



photo: Junnow Lin

View from Mt. Baldy Wilderness near Los Angeles.

RETREAT 2013: MEASURING DESIGN

The idiom “measure twice, cut once” signifies the importance of measurement and its verification as both a primer and product of making. The architectural profession is coming to terms with the use of metrics to verify design and performance. We’re currently witnessing a growing critical interest in the idea of “Measuring Design: Models + Metrics” within the profession. Quantifying architecture design advances the discipline by introducing new ideas, testing theories, defining methodologies, developing technologies, and promoting critical discourse. Yet exactly how to measure design and performance of the built environment is not always clear. For many, it is a question of the product, while for others it is a question of the process that moves the field of architecture from normative inquiry to evidence-based design.

The theme of the 2013 retreat is measuring, in all its possible connotations. The goal of this year’s retreat is to interrogate the ideas of measuring design and the design of measurement in teaching, research, and practice of architecture from a variety of perspectives.

Help shape the 2013 retreat content. Submit a proposal for your presentation in any of the sub-themes—(1) What to Measure, (2) How to Measure, (3) When to Measure, (4) Who Measures, and (5) For Whom to Measure. Or propose a presentation, workshop, or activity that doesn’t fit neatly into one of those sessions. Let’s get together to measure the unexpected!

Limit your proposal to 250 words and e-mail it to Shane O’Neil <sonell1@uoregon.edu> with “Subject: SBSE Retreat Proposal” by Monday, February 1, 2013, 5:00 p.m. PST. All sessions will be 60 minutes in length. Wi-fi, digital projector, and flip charts will be available. Proposals must include name(s) of session organizer/presenter; contact information (institution, email, telephone, url); theme(s) addressed by your proposal; title of your presentation, workshop, demonstration, or hands-on activity; summary of objectives, goals, questions raised, and/or activities implemented; and intended outcomes and deliverables. 🖐

—Ihab Elzeyadi

SBSE CALENDAR

2013

- Feb 11–13 Geothermal Conclave/Muncie, IN
- Mar 27–30 ARCC Conf/Charlotte, NC
- Apr 16–20 ASES Conf/Baltimore, MD
- Apr TBD SBSE Annual Mtg/Baltimore, MD
- Jun 21–23 SBSE Retreat/Mt. Baldy, CA
- Jun 24–25 BESS–SB13 Conf/Pomona, CA
- Jul 11–13 BTES 2013 Conf/Bristol, RI
- Sep 10–12 PLEA Conf/Munich, GER
- Oct 30–Nov 2 PLDC 2013/Copenhagen, DEN

2014

- Apr 10–13 Windsor Conf/Windsor, UK 🖐

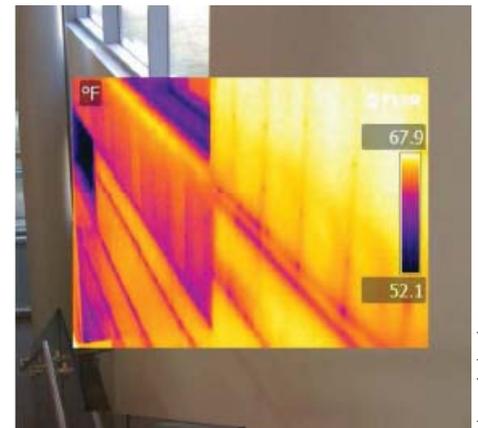


photo: Andrea Love

Andrea Love’s thermal façade image (see p. 6) measures R-value at 60% less than the calculated clear wall R-value.

LETTERS TO THE EDITOR

Another great issue, but I take issue with the comment that Marc Schiler has (temporarily) gone over to the “dark side.” As an unofficial representative of the “dark side” I think we (SBSE) need MORE people in administration! That’s where the decision-making takes place. It’s tough (as you know), but someone has to do it!

—Chris Theis

[I agree, when given the opportunity to serve in administration, SBSEers can advance the cause of humanity for a healthy planet. Spread enlightenment through the darkness that pervades university administration.—ed.]



“Note: the SBSE board has decided to redirect the expense of printing the *News* (~\$1,200/year) toward student scholarships. So the December news may be the last print version.”

Too bad. I would have voted to continue the printed version.

—Nick Pine

[Apparently you’re the only one who picked up on the board’s decision reported to the list server, or you’re the only one who cares. I love the print version too, so I’m amazed that you make up my entire cohort. If less tactile, the digital version is more colorful. I’ll try to take advantage of the potential of the change of medium in the upcoming editions. Besides, you can always print your own from the e-version, even in color on your own stash of recycled paper!—ed.] 🖱

SBSE *News* is published quarterly by the Society of Building Science Educators, a not-for-profit corporation. Submit material for publication before the first of March, June, September, or December to Bruce Haglund, Editor; Department of Architecture; University of Idaho; Moscow, ID 83844-2451; tel 208.885.6781; fax 208.885.9428; e-mail <bhaglund@uidaho.edu>. Direct membership and mailing list inquiries to Troy Peters, Secretary-Treasurer; Wentworth Institute of Technology; College of Architecture, Design, and Construction Management; 550 Huntington AV; Boston, MA 02115; e-mail <peterst2@wit.edu>. To join our list server or to manage your account go to <<http://www.lists.uidaho.edu/mailman/list-info/sbse>>. For full membership info and more, visit our home page <<http://www.sbse.org>>.

ARCHITECTURAL DESIGN LEARNING

Autonomy is a prime component of self-determination theory and is part of a trilogy of factors of motivation, preceding the other aspects—competency and relatedness. In the context of learning, autonomy refers to the sense of “choice” that a student perceives in her or his approach to learning. A description of such an experience might encompass a goal without prescribing the tactics or objectives for realizing a good outcome. For example, for an architecture student’s studio design project we say, “Please devise a novel and insightful design solution for the new nature center that embraces the client’s needs and the conditions of the site. Be sure it applies the principles of sustainability and could be practically built and operated. Figure out what you need to know and apply what you have learned so far in history, theory, criticism, and technology. Your instructor will visit with you each week to critique your progress.”

The opposite of autonomy is control. Adult learners are particularly averse to controlling teaching strategies because of their sense of self-reliance and particular sets of interests. Control removes a great deal of motivation to learn. Belle Hooks, for example, proclaims that teachers’ use of control dulls the students’ enthusiasm and teaches obedience to authority, “confining each pupil to a rote, assembly-line approach to learning.”

Teaching and learning in architecture is typically centered around the studio experience where twelve to fifteen students work with one instructor who is professionally trained in architecture. The basis of autonomy in this learning environment is the open-ended complex problem of architectural design where there is never complete knowledge about the problem, there are no rules of how to proceed, and there is no ultimate final solution. There is only ambiguity, but *in design ambiguity is vital* [ed.’s emphasis]. This ambiguous, complex, indeterminate, messy, and wicked problem of design leads to autonomy because the student is left almost entirely with personal choice in their problem definition, approach to its resolution, and intentions toward problem solution. Simple problems (such as tic-tac-toe) deal with well-defined problem space (nine squares), explicit rules of operation (X, then O), and a known solution space (three in a row). By contrast, in the mode of complex design ambiguity, architecture students are left with their own personal sensitivities and sensibilities in a uniquely choice-filled experience. We don’t teach them core knowledge first, and then ask them to perform unique research; we start with the new stuff on day one. While design ambiguity is a global strategy in architectural education rather than a classroom tactic, it is nonetheless readily transferable to whatever one teaches.

In our postindustrial knowledge society, there is considerable basis for the belief that the only profession left is design—and not just for architects. Doctors design cures, managers design plans, scientists design experiments, historians design narratives, teachers design courses, engineers design processes. Essentially, in knowledge-based production we all collect, vet, organize, and infer from information to design solutions, to deeply complex and dynamic systems that are not responsive to mechanistic or symptomatic approaches. We don’t want a doctor to treat our headache with an aspirin; we want her to check our vision for underlying root causes and keys to systemic cures.

Design progresses not by a linear sequence of procedural steps, but rather through a spiraling downward to the teleological urge of the problem in its unique essence. It’s opportunistic, relational, propositionally abductive, and hermeneutically iterative as observe–interpret–propose–try–learn–repeat. Studio is the ultimate flipped classroom: class meetings are workshops with feedback constant, risk taking continuous, content externalized, competency actualized, and relatedness with others prevalent. The student is on his or her own, but never alone. Ideally, in the end design learning leads to deep engagement, assimilation of supporting topic areas, reward of competency, and confidence of making one’s own choices. This mode of architectural education dates back to the École des Beaux Arts, yet meets the current best-practice modes of activity-grounded, student-centered, problem-based, intrinsically motivated, personally relevant learning. Give students the goals, and they’ll decide the path.

As a take-away, consider the analogy of a trip with a specific, well-defined destination. Don’t tell students how to get there, just give them a road map. Don’t tell them how to drive, show them how to navigate. Give them a vehicle, and watch them go. Design for all of us is simply how we imagine making a better world. 🖱

—Leonard Bachman

PLEA 2012 IN REVIEW

A few brave SBSEers and a handful of their students ventured to Lima for PLEA 2012, *Opportunities Limits & Needs: Towards an Environmentally Responsible Architecture*. They were rewarded with an engaging conference graciously hosted by Susana Biondi, Cecilia Jimenez, and Juan Reiser of Pontificia Universidad Católica del Peru. The five keynotes by Denise Duarte, Jorgé Ramirez Fonseca, Edward Ng, Rene Poggione, as well as Brenda Vale were brilliant. I was especially charmed by Ng's poignant and amusing delivery that balanced academic and professional efforts and Vale's perceptive look at the history of sustainable design and our dubious future. My students fully understood Brenda's POV. There was plenty of opportunity to present research findings through five, three-track parallel sessions and an informal poster session. As usual it was difficult to decide which session to attend.

Peruvian cuisine is in high repute, and we weren't disappointed by the lunches and the gala dinner at the conference, nor by meals we found on our own in Lima, in Cusco, and in Machu Picchu. Yum! Among other things, we feasted on cuy (guinea pig), alpaca, and yucca, fueled by pisco sours. The gala dinner at Museo Larco gave us the opportunity to view its vast collection of ancient Incan art, enjoy a fine meal, and present SBSE/Cook awards to Islam Abohela (Newcastle) and Abhay Nagory (USC) [photo, p. 6.-ed.].

Since we were in Peru, we had to fly to Cusco (the alternative is an 18-hour bus ride!) and venture via train to Machu Picchu. This world heritage site should be on the bucket list of all architects. My perfect day was just a scouting trip with an articulate guide who led us through the highlights, but I yearned to spend time on my own exploring, drawing, and communing with the site. Wow! Cusco was the perfect preparation for Machu Picchu. On arrival we were given coca leaf tea and told to take a nap and eat a light lunch to help adjust to the altitude. Cusco is a pedestrian-friendly city that shows off both Incan and Spanish architecture, offers craft markets, and serves delicious meals. It's actually much higher in elevation than Machu Picchu, making hiking the latter less strenuous than expected.

What's next? Go to PLEA 2013, *Sustainable Architecture for a Renewable Future*, in Munich, September 10–12, 2013. 🖐

—Bruce Haglund



Images from PLEA 2012 Lima, Peru: (from top) Prepping for the PLEA gala at Museo Larco, the Cathedral in Lima, Machu Picchu from ground level, and Machu Picchu up close.

RETREAT 2013 VENUE: MT. BALDY ZEN CENTER



Photo: Zen Center web site

Mt. Baldy Zen Center meeting space.

[Tantalized by the view from Mt. Baldy and the retreat theme? Here's further incentive to participate including venue details.—ed.]

Site Coordinators Pablo La Roche and Juintow Lin have selected the Mt. Baldy Zen Center, located in the San Gabriel Mountains 40 miles east of Los Angeles, just north of Pomona, for the next retreat. The Zen Center is a monastic-style retreat center for Joshu Sasaki Roshi's Rinzai-Ji community. Check it out at <<http://www.mbz.org/>>. *[Mt. Baldy will be the second Zen Center to host an SBSE Retreat. The Green Gulch Zen Center in Marin County, CA, has been home to two retreats. We all loved its ambience and vegetarian meals!—ed.]*

Arrive Friday afternoon, June 21, via shuttle from the Lyle Center on the Cal Poly Pomona campus, and have dinner on-site. The retreat ends with a Sunday afternoon luncheon at the Zen Center. After the retreat, shuttle to either the Lyle Center, Ontario Airport, or local hotels (especially for those staying for the BESS-SB13 conference on Sunday).

The Zen Center serves three vegetarian meals a day. They serve eggs and dairy. Groups use the Oryoki-style bowl sets—three bowls in a set, with three corresponding dishes served at each meal. The first bowl is typically a grain, the second might be soup, and the third a vegetable or salad. For breakfast, first bowl might be oatmeal or muffins, the second bowl fruit, and the third an egg dish. Each participant takes care of her or his bowl set throughout the retreat, washing up after the meals. Instruction for use is given, of course.

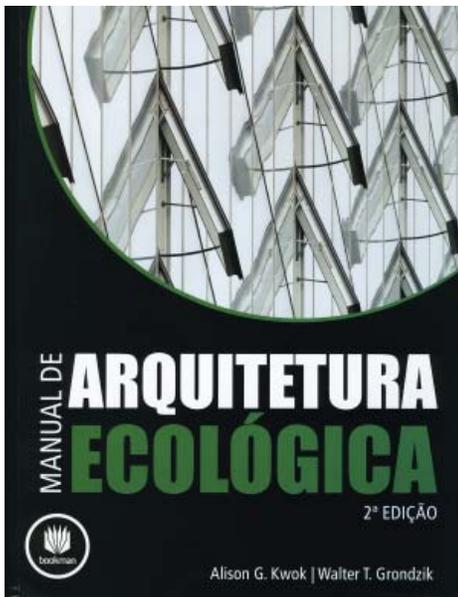
The Zen Center accommodates a maximum of 35 attendees. The projected retreat cost of \$225 includes shuttle, bed, and food. 🖐

—Pablo La Roche

SBSE PEOPLE

✦ **Alfredo Fernández-González** was the first recipient of the 2012 UNLV Foundation Distinguished Teaching Award, which then led to his nomination to represent UNLV in the Nevada System of Higher Education Regents Teaching Award and in the U.S. Professors of the Year Program. Subsequently, he was named the 2012 Carnegie Foundation for the Advancement of Teaching Nevada Professor of the Year! The award was made in recognition of his service to the Silver State, teaching at the School of Architecture at UNLV for over 8 years. Governor Brian Sandoval wrote, “Your enthusiastic and innovative teaching has inspired the lives of countless students by encouraging curiosity and understanding and by contributing to the development of mind and spirit.”

✦ **Matt Hogan** has moved back to the east coast. He and his wife left Oregon in July and relocated to Richmond, VA, where he took a position as a project consultant with a company called Sustainable Design Consulting. SDC mostly consults with architecture firms on projects pursuing LEED certification, and provides other services. Hogan is enjoying it so far, though he misses teaching and the west coast now and then.



cover: Bookman Editorial LTDA

✦ *The Green Studio Handbook*, by **Alison Kwok** (Oregon) and **Walter Grondzik** (Ball State), was recently released in Portuguese by Bookman Editora LTDA as *Manual de Arquitetura Ecológica*, joining previous translations to Korean and to Chinese. 📖

OPPORTUNITY KNOCKS & STUFF CALLS

NORBERT LECHNER'S CASE STUDY PROJECT

I'm compiling a list of buildings that are excellent case studies for energy-responsive design to include in the 4th edition of *Heating, Cooling, and Lighting*. The list will be available to all on the SBSE web site, with its posting announced on the SBSE list server.

Please send your recommendations using the following outline to Norbert Lechner <lechnnm@auburn.edu>.

Name of building: _____ Architect: _____
 Type of building: (e.g., office, school, residence) _____ Year: _____
 Location: (city, state/province, and country) _____
 Web address: (where images and more information are available) _____
 Key energy features: (e.g., shading, daylighting, passive cooling, thermal mass) _____
 Important weaknesses: (e.g., poor orientation, dysfunctional shading, too much glazing). _____

—Norbert Lechner

SYLLABUS SUPPLEMENTS FROM BUILDINGGREEN

BuildingGreen, publisher of *Environmental Building News* and *GreenSpec®*, is now serving over 120 colleges and universities with authoritative, well-written content on sustainable design practices and topics. Through a library's subscription to *BuildingGreen Suite*, all professors, students, and facilities staff have full access to the articles, green product listings, and case studies of high performance buildings.

If you are teaching undergrads, BuildingGreen's content is a great complement to primary texts. Remember, we are constantly publishing new content and are working to keep SBSEers and their students up-to-date. We've also been writing about this stuff for 20 years and take pride in the fact that each of our articles builds context and delves into detail. To help you navigate to specifically relevant content, we are creating syllabus supplements from which you can choose to support your own courses and curriculum. No strings attached! Just pull the content you need. So far we have two, “Introduction to Sustainable Design” and “Green Materials.” Download the PDFs from <<http://www.buildinggreen.com/syllabus>>.

Tell us what topics you'd like us to focus on next. We have also included discussion questions at the end of feature articles for the last two years. Use them for essay prompts, a catalyst for in-class discussion, or study questions. Check out the map <<http://bit.ly/H1NVlb>> to see if your school subscribes. We don't want you to miss a supportive resource for your own course preparation or a dependable reference for your students.

Please contact me (<Jerelyn@buildinggreen.com> or 802.257.7300 x102) with questions or to tell us how we can better support your efforts to educate the next generation of building professionals. It's a heck of a road we are traveling together!

—Jerelyn Wilson

A WEB-BASED THERMAL COMFORT TOOL

The Center for the Built Environment has developed a web-based thermal comfort tool now available from <<http://cbe.berkeley.edu/comforttool/>>. This free, online tool is useful for performing and visualizing comfort calculations according to ASHRAE Standard 55–2010 and has been validated against the official ASHRAE Thermal Comfort tool. It can be used for design, research, and teaching. We welcome your feedback. The tool works in Firefox, Chrome, and Safari. Internet Explorer is not supported. 📖

—Stefano Schiavon and Tyler Hoyt



The tool allows you to flip between old Fanger comfort and newer, adaptive comfort standards to compare results.

image: CBE web site

BOOK REVIEW CORNER

ADAPTIVE THERMAL COMFORT: PRINCIPLES AND PRACTICE

Fergus Nicol, Michael Humphreys, and Susan Roaf

Among those whose job it is to specify machines for the cooling and heating of buildings, consideration of thermal comfort usually begins and ends with calculations of predicted mean vote (PMV). Every now and then, however, a project comes along where someone on the design team entertains the thought of letting people turn off the air conditioning and open the windows. “Won’t everyone get hot and complain?” Mechanical engineers respond, “It’s all too hard. Quick, shut those windows, and turn the air-conditioning back on!”

It was these kinds of experiences, which I relate to you without hyperbole, that prompted me to wonder why building designers shy away from the shades of grey of adaptive thermal comfort and back into the safe, machine-dependent, black-and-white of sealed windows and full-blown air conditioning. My curiosity tempted me away from industry and into post-graduate building science research where I began to read up on it all.

Until recently, unless you were fortunate enough to have someone teach you, learning about adaptive comfort was a process of following the threads of articles, studies, and the odd book chapter, until (hopefully) you grasped the correct end of the stick. *Adaptive Thermal Comfort: Principles and Practice* has taken this journey and put it in a format that is at once comprehensive for comfort research students like myself, a useful resource for more seasoned researchers, and accessible for those needing only to dip in a toe.

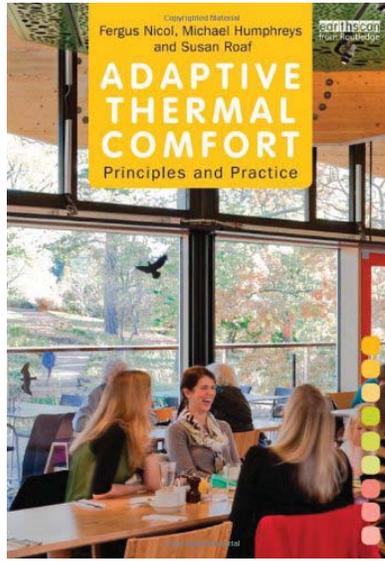
Nicol, Humphreys, and Roaf are well-known comfort researchers whose work is familiar to anyone remotely interested in the field. The book begins with the basics of comfort—why it is important, and how we experience it physically, psychologically, and behaviourally. The book follows the way the body of knowledge has developed from field studies, and traces the parallel conversations around standardisation and energy efficiency. Although the authors are UK-based, this discussion encompasses examples from warmer climates, such as the United States and the Middle East, providing welcome and important balance to some of the more Euro-centric aspects of the book.

The second half of the book presents in detail the practice of thermal comfort field study, encompassing instrumentation, survey techniques, and data analysis. For a student researcher, this provides an invaluable reference, although, as with any reference, it would be best complemented with wider reading.

Adaptive Thermal Comfort: Principles and Practice is the first in a series of three books (*Foundations and Analysis* and *How to Design Comfortable Buildings* being the others), that provides a broad and deep foundation for anyone interested in the field. I hope the second and third books provide a greater emphasis on more humid climates, as these areas will be the focus of much new development in this century and require subtly different consideration for comfort compared to colder or drier climates.

As for me, I am back at work in the engineering office, and look forward to throwing this book at as many mechanical engineers as possible. 🖐️

—Kat Healey



HOT OFF THE PRESS



DAYLIGHTING DESIGN IN THE PACIFIC NORTHWEST

Christopher Meeke and Kevin van den Wymelenberg

This practice-based book spotlights innovative design in a region heavily influenced by climate and landscape, makes use of environmentally friendly technologies, and looks at projects that aim to achieve social as well as aesthetic goals. It discusses the particular challenges of fourteen projects and the solutions found by their design teams as they sought to take advantage of daylight to create pleasant, workable, energy-efficient spaces.

—UW Press blurb

BEST PRACTICES IN SUSTAINABLE BUILDING DESIGN

Shahin Vassigh, Ebru Ozer, and Thomas Spiegelhalter

This book and accompanying DVD provide an interactive, step-by-step learning environment composed of seven content areas: landscape design, building form, envelopes, structures, climate control systems, renewable energy, and lighting. Each area is subdivided into learning modules introducing the subject matter and investigating best practices for climate-responsive and ecologically sustainable building design and construction. The DVD helps visualize concepts that otherwise may be too ambiguous or difficult to comprehend in a book format.

This book was developed under a FIPSE grant and a Paul Cejas Faculty Initiative Endowment grant from FIU in Miami. 🖐️

—Thomas Spiegelhalter

SBSE/COOK SCHOLARS AT PLEA 2012 LIMA

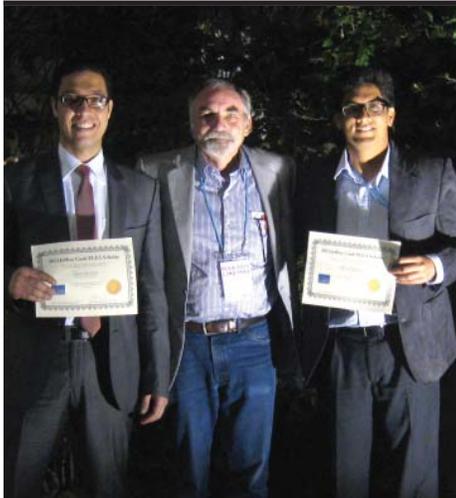


photo: Pablo LaRoche

Islam Abohela (Newcastle) and Abhay Nagory (USC) surround Bruce Haglund (ed.) with their SBSE/Cook PLEA Scholar certificates presented at the PLEA gala in Lima, Peru.

SBSEERS ARE 2012 UPJOHN SCHOLARS

The AIA is proud to announce the following Upjohn Scholars and Projects for the 2012 Awards—SBSEer Timothy Hemsath (Nebraska–Lincoln), *A Framework for a Energy-Efficient and Computer-Automated Housing Design*; Andrea Love (Payette Associates), *Thermal Performance of Façades*; Kiel Moe (Harvard), *Energy, Construction Ecologies, and Built Environments*; and SBSEer Ryan Smith (Utah), *Solid Timber Building Performance*.

TIM'S PROJECT ABSTRACT

Architects currently account for a relatively small portion of the home building industry—only 28% according to an AIA study—and that portion is significantly smaller when you exclude high-end residential design. Homebuilders have a limited set of house plans they repeatedly build, reducing the design cost per home produced and allowing builders to construct affordable homes for middle- and lower-income households. Builder's homes are also designed to be placed on one of a few basic types of lots, and, as a result, builders give little attention to one of the most basic design criteria architects use—the site—which can have a radically different effect on a home design when considering energy efficiency, performance, and interior light conditions.

RYAN'S PROJECT ABSTRACT

Prefabricated solid timber (ST) products for roofs, floors, and walls, including cross-laminated timber and laminated veneer lumber for mid- and high-rise structure in buildings were pioneered in Europe nearly two decades ago. More recently, the Canadian government has invested hundreds of millions of dollars in solid timber manufacturing and knowledge transfer to designers from Europe for the purpose of using its standing dead pine stock (infected by the mountain pine beetle) in building construction. This epidemic is just as pervasive in the U.S. mountain west (nearly 50% of the forests in Colorado are standing dead pine stock) and in northwestern states, leaving millions of forestland acres as a fire hazard with little value. 🙌

—Richard Hayes

 printed on recycled paper



SBSE NEWS
C/O BRUCE HAGLUND
DEPARTMENT OF ARCHITECTURE
UNIVERSITY OF IDAHO
PO BOX 442451
MOSCOW, ID 83844-2451

SPRING ISSUE SUBMITTAL DEADLINE—MARCH 1

FIRST CLASS MAIL