This work has been the subject of three monographs and numerous exhibitions in Europe. This is his first major solo exhibition in the United States. Daily 10AM–5PM, MIT Museum, 265 Massachusetts Avenue, Cambridge.

THROUGH SEPTEMBER 15
After Katrina: MIT’s Department of Urban Studies + Planning Takes On Big Questions About Rebuilding.

In the eight years since Hurricane Katrina, faculty, students and alumni from MIT’s Department of Urban Studies + Planning and the School of Architecture + Planning have worked in New Orleans and the Gulf Coast with a number of organizations on a multitude of issues. This free commemorative exhibit documents that work. Daily 10AM–5PM, MIT Compton Gallery, MIT Room 10-150.

THROUGH AUGUST 16
From Obsolescence to Sustainability: A Century of Architectural Change.

An exhibit tracing the concept of obsolescence in the built environment through its evolution in architecture, economics and culture and the subsequent development of sustainability. Weekdays, 9AM–5PM, SA+P's Wolk Gallery, MIT Room 7-338.

THROUGH AUGUST 31
Joël Tettamanti: Compass Points.

A collection of 74 photographs and four videos documenting structures, villages and cities that people create and inhabit, and the landforms and climates that shape their culture. Tettamanti has worked from Asia to the Arctic Circle and his work has been the subject of three monographs and numerous exhibitions in Europe. This is his first major solo exhibition in the United States. Daily 10AM–5PM, MIT Museum, 265 Massachusetts Avenue, Cambridge.

Stories in PLAN can usually be found in greater detail online at sap.mit.edu/plan, along with archives of previous issues. PDFs of recent issues can also be housed at sap.mit.edu/publications, along with a link to our new mobile app.

To change your address, or to be removed from our mailing list, please email sap-info@mit.edu with the heading ‘address change’ or ‘PLAN cancellation’.

(cover) From the Bilbao Urban Design Studio, an example of the sort of large-scale infrastructure interventions being explored by SA+P’s new Center for Advanced Urbanism. The studio studied design strategies for the area connecting Bilbao to the Atlantic Ocean through an elongated system of road, harbor and marine infrastructure; pictured here, an engineered landscape designed to resemble a public park that would perform all of the region’s hydrological infrastructure needs. (Image: Matt Binder and Daniel Dues)
This spring, we launched a major new research effort here, the Center for Advanced Urbanism, focused on creating new models for 21st century cities. (See the foldout in this issue.)

It is a timely venture. It seems that everybody is talking about the future of the city these days and at SA+P we think we’re positioned to make a unique contribution to that conversation.

Our urban planning program has been ranked Number One in the nation for years, our architecture program has a long and distinguished history in the urban design arena and the Media Lab is increasingly engaged in related research, including the newly-formed City Science initiative.

As part of MIT, we are also surrounded with an unmatched array of faculty in other disciplines—engineering, science, business and the humanities— with whom to collaborate on problem-solving.

With all this expertise to draw on, we feel singularly prepared to tackle large-scale issues of urbanism at a very high level—developing rigorous, reliable, forward-looking theory to serve as a basis for rethinking the entire concept of urbanism.

EXPLORING THE FUTURE OF MAKING THINGS

INTRODUCING THE SELF-ASSEMBLY LAB

Imagine a world in which large-scale man-made structures could assemble themselves, reconfigure themselves or even change their material properties. Architecture alum and lecturer Skylar Tibbits is working on bringing that world about by developing ‘smart’ components that translate natural molecular processes and computational processes into self-assembly technologies for the built environment.

Self-Assembly is a process by which disordered parts build an ordered structure entirely on their own, a process Tibbits enables by fabricating objects that can respond to various energy sources to change themselves over time. To formalize this line of inquiry, he recently established the Self-Assembly Lab at SA+P.

His exploration of self-assembly has taken a number of forms so far. He collaborated with Neil Gershenfeld’s Milli-biology team at SA+P’s Center for Bits and Atoms to develop two jointed robotic chains, each joint of which can receive, transmit and respond to coded instructions that transform the chain from a one-dimensional string into three-dimensional shapes.

He then developed a series of self-folding toys that have the instructions for assembly coded directly into each link, so the structures themselves contain the blueprints of what he wants to build.

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Seemingly disparate processes into self-assembly technologies for the built environment. Most recently, using a new material that is able to transform itself in water, Tibbits collaborated with Stratasys to design and print a string of pieces that, when dunked in water, wiggles its way into spelling out ‘MIT’ or into a 3D cube. The Bio-Molecular Self-Assembly Project—a collection of coded pieces that, when shaken in a beaker, assemble themselves into a 3-D model of a polio virus, the pieces held together through their shapes and magnetic properties.

Working with Arthur Olson, director of the Molecular Graphics Laboratory at the Scripps Research Institute, he created a collection of little coded pieces that, when shaken in a beaker, assemble themselves into a 3-D model of a polio virus, the pieces held together through their shapes and magnetic properties.

TO LEARN MORE ABOUT SELF-ASSEMBLY RESEARCH, CONTACT SKYLAR TIBBITS AT SJET@MIT.EDU.
SNEAKING A PEAK AT THE NEW SIMCITY
A VISIT FROM THE LEAD DESIGNER OF THE REVISED URBAN PLANNING GAME

First released in 1989, SimCity is an award-winning simulation that invites players to create their own cities, introducing them to the trade-offs among a seemingly endless array of variables in the design and management of an urban environment. The SimCity franchise has been credited with inspiring an entire generation of urban theorists—The New Yorker has called it ‘arguably the single most influential work of urban design theory ever created’—and MIT planning professor Brent Ryan attests to that claim, on a personal basis at least, asserting that finding around with earlier versions of SimCity played a significant role in getting him interested in the profession.

Machover is now adapting a version of his collaborative approach for this summer’s Edinburgh International Festival: Festival City will premiere there on August 27, performed by the Royal Scottish National Orchestra conducted by music director Peter Oundjian. A number of other cities have also approached him about creating their own versions of A Toronto Symphony. To find out the latest, contact him at tdd@media.mit.edu or consult http://opera.media.mit.edu. (Upper left photo: Josh Clavir, Toronto Symphony; lower right photo: The Machovers.)

WHAT DOES A CITY SOUND LIKE?
A TORONTO SYMPHONY ANSWERS WITH THE HELP OF 10,000 CITIZENS

In March of this year a new version of the enormously popular city-building simulation, SimCity, was introduced with a considerable amount of fanfare in the digital gaming world—an event of particular interest to SA+P for a number of reasons.

For starters, of course, SimCity is a simulation of urban design and management processes, a core concern of almost everything we do here. It is also a hugely successful example of digital game design, the focus of an important research program in the school.

And finally—a source of much pride to us—the lead designer of the new game is SA+P alum Stone Librande (SM’92, Architecture; SM’92 Media Arts & Sciences), Creative Director at EA/Maxis, a division of Electronic Arts that publishes many blockbuster digital game franchises. On Valentine’s Day, Librande came to MIT to meet with students for an introduction to the new game and a roundtable discussion on the role of games in education.

The use of digital games like SimCity for educational purposes is increasingly common and promising, according to Eric Klopfer, director of SA+P’s Scheller Teacher Education Program and The Education Arcade. Klopfer conducts ongoing research into the creation and use of such games for understanding complex systems and he says the research shows the games align well with good learning principles. So well, in fact, he has often used SimCity in his classes in Computer Games and Simulations for Education and Exploration.

In his presentation to students, lead designer Stone Librande said the design team began their work with spreadsheets, then moved on to flow diagrams on a whiteboard and eventually to Adobe Illustrator to create a master plan for the game, continuously working on the diagram to get it sufficiently simplified. If you can’t make a decent drawing at it, Librande said, the game is too complex.

In March, the Toronto Symphony presented the world premiere of a new composition by SA+P’s Tod Machover, head of the Media Lab’s Opera of the Future group—a collaboration between the composer and thousands of the city’s citizens seeking to answer the question “What does Toronto sound like?” Conducted by TSO music director Peter Oundjian, A Toronto Symphony: Concerto for Composer and City, was the finale of the orchestra’s annual New Creations Festival, which Machover curated this year.

Over a period of several months, Torontonians were asked to send in their favorite city sounds as well as compositional fragments, elements that Machover then incorporated into the score. The thousands of sounds included seagulls, traffic, playgrounds, skateparks, streetcars, markets, festivals—and, most recognizably, the chimes that signal the opening and closing of the city’s subway doors—all of the recording either included as part of the piece or recreated acoustically by the orchestra. Or, in some cases, both.

About 10,000 Torontonians participated in the year-long project, contributing by Skype and smartphone, blog and e-mail, and through face-to-face meetings with Machover. It also included contributions from a Toronto indie rock festival, where more than three dozen different bands offered sound bytes for the piece.

Collaborators also created contributions using the color-coded graphics of Hyperscore, Machover’s graphic composing software. The premiere was synchronized with a light show on the CN Tower designed by the Media Lab’s Peter Torpey, who also designed the interactive graphics for the concert hall itself. Those who couldn’t attend the event were able to tune in to a live webcast including video, graphics and photographs illustrating both the piece and the process of its creation.

As an exploration of the changing relationship between composers and their audiences, A Toronto Symphony is a further extension of Machover’s ongoing research into the intersection of classical music and technology, research that has included such projects as Brain Opera, Toy Symphony and Death and the Powers, an opera featuring a chorus of robots and an animated stage that was a finalist for the Pulitzer Prize in 2012.
For the second year in a row, a team of MIT students—including three this year from SA+P—have won double awards in the Better Buildings Case Competition conducted at the White House by the US Department of Energy.

In support of President Obama’s goal of cutting energy waste from homes and businesses by half over the next two decades, the annual competition invites university energy clubs to propose innovative solutions for increasing the efficiency of buildings across the country. The MIT team won ‘Best Proposal’ for the City of Fort Worth Case Study by exploring ways for a city with a conservative political climate to encourage energy efficiency in the private sector. They proposed that the city organize an energy data disclosure effort to help the market internalize the costs of energy and to provide a new resource for privately-led efficiency efforts. To help build momentum for the initiative they encouraged the development of strong public-private partnerships with community groups, especially faith-based organizations, and with local utilities that have already begun to invest in energy data infrastructure.

They won ‘Most Innovative Proposal’ for the ‘Every Store’ Case Study with a plan to upgrade the heating and cooling units in a national big-box chain and proposed that the chain use the upgrades as an opportunity to enhance its position in the market. By partnering with residential equipment manufacturers, and offering customer loyalty programs that incentivize efficiency, the store could increase its stature in the market while spreading the benefits of energy efficiency to its customer base.

More SAPMIT EDU PLAN

**Local Warming** Interactive Sculpture Demonstrates New Heating Technology

Local Warming, an installation outside MIT’s Lobby 7 this spring, demonstrated a new approach to heating commercial buildings, using smart sensors to track individuals’ presence and beaming heat directly to them as they move about. The goal of the installation was to gather data on how people actually interact with the system in order to gain insight into its practical usefulness.

The heating of commercial buildings, including electricity that is ultimately converted to heat, accounts for 20% of the nation’s energy consumption, creating more than a gigaton of greenhouse gas emissions per year, largely from natural gas combustion. Because the air in buildings is generally warmed by a central heating system and distributed by a HVAC system, a great deal of that heat is wasted, leaking out through windows, walls and ceilings. Based on the notion that those losses could be reduced substantially if occupants were heated directly, the Local Warming installation served as a prototype for a dynamic human tracking system that would radiate infrared heat directly to individuals with little or no transfer of heat to surrounding air, walls or floors. In outdoor environments, the benefits would even more pronounced.

The project leader for Local Warming was Leigh Christie, a candidate for the SM in Art, Culture and Technology and co-founder of the eartART Laboratory, a Vancouver foundation that fosters research focused on large-scale, technically sophisticated art aimed at educating people about the role of energy in our lives. Christie worked with SMArchS candidate Cagri Zaman and Visiting Researcher Matthias Danzmayr. Principal Investigator on the project was Carlo Ratti, Director of SA+P’s Senseable City Lab.

More SAPMIT EDU PLAN

**Students Win Twice in White House Competition**

**Contest Focused on Energy Efficiency in Buildings**

The MIT team, L to R: Defne Gurel, Yuanjian Carla Li, Ryan Shinnebein, Christopher Jones, Dana El Hassair, Mohsen Honbali, Dave Danielson, Zaal Accuardi, Kaitlin Goldstein, Ryan Cook, Wardah Iman, Jones and Cook are planning students; Goldstein is studying building technology. (Photo: Ken Shig, Courtesy US Department of Energy)

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SA+P’s new Center for Advanced Urbanism (CAU) is joining forces with the American Institute of Architects (AIA) in a new research collaboration focused on how design can help improve urban health.

The research will support AIA’s efforts through the Clinton Global Initiative’s Decade of Design: Global Urban Solutions Challenge—a ten-year AIA pledge to promote urban design that addresses the interests of public health and the effective use of natural, economic and human resources.

Through that initiative, the AIA is working with partner organizations to effect meaningful change through research, community participation, design frameworks and active implementation of innovative solutions.

The collaborative effort is based on the premise that massive urbanization can affect human and environmental health in uniquely negative ways, many of which can be addressed through the realm of design.

Some of the great health challenges facing the world in the next century and beyond—including the prevalence of obesity, asthma, cardiovascular disease, diabetes and depression, among others—are increasing at an alarming rate and are frequently linked to physical design and urban environmental factors.

Through joint research, prototypes and demonstration projects, CAU and AIA will develop guidelines and design solutions that support human and environmental health in and around cities.

Incorporating broad interdisciplinary perspectives from architecture, building science, urban planning, transportation, finance, medicine and others, the project will proceed in three phases:

• research and development of evidence-based guidelines, starting in the spring of 2013
• working with a particular city, including municipal officials and community stakeholders, to develop specific solutions to that city that will also be applicable to other cities in the US and globally
• putting demonstration projects in place

Findings will be shared online and in print at conferences and workshops, in person and virtually. In addition to funding provided by the AIA and MIT, further support will be raised from private and public sector sources.

Established in 2005 by President Bill Clinton, the Clinton Global Initiative convenes global leaders to create and implement innovative solutions to the world’s most pressing challenges. Its Annual Meetings have brought together more than 150 heads of state, 20 Nobel Prize laureates, and hundreds of leading CEOs, heads of foundations and NGOs, major philanthropists and members of the media.

To date CGI members have made more than 2300 commitments, which have improved the lives of over 400 million people in more than 180 countries. When fully funded and implemented, these commitments will be valued at more than $73.1 billion.

Designing Healthy Cities: A Joint Initiative of the CAU and the AIA
INTRODUCING THE CENTER FOR ADVANCED URBANISM

Under the leadership of center director Alex- ander O'Higgins and research director Alex- ander D’Hooghe, the new Center for Advanced Urbanism will investigate collaborations among existing efforts in S+P and with other MIT groups, as well as undertaking new programs at the Institute and with sponsors in practice.

The creation of this new enterprise is driven by dramatic and ongoing changes in global urbanization. More than half the world's population currently lives in cities, by 2050 that number will have grown to two-thirds or more, and with more than 1000 megacities currently envisioned or under construction—often without the benefit of established design and planning procedures—the effectiveness of new urban forms and existing connections are inadequate.

Given the breadth of challenges under- taken by the school for urban growth, the Center for Advanced Urbanism will addi- tionally research to enhance integrated design and planning connections, to embrace the latest technologies in the creation of city form and function, and to integrate disparate realms of knowledge in the service of large-scale design and planning. To that end, the center will contribute a new, more year-round integrated studio experience in which students will tackle a complex urban problem from the combined perspectives of architecture, ecology, engineering, landscape, policy, real-estate and technology.

Well in distinguished history in urbanism, reaching all the way back to the work of profes- sor Kevin Lynch, the School of Architecture + Planning is well positioned to lead this effort, with its distinguished history in urbanism, with its distinguished history in urban design and planning, with its distinguished history in urban design and planning, with its distinguished history in urban design and planning.

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IN THE LOCAL GALLERIES

A SELECTION OF SPRING EXHIBITS AND EVENTS

Suspended City: L’Aquila after the Earthquake of 2009. Photographs by Michele Nastasi. SA+P’s Wolk Gallery. On April 6, 2009, a magnitude 6.3 earthquake struck the medieval city of L’Aquila in central Italy, destroying or damaging eighty percent of the historic center of the city. The center was cleared of debris and stabilized, but rebuilding was stalled by a deep public divide over how the city should be reconstructed and ultimately used. Nearly four years after the earthquake, L’Aquila remains caught in a planning impasse.

Milan photographer Michele Nastasi began working in L’Aquila soon after the earthquake. His photographs record a cityscape of prosthetics, splints, casts and stays shoring-up and stabilizing centuries-old structures. These surgical interventions in the fabric of the city have been divisive over how the city should be reconstructed and sometimes defeated by the land they inhabit.

Wheels + Legs. Media Lab Lobby. From lightweight, shared, electric vehicles that fold to artificial limbs that not only emulate—but improve upon—biological gaits, the Media Lab is transforming mobility for the 21st century.

This exhibition documentation work of two Media Lab research groups—Changing Places (Kent Larson, director) and Biomechatronics (Hugh Herr, director). Changing Places researchers are creating more livable and sustainable cities with projects like the CityCar, GreenWheel, RoboScooter and PEV (Persuasive Electric Vehicle). The Biomechatronics group focuses on smart prosthetics, orthotics and exoskeletons, blurring the boundaries between what is human and what is not.

FAIR USE. An Architectural Timeline. SA+P’s Keller Gallery. FAIR USE presented a timeline of historical instances, characters, trajectories, theories and court cases that together begin to describe the realm of appropriation in architecture. Compiled during a full research workshop conducted by Ana Mijacki and Sarah Hirschman (MArch’11)— Appropriation: The Work of Architecture in the Age of Copyright— the material was organized in three broad categories: technologies of reproduction, theories of appropriation and legal issues pertaining to ownership of architectural ideas.

The exhibit was accompanied by a two-day symposium bringing together scholars and practitioners to focus on one of the most anxious disciplinary topics: influence. The aim of the symposium was to place issues of individual and collective authorship, of precedent, originality and reproduction under a magnifying glass.

Design Biennial Boston. BSA Space, Boston Society of Architects. The third installment of Design Biennial Boston featured the work of SA+P faculty Brandon Clifford and Ana Mijacki, who constructed site-specific installations throughout the city.

Helix by Clifford and his partner at Matter Design, Wes McGee, was a half-scale spiral stair. While its reduced size resolved a number of practical concerns—weight, liability, access—the piece celebrated its impracticality; it was both column and stair yet hung from the ceiling, its uncertainty and changed scale injecting a playful quality into the surrounding space.

Project Rorschach by Mijacki and her partner Lee Moreau, with Sarah Hirschman (MArch’11), was an invocation of the contentious Rorschach test; common images of architecture, assembled from digital archives that designers often draw upon, were layered into ten revised Rorschach cards, inviting viewers to see images of architectural tropes anew.

Joël Tettamanti: Compass Points. MIT Museum. A collection of 74 photographs and four videos documenting villages, cities and the landforms and climates that shape their culture.

The show includes landscapes or cityscapes from Greenland, Iceland, Israel, South Korea, China, Luxembourg, Niger, Vietnam, Greece, Togo, and French Polynesia. Although his photographs are often unpopulated, the focus of Tettamanti’s work is the human presence in the landscape and the people who are uplifted and sometimes defeated by the land they inhabit.

Feeling Contexts. SA+P’s Keller Gallery. An exhibition of work by C+S Architects of Treviso, Italy. C+S works internationally in urban, landscape, architectural and interior design for both the private and public sectors, approaching each project as a translation of the contexts to which it belongs—historical, socio-political, economical, physical and climatic.

For this exhibit, the Keller Gallery served as a new context for their work. As if lifted from their studio in Italy and planted directly within MIT, a working table of models and drawings from the firm’s recent built works occupied the central space of the gallery.
SA+P’s new Media Lab building, designed by Fumihiko Maki in association with Leers Weinzapfel of Boston, has been awarded the Harleston Parker Medal by the Boston Society of Architects. The intent of the award is to acknowledge Boston’s most beautiful piece of architecture; five of MIt’s buildings have now been honored with the award—four of them designed at least in part by SA+P alumni—as have a number of others by our alumni and faculty.

At MIT, previous Harleston Parker Medals have gone to:

• The Dreyfus Laboratory and Green Center for Earth Sciences, both designed by alumnus I.M. Pei (Pei also won in 1975 for Boston’s Christian Science Center and in 1983 for Boston’s John Hancock Tower)
• The Karl Taylor Compton Laboratories, designed by Skidmore, Owings & Merrill (which was founded by alumnus John Merrill and Louis Skidmore; SOM also won in 1992 for The Park and Garage at Post Office Square in Boston)
• The Arthur Rotch Library of Architecture and Planning, designed by Schwartz/Silver Architects
• Simmons Hall, designed by Steven Holl Architects with Perry Dean Rogers Partners (alumnus Robert Dean was a founder of Perry Dean Rogers)
• The Media Lab is magical. Wrapped in glass and transparent metal mesh, it appears, in certain kinds of light, to be made entirely of windowed lab spaces seem to lock open atrium, thus becoming a metaphor for the hope that each researcher is aware of what the others are up to. Maki, who has long been recognized as one of the world’s great architects, has created remarkable spatial drama for MIT.”

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—Robert Campbell, architecture critic for The Boston Globe

NEW MEDIA LAB BUILDING: ‘BOSTON’S MOST BEAUTIFUL’

MIT’S FIFTH WINNER OF BSA’S HARLESTON PARKER MEDAL

Among our alumni, William Rawn and Ann Beha won in 2010 for their Cambridge Public Library; William Rawn Associates won in 2005 for Northeastern University’s College of Computer and Information Science & Residence; and Robert Dean won in 1987 for the Wellesley College Science Center.

Among our faculty, Nader Tehrani’s Office dA won in 2002 for the Northeastern University Multi-Faith Spiritual Center (in association with SmartArchitecture); and, reaching back into history:

Ralph Adams Cram (in 1939 for the Conventual Church of St. Mary and St. John in Cambridge and in 1950 for the John Hancock Mutual Life Building in Boston)

William Brown, Vernon DeMars, Carl Koch and Ralph Rapson (in 1951 for 100 Memorial Drive in Cambridge)

Lawrence B. Anderson and Herbert Beckwith (in 1957 for the Boston Manufacturers Mutual and Mutual Boiler Machinery Company Office Building in Waltham)

Kyu Sung Woo (in 2011 for 10 Akron Street at Memorial Drive)

BOYDEN HONORED FOR WORK ON OPTOGENETICS

WILL SHARE €1 MILLION PRIZE WITH FIVE OTHER RESEARCHERS

Media Lab professor Ed Boyden has been named a recipient of the 2013 Grete Lundbeck European Brain Research Prize, awarded for the development of optogenetics, a technology that makes it possible to control brain activity using light.

The €1 million Brain Prize is awarded annually by the Denmark-based Lundbeck Foundation for outstanding contributions to European neuroscience. Boyden is recognized for work done in collaboration with Karl Deisseroth at Stanford which builds on earlier discoveries by four European research centers—Ernst Bamberg, Georg Nagel and Peter Hegemann in Germany, and Gero Miesenböck, now in Oxford UK. The prize will be shared equally among all six researchers.

The idea of using light to control brain activity was suggested by Francis Crick in 1999, and Miesenböck performed a proof of concept demonstration in 2002, showing that light-sensitive proteins obtained from the eyes of fruit-flies could be used to activate mammalian neurons. A further breakthrough was enabled by the discovery of channelrhodopsin-2 (ChR2), a light-activated ion channel from a common pond algal species that had been characterized by Hegemann in Martinsried and by Nagel and Bamberg in Frankfurt.

The application of ChR2 to neuroscience was pioneered by Boyden and Deisseroth at Stanford, where Deisseroth is now a faculty member. In a collaboration that began when Boyden was a graduate student and Deisseroth a postdoctoral fellow, they obtained the ChR2 gene from Nagel and Bamberg, expressed it in cultured neurons, and pulsed the dish with blue light to see whether it could trigger neural activity. The first experiment was performed in August 2004 and worked the first time.

They reported the result in 2005, in a landmark paper in Nature Neuroscience that has now been cited more than 600 times. Their method, later dubbed ‘optogenetics,’ is now used by hundreds of labs worldwide and is also being explored for a wide range of potential therapeutic applications. In announcing the Brain Prize, the chairman of the selection committee, Professor Colin Blakemore, described optogenetics as ‘arguably the most important technical advance in neuroscience in the past 40 years’. Boyden joined the SA+P faculty in 2006, where he is now the Benesse Career Development Professor in the Media Lab, with joint appointments at the McGovern Institute for Brain Research and in the Departments of Biological Engineering and Brain and Cognitive Sciences.

His contributions have been recognized by numerous awards and honors, including the inaugural AF Harvey Prize and the 2011 Pers/ UNCI-prize (shared with Karl Deisseroth and Feng Zhang, also of MIT). He continues to develop novel optogenetic tools, along with many other technologies for understanding and manipulating neural circuits within the living brain.

Boyden’s work was supported by the Fannie and John Hertz Foundation, the Helen Hay Whitney Foundation, the McKnight Foundation, Jerry and Marge Burnett, DARPA and the Department of Defense, Google, Harvard/MIT Joint Grants Program in Basic Neuroscience, Human Frontiers Science Program, IET A. F. Harvey Prize, MIT McGovern Institute and MIT Media Lab, NARSAD, New York, Stem Cell Foundation-Robertson Investigator Award, NIH, NSF, Paul Allen Distinguished Investigator Neuroscience Award, Shelly Kuzin, SkTech, Alfred P. Sloan Foundation, the Society for Neuroscience Research Award for Innovation in Neuroscience (RAIN), and the Wallace H. Coulter Foundation.

This story is based on a report from the McGovern Institute for Brain Research.

“If you had to make a list of all the people in the world who are innovating in neuroscience, I think he’d be at the top of it.” —Garrett Stanley, associate professor of biomedical engineering at Georgia Institute of Technology, talking about SA+P’s Ed Boyden; since President Obama announced his major new initiative to understand the human brain, Boyden has been getting ‘tollions’ of emails about the project.

(Photo: Gestures Matter for MIT News)
Estate for a five-year term, a joint appointment in real estate finance, has been appointed Walter Torous, one of the nation’s top scholars and Sloan graduate students. He recently served as associate editor for the Journal of Real Estate Literature. Since 2002, Torous has taught at the University of Michigan and the London Business School. He is also currently the founding director of the Ziman Center for Real Estate at the UCLA Anderson School of Management. He has published a number of articles in academic journals on the valuation of mortgage-backed securities and mortgage pass-through securities, mortgage prepayment and default, and the valuation of commercial mortgages.

Current editor of Real Estate Economics, the official publication of the American Real Estate and Urban Economics Association and associate editor of the Journal of Real Estate Finance and Economics, he has previously served as associate editor for the Journal of Housing Economics, the Pacific-Basin Finance Journal and Economic Notes. Torous has previously taught at the University of Michigan and the London Business School; at MIT, he is teaching a graduate course in Mortage Securitization, offered to MSRED and Sloan graduate students.

He holds a BMath in Economics from the University of Waterloo and a PhD in Economics from the University of Pennsylvania.

**New Faculty: Walter Torous**

**Top Scholar in Real Estate Finance**

Walter Torous, one of the nation’s top scholars in real estate finance, has been appointed a Senior Lecturer in the MIT Center for Real Estate for a five-year term, a joint appointment with the Sloan School of Management. Torous was the Lee and Seymour Graff Distinguished Professor and founding director of the Ziman Center for Real Estate at the UCLA Anderson School of Management. He has published a number of articles in academic journals on the valuation of mortgage-backed securities and mortgage pass-through securities, mortgage prepayment and default, and the valuation of commercial mortgages.

**New Faculty: Miho Mazereeuw**

**Founder of the New Urban Risk Lab**

Miho Mazereeuw, founder of the new Urban Risk Lab at MIT, has been appointed an assistant professor in the department of architecture. Working on a large, territory-scale land with an interest in public spaces and the urban experience, Mazereeuw is known for her work in disaster preparedness. Her Urban Risk Lab (urbanrisklab.org)—a cross-disciplinary organization of researchers, designers and decision makers affiliated with MIT—operates at the intersection of risk and disaster, storms and earthquakes, floods and fires, ecology and infrastructure, research and action, addressing the most challenging aspects of contemporary urbanization.

As an Arthur W. Wheelwright Fellow, Mazereeuw is currently completing her forthcoming book, *Preemptive Design: Disaster and Urban Development along the Pacific Ring of Fire*, featuring case studies on infrastructure design, multifunctional public space and innovative planning strategies in earthquake prone regions. Mazereeuw was formerly an Associate at the Office for Metropolitan Architecture in Rotterdam where she worked on projects in Latvia, China, Belgium, Russia, Saudi Arabia and Dubai. She also has worked in the offices of Shigeru Ban and Dan Kiley and has previously taught at Harvard and the University of Toronto. She completed a Bachelor of Arts with High Honors in Sculpture and Environmental Architecture at Wesleyan University and a Master of Architecture and a Master of Landscape Architecture with Distinction at Harvard, where she was awarded the Janet Darling Webel Prize and the Charles Eliot Traveling Fellowship.

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