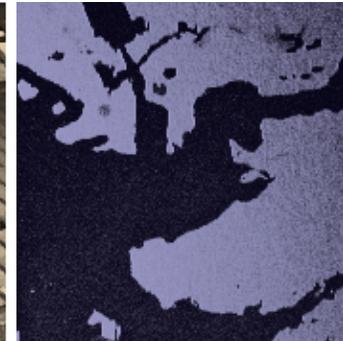
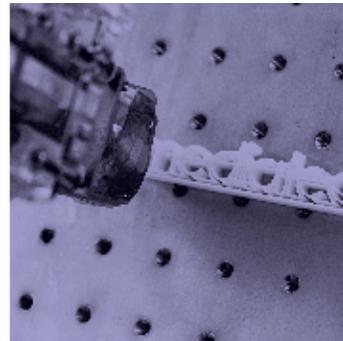
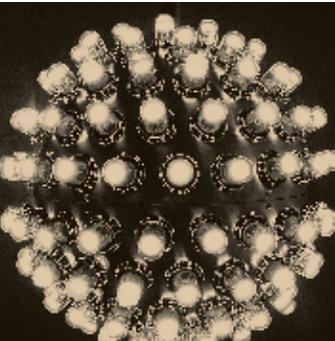


## PLAN



## DATEBOOK

SPRING 2012

## FEBRUARY 15–APRIL 13

**Architecture of the Freelon Group.**

Ten projects that exemplify the reach of the Freelon Group's work; founder Phil Freelon is a Professor of the Practice at SA+P. M-F, 9AM–5PM, Wolk Gallery, MIT 7-338.

## MAY 3–SEPTEMBER 30

**Photography and Science: An Essential Unity—Photography by Bernice Abbott.**

An exhibit of Abbott's rarely-seen science photographs; the show marks the debut of the Kurtz Gallery for Photography, established with support from Ron Kurtz, MIT Class of 1954. Daily, 10AM–5PM, MIT Museum, N51.

## JUNE 8

**Commencement.**

Salman Khan ('98), founder of the Khan Academy online educational organization, will deliver the keynote address; at 35, Khan is the youngest Commencement speaker in at least 30 years.

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(Cover)

*Otto Piene: Lichtballett.* Detail from the autumn exhibit of light-based sculptural work by the director of SA+P's Center for Advanced Visual Studies from 1974-94. Courtesy of MIT's List Visual Arts Center. (Photo: Günter Thorn)





In the last issue of PLAN, we introduced four impressive new faculty members—two in media, two in art—and with this issue we are pleased to introduce two more bright lights: Sep Kamvar, a world-class researcher in the field of social computing, and Christoph Reinhart, a leading expert in sustainable building design and environmental modeling.

The arrival of these six newcomers marks the beginning of what will be a transformational era in the history of our school. At the moment we are conducting over a dozen faculty searches in architecture, urban planning, artistic practice and media studies which will ultimately result in more than twenty keen new minds in our mix.

The opportunity this presents would be unusual in any school, but in a place as compact as ours, it represents nearly 15% of our faculty. By hiring such a large cohort at once, rather than one person at a time, we have the chance to assemble a group especially rich in synergies—among themselves, with the existing faculty in our school and in the Institute at large.

We have always taken pride in the extraordinarily fertile mix of scholars in our school—economists, historians, designers, artists, scientists, inventors—and this remarkable opportunity will allow us to build on those strengths while at the same time bringing in new perspectives to broaden our base still more.

Many of these positions will be filled by the start of the school year next fall and many others will follow soon after. I look forward with great anticipation to introducing them to you.

*Adriana Santos*

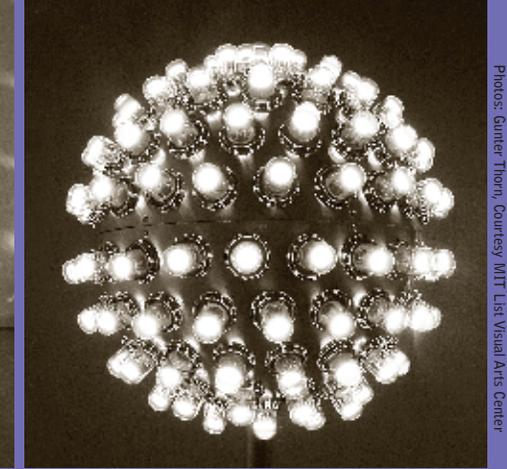
(A) Haacke's 1967 show premiered *Wide White Flow*, a construction of white fabric and fans, and *Grass*, in which a mound of dirt was seeded with grass that grew inside the gallery.

(B) Piene's *Light Ballet on Wheels* (1965), consisting of interior lamps that project light through a revolving disk onto the ceiling and walls.

(C) Piene's *Electric Rose* (1965), a major work from the List collection consisting of an aluminum globe covered with neon bulbs that pulsate light in four sequenced phases.



(B)



(C)

Photos: Gunter Thony, Courtesy MIT List Visual Arts Center

# PIENE AND HAACKE AT THE LIST

## REVISITING MIT'S EARLY CONTRIBUTIONS TO CONTEMPORARY ART



Photo: Courtesy of MIT List Visual Arts Center

(A)

Two simultaneous exhibits at the List Visual Arts Center focused attention this fall on MIT's historical contributions to contemporary art.

One of the two exhibits showcased light-based sculptural work by Otto Piene, internationally noted artist and director of SA+P's Center for Advanced Visual Studies from 1974-94. During his 20 years in that post, Piene established MIT as an important hub for creative and scholarly work involving the visual arts and technology, fostering creative collaborations of artists with scientists and engineers.

The exhibit at the List highlighted Piene's pioneering exploration of light as an artistic medium, bringing together several sculptures from the 1960s and '70s along with two new works created especially for this exhibition. The two new works—*Lichtballett* (2011), a site-specific wall-sculpture, and *One Cubic Meter of Light Black* (2010-11)—continued the artist's decades-long investigation of light phenomena.

Throughout the duration of the show, several special presentations were accompanied by an original score composed by the artist in the 1960s for his early light performances; the exhibit also included a series of film screenings documenting the history and performance of several decades of Piene's work. *Otto Piene: Lichtballett* was organized by João Ribas, Curator at the List Visual Arts Center.

The second exhibit at the List, revisiting Hans Haacke's solo show at MIT in 1967, presented a particularly cogent look at this artist's largely undocumented early work and cast new light upon the development of his later, better-known oeuvre.

A world-renowned artist, Haacke is best known for what is commonly termed Institutional Critique dealing with political and corporate systems, much of it focused on the art world and the system of exchange between museums, corporations and corporate leaders. But few are aware of his early work involving biological and physical systems—living animals, plants and physical states of water and wind—which was stimulated if not produced by the show at MIT.

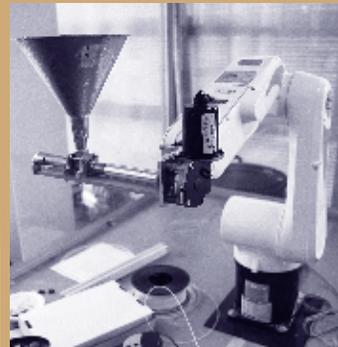
For the new installation, many of the works from the 1967 show were brought together again for the first time in 44 years, along with ephemeral works that both preceded and followed it, both reinventing the solo show and contextualizing it within Haacke's broader research. The exhibition was accompanied by a scholarly catalogue that included an essay by Caroline Jones, director of SA+P's History, Theory and Criticism Program, who organized the exhibit, along with statements from Haacke and an introduction to Haacke's work written by the late Edward Fry that has never before been available in English.

MORE: [SAP.MIT.EDU/PLAN](http://SAP.MIT.EDU/PLAN)

# EXPANDING THE POTENTIAL OF BUILDING WITH CONCRETE

## 3D PRINTING OPENS UP NEW POSSIBILITIES

(Photos: Steven Keating)



**(Top)**  
A sample printed object made of ABS plastic using the robotic printing platform.

**(Left)**  
Concrete samples with functional density gradients are shown here—one with a radial density gradient and the other containing a linear density gradient.

**(Right)**  
A test platform for 3D printing using a multi-axis robotic arm; attaching different extruder heads allows for various materials to be printed and tested.

Researchers at the Media Lab are developing a system for the 3D printing of concrete with the ultimate potential of actually 'printing' an entire building.

Pursued by assistant professor Neri Oxman (PhD'10) and master's candidate Steven Keating, the process could make it possible to create fanciful concrete shapes that would be difficult or impossible to mold using traditional wooden forms.

It could also allow the properties of the concrete to vary continuously, producing structures that are both lighter and stronger than conventional concrete by mimicking structures found in nature.

A palm tree, for instance. The trunk of a palm tree is denser at the outside and lighter toward the center, resulting in a high strength-to-weight ratio, as opposed to a man-made concrete column in which the density is constant throughout, producing a much heavier structure.

As part of his thesis research—and in collaboration with Timothy Cooke and John Fernández from SA+P's Building Technology Group—Keating has already created sections of concrete with the same kind of density variations found in palm tree trunks and in bones, which consist of a hard, dense outer shell and an interior of spongy material.

The 3D printing technology—or '3DP', as it's called—involves building up a shape one thin layer at a time, using a metal platform mounted on a piston that's raised or lowered in tiny increments.

A layer of powder is spread on the platform, then a print head deposits a liquid onto the powder to bind it together. The platform is then lowered infinitesimally and another thin layer of powder is applied on top of the last, followed by another layer of binder.

Different combinations of powders and binders can make a range of materials or even a mix of different materials in the same printed object, using different liquids in the print heads, like the different colors of ink in an inkjet printer.

The technology of 3DP was pioneered at MIT nearly two decades ago, initially for the purpose of producing architectural models and prototypes for new products such as medical devices, but it has since branched out in a range of directions.

Oxman has produced a glove with sections that are stiff and others that are flexible, designed to help prevent the wearer from developing carpal tunnel syndrome. She has also designed a chair made of different polymers, producing stiff areas for support and flexible areas for comfort, all printed out as a single unit.

A project at the Media Lab is developing machines to print *food* ranging from candies to complete meals. And one former student, Peter Schmitt (PhD'11, Media Arts and Sciences), working with Media Lab IP consultant Bob Swartz, has printed entire working clocks with all their gears, chains, faces and hands in a single unit.

VIDEO: [tinyurl.com/cawevx5](http://tinyurl.com/cawevx5).

# Greening the Built Environment

## New Research on the Environmental Impact of Concrete

Nearly 500 representatives from industry, government and academia convened at MIT last year for a day-long symposium on the environmental impacts of concrete.

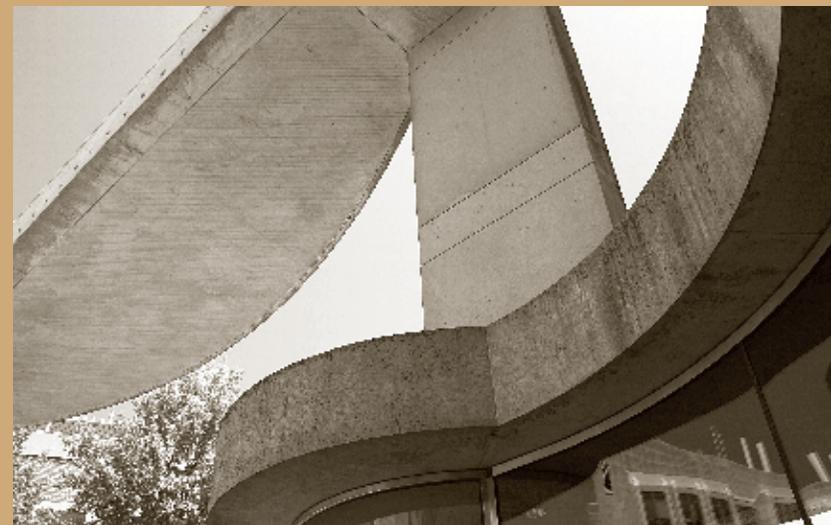
Sponsored by MIT's Concrete Sustainability Hub—a collaborative research center involving SA+P and the School of Engineering—the meeting featured the release of two important new reports on the carbon emissions of concrete buildings and pavements over the course of their life cycles, and included a new set of analyses to help designers and builders determine which of their construction options involve the lowest environmental costs.

Led by professors John Ochsendorf and Les Norford from the Building Technology Group in SA+P's Department of Architecture, the newly-released life cycle research analyzed the overall performance of residential buildings, commercial buildings and highway pavements for different climatic regions, considering all phases of their life cycle from production and transportation through construction, maintenance and operations and finally through disposal.

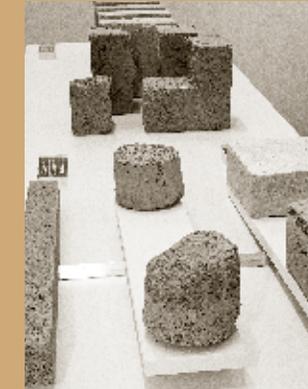
In addition to quantifying the options for reducing life cycle CO2 emissions, the research promotes a standardized metric of global warming potential. And by providing methods to track the carbon footprint of a project over the course of its lifetime, the research also aims to develop greater 'carbon literacy' among architects, builders and clients.

MUCH MORE: [SAP.MIT.EDU/PLAN](http://SAP.MIT.EDU/PLAN)

(Photo: Judith M. Daniels/SA+P)



(Photos: Judith M. Daniels/SA+P)



The redesign of the gallery space—it had been a fabrication lab—was carried out with a generous donation of materials and labor in kind from Shawn Keller, principal with C.W. Keller & Associates, an architectural millwork, furniture and design firm.

For copies of the new reports on concrete carbon emissions, and to learn of further research on concrete materials science and the econometrics of sustainable development, visit [www.mit.edu/cshub](http://www.mit.edu/cshub).

# The Keller Gallery

## A Vest Pocket Space for Special Exhibits

As part of the continuing development of common spaces for the Department of Architecture, a new gallery opened this fall on the fourth floor of Building 7, close to the architecture design studios, the school's new fabrication lab, the Steam Café and the Long Room, where all the department's lecture series are held.

A vest-pocket space at about 200 square feet, the Keller Gallery will show a steady stream of faculty, student and experimental work, including work from alumni and friends.

One of the first exhibits, *Research in Lightweight Concrete*, focused on the invention of a cellular cement that minimizes raw material consumption and energy in production while maximizing lifecycle performance.

Created by SMArchS candidate Timothy Cooke and Associate Professor John Fernández, the show reflected their research into lowering concrete's thermal conductivity, increasing its overall strength and toughness and providing greater durability.

Coordinator of the Keller Gallery is Sarah Margaret Hirschman (MArch'11), who is also editor of the recently released *Testing to Failure: Design and Research in MIT's Department of Architecture*, a survey of work done at the school from 2009 to 2011.

The Keller Gallery, Room 7-408, is open Monday through Saturday from 9AM to 6PM.

# THE HANDS-FREE HEART MONITOR USING LOW-COST VIDEO TO MEASURE VITAL SIGNS

Every day when you look in the mirror, you see not only your physical appearance but you also get a snapshot of your physiological information, data that can be transferred through the Internet to your health care provider. When you start to keep track of these health indicators over a period of days or weeks, you can begin to see patterns and spot any deviations.

(Photo: Ming-Zher Poh)



A device developed by the Affective Computing Group at the Media Lab has been named one of the ten best inventions of 2011 by *Popular Science Magazine*; it has also won a prize of \$50K in a competition sponsored by the Center for Integration of Medicine and Innovative Technology, an organization created by doctors and engineers to develop new tools to meet clinical needs.

Developed by Ming-Zher Poh, (SM'07, EECS) a 2011 graduate of the Harvard-MIT Health Sciences and Technology program, working with Daniel McDuff, a graduate student in the Media Arts and Sciences program and their advisor Rosalind Picard, Head of the Affective Computing Group, the project was published last year in the peer-reviewed journal *Optics Express*.

The invention, called *Cardiocam*, is a non-contact technology for measuring physiological signals such as heart rate and breathing rate using a simple low-cost camera such as the webcam in a laptop computer.

Such noninvasive monitoring could allow doctors to check the vital signs of burn victims or babies without attaching uncomfortable clips. It could also be used for telemedicine screening over the Internet using a patient's own webcam or cell-phone camera.

A system like this could also be built into a bathroom mirror so that patients who need ongoing monitoring, or people who simply want to keep track of their health, could get routine readings displayed in a corner of the mirror.

Such a mirror is actually now on display at the Media Lab: behind the two-way glass, a webcam-equipped monitor is wired to a laptop so that when you stand in front of the mirror the monitor projects your heart rate on top of your reflection.

The technology is based on light readings. Every time your heart beats, it sends a pulse of blood through your blood vessels; blood absorbs light, so when a surge of it travels through the vessels less of the light that hits your skin is reflected.

The team developed an algorithm that can pick out the small fluctuations in the heart rate's light pattern from all the other reflected light captured by a webcam, then wrote code to process the data in real time, allowing the laptop to generate an instant heart-rate reading.

The big development challenge was dealing with movements of the subject and variations in ambient lighting. But the team was able to adapt signal-processing techniques originally developed to extract a single voice from a roomful of conversations to extract the pulse signal from the 'noise' of these other variations.

The system is able to generate valid results even when the subject is moving around a bit in front of the camera and produces pulse rates that agree to within about three beats per minute with the rates obtained from traditional monitoring devices. It is even able to get accurate pulse signals from three people in the camera's view at the same time.

Researchers have tracked this effect with a high-res camera in the past, but the use of a simple webcam makes nearly every computer and smartphone a potential heart-rate monitor. In time, the system may be able to measure other vital signs as well, including respiratory rate and blood-oxygen saturation.

A SAMPLING OF NON-PROFIT ORGANIZATIONS FOUNDED BY ALUMNI

# THE SOCIAL ENTREPRENEURS OF SA+P



(A) OVER THE YEARS, ALUMNI OF THE SCHOOL OF ARCHITECTURE + PLANNING HAVE BEEN PROMINENT PLAYERS IN MIT'S CULTURE OF SOCIAL ENTREPRENEURSHIP, WITH SCORES PERHAPS EVEN HUNDREDS OF GRADUATES HOLDING LEADERSHIP POSITIONS IN WELL-ESTABLISHED NON-PROFITS. IN RECENT YEARS A GROWING NUMBER OF THOSE NON-PROFITS HAVE BEEN ACTUALLY FOUNDED BY OUR ALUMS; THE CAPSULE DESCRIPTIONS BELOW PROVIDE A BRIEF OVERVIEW OF SOME OF THOSE EFFORTS.

## EDUCATION

**CFY.** CFY is a national education nonprofit that helps students in low-income communities, together with their teachers and families, harness the power of digital learning to improve educational outcomes. To date, CFY has served more than 40,000 families from 100 schools nationwide and has demonstrated significant impact on student achievement, student engagement, parental confidence and broadband adoption. Founded in 1999 by Elisabeth Stock ('90, MCP'95, SM'95) and Dan Dolgin, a lawyer and private investor. (MORE: [cfy.org/](http://cfy.org/))

**NuVu.** Originally established as a for-profit organization, now transitioning to a non-profit, NuVu is a magnet center for middle and high school students, and a professional development program for teachers and educators. Based on the studio model, NuVu provides students the opportunity to work collaboratively with experts from MIT and Harvard, as well as with working professionals, to solve real-world problems in an intensive and fun environment. Formed in 2010 by Saeed Arida (SM'04, PhD'11, Architecture, Design and Computation) as part of his doctoral research in teaching creativity. (MORE: [nuvustudio.org](http://nuvustudio.org))

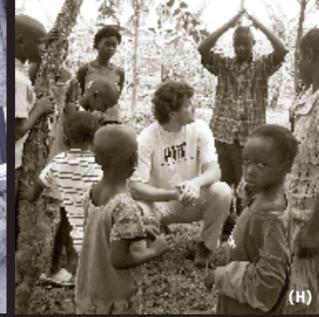
## THE ENVIRONMENT

**The Product Stewardship Institute.** The Product Stewardship Institute (PSI) pursues initiatives to ensure that all those involved in a product's lifecycle share responsibility for reducing its adverse impacts. It was the first national organization in the US to promote the extended producer responsibility (EPR) model, advancing voluntary programs and using legislative pressure to change corporate behavior. There are now 70 EPR laws in 32 states on 10 products. Founded in 2000 by Scott Cassel (MCP'88). (MORE: [productstewardship.us/](http://productstewardship.us/))

**The Consensus Building Institute.** The Consensus Building Institute (CBI) is a not-for-profit organization with fifteen full-time staff and an international network of dispute resolution professionals who work with leaders, advocates, experts and communities to promote effective negotiations, build consensus and resolve conflicts. Its areas of expertise include Natural Resources and Environment, Land Use and Development and Social Policies and Programs. In an effort to promote best practices and continuous learning, CBI documents its work as case studies available to the public. Founded in 1993 by Lawrence Susskind (MCP'70, PhD'73). (MORE: [cbuilding.org](http://cbuilding.org))

## DISASTER RELIEF

**Konbit.** Konbit is not officially organized as a non-profit entity but was created to support non-profits engaged in disaster relief. Created in direct response to the earthquake



in Haiti, Konbit helps organizations find and hire local labor instead of relying on foreign workers, thus helping build the local economy. Developed in 2010 by Aaron Zinman (SM'06, PhD'11, Media Arts and Sciences) and Greg Elliott (SM'11, Media Arts and Sciences), both of whom were students here at the time. (MORE: [konbit.media.mit.edu/](http://konbit.media.mit.edu/))

**Broad Community Connections.** Broad Community Connections (BCC) is a non-profit Main Street organization established to revitalize New Orleans' historic Broad Street as a vibrant commercial corridor. As part of its work, BCC provides design, urban planning and financial technical assistance to business and property owners, community members and other stakeholders, working on such projects as city streetscape enhancements and supporting Tulane University's development of a new community health center. Founded in 2008 by Jeff Schwartz (MCP'08). (MORE: [broadcommunityconnections.org](http://broadcommunityconnections.org))

**Transport for NOLA.** Transport for NOLA is a non-profit think-and-do tank of New Orleansians working to create a world-class transportation system in the Greater New Orleans region, based on equity, accessibility and best-practices. It is the first alternative transportation non-profit of its kind in the state. Founded in 2008 by MCP alumni Jeff Schwartz, Seth Knudsen, Stephen Crim, Jeff Hebert, Jackie Dadakis and Sean Escoffery, with SMArchS alumni Zach Lamb and Carey Clouse. (MORE: [transportfornola.org](http://transportfornola.org))

## AGRICULTURE

**Maa-Bara.** Maa-Bara makes use of sustainable aquaponics technology to improve food security in Nigeria, a region where 10.8 million gallons of oil spill into the landscape every year. The project uses kitchen scraps as feed for the propagation of fish and vegetables in almost any location, including places where food has never before been grown. Formed in 2011 as an outgrowth of thesis research by Ogheneruno Okiomah (MArch'11) and co-founded with Elisha Goodman (MCP'11). (MORE: [maabara.org](http://maabara.org))

**Hawai'i SEED.** Hawai'i SEED is a statewide non-profit coalition of grassroots groups. It aims to protect Hawaii and its people from the risks posed by genetically engineered organisms by promoting diverse, local, healthy and ecological food and farming. Utilizing a consensus process, Hawai'i SEED successfully deployed strategic plans across five geographically separate islands resulting in four key wins on coffee, taro, papaya and algae campaigns. Co-founded in 2002 by Elisha Goodman (MCP'11). (MORE: [hawaiiseed.org/](http://hawaiiseed.org/))

The culture of social entrepreneurship at MIT is cultivated to a large extent by MIT's Public Service Center, offering a range of support for students working on capacity-building projects around the world; in cooperation with the Department of Urban Studies and Planning, the Center also funds summer internships specifically for planning students. (MORE: [web.mit.edu/mitpsc/](http://web.mit.edu/mitpsc/))

(A) A visualization of Maa-Bara's sustainable aquaponics technology. (Image: Ogheneruno Okiomah and Daniel Daou)

(B) CFY provides training for teachers, students and their parents. (Photo: Kari Otero Photography)

(C) The Product Stewardship Institute helped develop a national program to reduce paint waste, estimated at 62 million leftover gallons per year. (Photo: Courtesy of the Product Stewardship Institute)

(D) Transport for NOLA's 'What If?' map, a stylized image of a potential New Orleans rail network. (Image: Jeffrey Schwartz)

(E) For teachers and educators, NuVu offers training on how to bring innovative practices to student learning. (Photo: NuVu)

(F) The Consensus Building Institute mediated interactions on the health risks of the Maine paper industry. (Photo: JustUs3—Flickr)

(G) A cellphone rep in Haiti helps bypassers call in to Konbit; to date, the effort has catalogued ten thousand workers in its open-source database. (Photo: CECOSIDA)

(H) MCP candidate Campbell Mayer, on a fellowship from MIT's Public Service Center, discussing affordable housing strategy with clients in Uganda. (Photo: Courtesy of Campbell Mayer, now MCP'11)

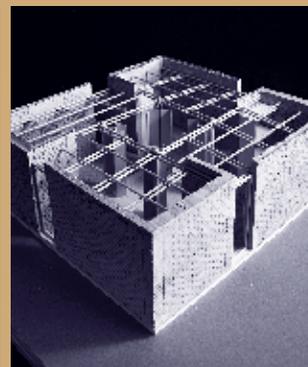
(I) Broad Community Connections is currently undertaking a \$16M project to transform a vacant grocery store into a mixed-use 'fresh food hub'. (Image: Broad Community Connections and Billes Partners)

(J) Taro flourish in the lo'i (paddies) of the lush Hanalei Valley; Hawai'i SEED has succeeded in protecting indigenous property rights, resulting in the relinquishing of three patents on taro. (Photo: Elisha Goodman)

## Housing the Victims of Natural Disaster

### A Prototype of the 1K House Recently Built in China

(Images: Ying chee Chui)



The first prototype from SA+P's '1K House' project—a challenge to design and build permanent new homes for victims of natural disaster at a unit cost of \$1K—has recently been constructed in Sichuan Province, China.

Designed by alumna Ying chee Chui (MArch'11), the 'Pinwheel House' was originally conceived in a 2009 design studio led by Yung Ho Chang, then head of the Department of Architecture, Tony Ciochetti, Director of the MIT Center for Real Estate, and Dennis Shelden, Professor of the Practice in Computation. The studio was aimed at creating affordable housing for areas hit by natural disasters such as the 2008 earthquake in Sichuan.

Chui's house, designed to withstand a magnitude 8.0 earthquake, features a series of repeated L-shaped walls made of earthen blocks topped with a corrugated roof. Its modular layout—rectangular rooms that can be duplicated and rotated around a central courtyard space to form different configurations—can be easily built because each module simply duplicates the others. Additions can also be easily annexed to create a more complex design, and multiple homes can be built in clusters to maximize land use efficiencies while maintaining privacy.

While the prototype of Chui's design ended up costing more than \$1K—it actually came in around \$6K, partly because it's about 35% larger than the original design—it is, in relative terms, still extremely affordable. And a smaller version of the house could still be built for about \$4K, a price that could fall still lower if a number of homes were built at once.

MORE: [SAP.MIT.EDU/PLAN](http://SAP.MIT.EDU/PLAN)

**(Left)**  
The modular layout features rectangular rooms that can be duplicated and rotated around a central courtyard to form different configurations.

**(Right)**  
Designed to withstand a magnitude 8.0 earthquake, the house is constructed with a series of repeated L-shaped walls made of earthen blocks.

**(Bottom Left)**  
One of many potential uses for the UNA toolbox could be to estimate the impact of a new transit station on a given neighborhood.

**(Bottom Right)**  
The toolbox can be used to compute five types of graph analysis measures on spatial networks—Reach, Gravity, Betweenness, Closeness and Straightness.



(Photo: Judith M. Daniels/SA+P)



(Image: Courtesy of the City Form Research Group)

## Honing the Accuracy of Urban Planning

### New Open-Source Software Helps Predict Impacts of Policy Decisions

Researchers in SA+P's City Form Research Group have created a new set of tools that offers architects and urban planners a better understanding of how the spatial patterns of cities affect the way people live and move around their urban environments. The first of its kind to be made available for free, the Urban Network Analysis (UNA) toolbox comes as an open-source plugin for the ArcGIS mapping software; download it from [cityform.mit.edu](http://cityform.mit.edu).

Making use of mathematical network analysis methods, often used to study social networks like Facebook, the UNA toolbox examines urban issues like accessibility, spatial patterns and urban growth to offer policymakers a detailed look at how their decisions would shape nearly every aspect of urban development, including such considerations as where traffic is likely to be highest and on which streets local commerce is most likely to flourish.

Specifically, the software lets planners study urban areas by analyzing aspects of location. For example, it's possible to measure a location's 'reach' (how many locations, jobs or residences are accessible when traveling by the available street network) or 'betweenness' (a measure that can be used to gauge the amount of traffic an area receives).

By giving planners more rigorous insight into how a city's configuration affects its quality as a host to human activities, the toolbox can help make future urban planning and design more accurately reflect reality. The tools can also give city designers and planners a better handle on how to improve existing cities based on empirical evidence.

MORE: [SAP.MIT.EDU/PLAN](http://SAP.MIT.EDU/PLAN)

## Witnessing Artists at Work

### A Creative Collaboration for the Benefit of Students

Eminent artist Joan Jonas, Professor Emerita in SA+P's Program in Art, Culture and Technology, collaborated this fall on a new performance piece with jazz pianist Jason Moran, a 2010 MacArthur Fellow hailed by critics as 'the future of jazz'. The new piece, *Reanimation*—an improvisation of music, sound, movement and video—was debuted to a sold out MIT audience in September.

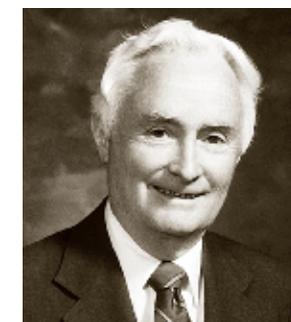
The performance was the first event of this year's Visiting Artists Program, organized by MIT's Office of the Arts to bring nationally and internationally recognized artists to campus for stays of several days and weeks. During Moran's residency, students were given access to an open rehearsal of *Reanimation* as well as a screening of the documentary *In My Mind*, Moran's multimedia tribute to Thelonious Monk.

Moran has received wide acclaim for his recordings on Blue Note Records, often performing with his ensemble The Big Bandwagon. His 1999 debut recording, *Soundtrack to Human Motion*, was christened Best Album of the Year by Ben Ratliff of the *New York Times* and his music is in the collections of the Museum of Modern Art and the Whitney Museum of American Art.

Over the course of four decades, Jonas has established herself as a pioneering force in contemporary art, working in genres ranging from performance and video to conceptual art and theater, a field of work that also includes drawing, film, installation, sculpture and photography.

MORE: [SAP.MIT.EDU/PLAN](http://SAP.MIT.EDU/PLAN)

(Photo: L. Barry Hetherington)



In addition to serving as a life member of the MIT Corporation, Spaulding served on the Corporation's investment, development and auditing committees, and on visiting committees for the Department of Urban Studies and Planning, the Department of Civil and Environmental Engineering and the MIT Libraries.

Frequent collaborators with other artists and musicians, Jonas and Moran have worked together on several of Jonas' projects including *My New Theater: Reading Dante III*, a version of which was on view last fall in the first floor gallery of the new Media Lab Complex.

## Alumnus Hank Spaulding, 1927–2011

### Founder and First Chairman of SA+P's Center for Real Estate

Charles 'Hank' Spaulding (CE'51), a founder and first chairman of SA+P's Center for Real Estate, died on Thanksgiving Day in Kennebunk Beach ME. He was 84.

In the 1980s, Spaulding worked closely with John de Monchaux, then dean of the School of Architecture + Planning, to establish MIT's graduate education and research program in real estate. Linking the disciplines of architecture, urban studies and planning, civil engineering, management and economics, the Center has become a model for similar programs at other universities.

'Hank was a true visionary in his creation of the Center for Real Estate,' says Tony Ciochetti, currently chair of the Center and professor of the practice in the Department of Urban Studies and Planning. 'The MSRED program has influenced the lives of 780 graduates who have been instrumental in creating a better built environment in 26 countries around the world.'

After earning his bachelor's degree in civil engineering from MIT in 1951, Spaulding started his professional career designing and building bridges at Parsons Brinckerhoff. Several years later, he joined Boston-based real estate developer Cabot, Cabot & Forbes, where one of his first projects was developing a 7000-acre ranch into the residential town of Laguna Niguel CA. He went on to become executive vice president and director at CC&F from 1963 to 1966, during which time the firm developed some of Boston's iconic office towers and suburban industrial parks.

In 1966 Spaulding co-founded Spaulding & Slye Corporation, a real estate development, brokerage, construction, property management and advisory services company that developed office properties in Boston, Washington, Charlotte NC and Oklahoma City. He led the company as president and then chairman until 1982.

MIT paid tribute to Spaulding in 1986 with the Bronze Beaver—the highest honor given by the MIT Alumni Association for distinguished service—and in 1991 with the Marshall B. Dalton Class of 1915 Award, for extraordinary leadership in developing resources for the Institute.

MORE: [SAP.MIT.EDU/PLAN](http://SAP.MIT.EDU/PLAN)

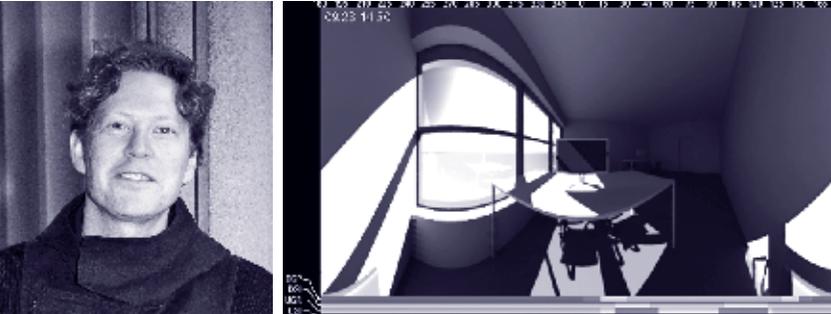
**New Faculty: Christoph Reinhart**  
World Renowned Building  
Scientist and Architectural  
Educator

**New Faculty: Sepandar Kamvar**  
World Leader in Social  
Computing and Information  
Management

**MEET SOME OF OUR STUDENTS**  
A SAMPLING OF STUDENT PROFILES

(Photo: Judith M. Daniels/SA+P)

(Image: J.A. Jakubiec)



Christoph Reinhart, internationally known for his daylighting analysis software, has been appointed an associate professor with tenure in the Department of Architecture, beginning in January.

Originally trained as a physicist, Reinhart is a building scientist and architectural educator working in the field of sustainable building design and environmental modeling. He has studied both architecture and physics and has particular expertise in daylighting, passive climatization and the influence of occupant behavior on building energy use at both the individual building and neighborhood scale.

Reinhart is the creator of *Daysim*—daylighting analysis software used by thousands of AEC firms in more than ninety countries. He is also the main developer of the DIVA-for-Rhino sustainable design analysis tools that are used in leading schools of architecture and consulting firms across the globe. These tools are based on a simulation studies, field studies and occupant behavior surveys that Reinhart previously led under the umbrella of the International Energy Agency.

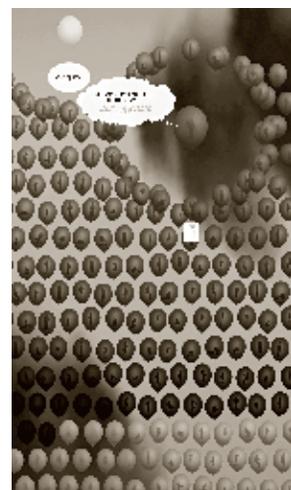
He has authored and co-authored over 100 scientific articles, including three book chapters, and chaired the scientific committee for esim 2008. He serves on the editorial board of the *Journal of Building Performance Simulation* and guest-edited a special issue on 'Daylighting' for *Energy and Buildings*.

Reinhart holds a doctorate degree in architecture from the Technical University of Karlsruhe, Germany, and masters degrees in physics from Albert Ludwigs Universitaet, Germany, and Simon Fraser University, Vancouver, Canada.

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Above right: A 360° glare analysis of an office workspace, indicating from which direction an office worker would be most likely to experience discomfort from daylight.

From the interactive installation 'I Want You to Want Me' by Jonathan Harris and Sep Kamvar, commissioned by MoMA for their 'Design and the Elastic Mind' exhibition. (Image courtesy Sep Kamvar and Jonathan Harris)



(Photo: Courtesy of Sep Kamvar)



Sepandar Kamvar, considered one of the best young minds in the growing field of social computing, has been appointed associate professor in media arts and sciences beginning January 1.

Previously a consulting assistant professor at Stanford's Institute for Computational and Mathematical Engineering, Kamvar was the founder and CEO of Kaltix, a personalized search engine acquired by Google in 2003, then led the personalization effort at Google from 2003-2007.

In the field of information retrieval—historically most concerned with queries and documents—Kamvar has developed models that focus on the *people* behind the queries and documents. He developed the first efficient algorithm for adding personal context to the internet search process, enabling customized searches, and devised a reputation mechanism that computes the level of 'trust' for individuals in peer-to-peer networks, so more reliable individuals can be given higher rankings in search results.

He also helped develop algorithms for locating people in a network who are best able to provide the requested information, rather than locating documents, and developed search engines to analyze and visualize human emotion using the words and pictures that people post on their social networks as raw material for creating mosaics of humanity—work that has served as the basis for art installations at several major museums.

Kamvar is the author of two books and over 40 technical publications and patents in the fields of search and social computing, and serves on the advisory boards of several companies, including Clever Sense and Etsy. He holds a PhD from Stanford in scientific computing and computational mathematics (2004) and a BS in chemistry from Princeton (1999).

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**Felicia Davis.** (Pasadena CA; New York NY) A PhD candidate in Design and Computation, Department of Architecture, exploring the intersection of architecture, craft and the digital arts. She received her BS in Engineering from Tufts and her Master of Architecture from Princeton. Her career ambition is to continue running her own architecture and design firm and to continue teaching others what she has learned. Thesis topic—investigating fabrication techniques such as knitting, weaving and lace-making that may offer architects new possibilities for fabrication and suggest other ways of creating architecture and space.



**Liz DiLorenzo.** (Portland OR) A candidate for an MS in Real Estate Development with interests in sustainability, affordable housing, public-private developments and public-financing mechanisms. She did undergraduate work at the University of San Diego (BA, 2005) and received her MBA from the University of Colorado at Boulder (2010). Her career ambition is to help people reconnect with one another by building healthier and happier communities. Thesis Topic: Connecting New Neighbors: How to ensure a wonderful public environment through creative financing in mixed-use developments.

The School of Architecture + Planning admits 600-700 students a year, about 90% of whom enter our graduate programs. In the fall of 2011, roughly 45% of our students were women and 30% were from other countries. About 43% were enrolled in the architecture department; 33% in urban studies and planning; 21% in the media arts and sciences program at the Media Lab and 3% in the real estate program. Many of them are also pursuing cross-disciplinary studies and dual degrees among those programs and other programs at the Institute. Whatever their pursuits, they are among the brightest, boldest, most creative and enterprising representatives of their generation and we are deeply proud of them. Below, a brief introduction to just a few of their number:



**Jeffrey Juarez-Araniva.** (Los Angeles CA) A recent graduate of the Master in City Planning program in the Department of Urban Studies and Planning, with particular interest in housing, community and economic development. He received his undergraduate degree from UCLA (2006) after transferring from Santa Monica Community College and Los Angeles City College. His career ambition is to work in disadvantaged communities to help stimulate the local economy, bringing jobs and social services that may improve the overall quality of life for residents. Thesis topic—the role of informal outdoor public markets in helping to revitalize and improve marginalized or low-income communities. (See a video of Jeff talking about his journey from the barrios of South Central LA to the halls of MIT: <http://bit.ly/t4xXKc>)



**Sajid Sadi.** (Philadelphia, New York, Chicago and Boston—and that's just in the U.S.) A PhD candidate in the Fluid Interfaces Group at the Media Lab working to extend the human reach by unifying the world of digital information with the physical world in which we live. He received his undergraduate degree in computer science and engineering from Columbia (2003) and his SM in Media Arts and Sciences from MIT (2006). His career ambition is to build a few companies, hopefully make an impact, retire early then dedicate himself to teaching. Thesis topic—creating 'mental prostheses' that give people insight into behaviors that are important on a daily basis but for which they don't keep good mental accounts—such as how much food they ate for lunch or how much power their laptop uses on standby—opening the door to informed self-induced changes in behavior via increased self-reflection.



**Elizabeth Anne Watkins.** (Los Alamitos CA) A candidate for the SM in Art, Culture and Technology, researching how ideas of time have found form in time-based media, specifically cinema, television and video, and how these mediums can be platforms for reflection and criticality on the ideas that influenced their formation. She did her undergraduate work in Studio Arts, Art History and Digital Art at the University of California-Irvine (BA, 2009). Her career ambition is to keep learning and making as much as she can, and to hopefully produce a thought or inquiry that history deems worthy of passing down to the next wondering mind. Thesis Topic: Time at the End of History: Towards a New Framework of Memory, Video and Simultaneity.

(Photos: Judith M. Daniels/SA+P)