Students sponsored by SBSEers Laura Briggs, Jeff Geisinger, Ulrike Passe, and Sandy Stannard took four of the AIA COTE Top Ten for Students for 2016–17.

**THE AIA COTE TOP TEN FOR STUDENTS**

[Asstute readers will realize the unnamed theme of this issue is attacking climate change through studio and building science teaching. See related articles on pages 2 and 3.--ed.]

The AIA COTE Top Ten for Students competition (coordinated by the ACSA) will, for the 2017–18 program, be enhanced through a collaboration with Architecture 2030. This year’s competition, themed *Innovation 2030*, will feature $2,000 cash prizes for each winning project, as well as internships with leading firms for the student members of the winning teams. Design studio faculty sponsors of the winning projects will be recognized for their leadership in innovative design instruction, awarded $2,000, and invited to participate in the Design Futures Council 2018 Leadership Forum on Design Education in New York, NY.

“The current generation of students will be designing the future; it is critical that they explore and develop ideas and concepts with the potential to reshape architectural practice in the age of climate change.”

—Edward Mazria

The criteria will follow the new COTE Top Ten framework, but feature a special emphasis on low-carbon construction, carbon-neutral operations, and resilient design that anticipates a changing climate. The competition will recognize innovative and exemplary designs that satisfy three primary objectives:

- **Resilience** Enable continued habitability and rapid recovery after shock events, natural disasters, power or climate interruptions
- **Adaptation** Research and design for projected climate-related effects, such as increased temperatures, sea-level rise, drought, flooding, food scarcity, and population shifts
- **Energy and Emissions** Design for zero CO₂ emissions in building operations and minimal embodied carbon in building materials and construction

**SOCIETY AFFAIRS**

**SBSE ELECTION YEAR**

Odd years are election years for SBSE. This is an odd year both literally and figuratively. We are seeking strong candidates for two positions—President–Elect and Secretary/Treasurer. Please make nominations (or self-nominations) to one of the board members (see <http://www.sbse.org/contact/index.htm>) by e-mail or in person at the Retreat.

**ANNUAL MEETING**

The SBSE Annual Meeting will be held at Solar 2017 in Denver, CO, in October. The time and place for the meeting has not been set. Stay tuned!

**EDINBURGH TOOL DAY**

Tool Day at the John Hope Gateway in the Royal Botanic Garden Edinburgh is fully subscribed. Five teams of students, teachers, and practitioners from around the globe will explore performance issues in this Cullinan-designed green building on July 2.

**RETREAT UPDATE**

See page 3. 📖
LETTER TO THE EDITOR

Amazing quality on those garden photos in the Spring SBSE News. From your garden? Wow!
—John Reynolds, Oregon

Even though my garden is abloom with spring flowers, the garden featured in the News was the Royal Botanic Garden Edinburgh (two more below), my favorite botanic garden and this summer’s Tool Day site! Wow!—ed.

IN OUR HUMBLE OPINION

SINCE TRUMP WILL NOT FIGHT CLIMATE CHANGE, THE REST OF US MUST

SBSE members can greatly affect the future of the planet. By teaching how to design low-energy buildings, we train future architects to be able to significantly reduce the negative effects of buildings on climate change. However, if the school as a whole does not support this effort, significant change will not occur until the mid-to-far future; yet reducing carbon emissions must occur as soon as possible. Not only are the influences of atmospheric carbon slow to be reversed, but there is a real possibility that the climate will tip in the near future, at which point efforts to minimize climate change will be of little significance. It is vital for architecture schools to change their educational priorities as soon as possible.

Particularly because of President Trump’s actions, it is even more critical that we all do what we can to offset his retreat from fighting climate change. One very effective way to speed up the change in architectural education is by certifying schools that produce graduates who have the motivation, knowledge, and skills necessary to help design very-low-energy buildings.

Our efforts to educate future architects in our classes is great, but not enough. We need all or most schools to emphasize low-carbon/low-energy design at the earliest possible moment. BEEnow (Built Environment Education now) has been working toward this goal for several years by creating a voluntary certification program that recognizes schools that graduate students able to help design low-energy buildings. BEEnow has established the criteria for basic, silver, gold, or platinum certification. Although there are already a number of schools that could meet these requirements with little effort, we believe that all or at least most schools should and can work to meet at least the basic requirements.

The immediate benefit to certified schools will be an increased interest by the profession in hiring their graduates. This fact would then put pressure on other schools to become certified, and graduates from schools not having certification would find it difficult to gain employment.

The critical hurdle in establishing the certification program is to gain the credibility necessary to convince schools to seek certification, where SBSE faculty could make a difference. SBSEers, please talk to your colleagues, department heads, deans, ACSA, NAAB, NCARB, AIA, COTE, etc. to promote the idea of certification as a means to rapidly create architectural education that delivers graduates who will be able to minimize the terrible consequences of climate change.

In addition to promoting BEEnow, faculty can involve their school in a “peer review” of the certification program, or in the future they can have their school perform a “mock certification” to further prepare the program before BEEnow becomes operational. Let us know if you are interested in a “peer review” and/or a “mock certification” effort.

You are welcome to become a member of BEEnow. For more information, suggestions, interest in participating, or reporting your activities please contact me at <lechnmm@auburn.edu>.

—Norbert Lechner
MORE STUDIO-RELATED INITIATIVES

THE STUDIO PRIZE

CALL FOR ENTRIES

Think your studio is first class? Prove it. Enter the ARCHITECT Studio Prize. This award program recognizes thoughtful, innovative, and ethical studio courses at NAAB and equivalently accredited architecture schools, and the work students produce as a result.

Deadline—June 23, 2017
Extended Deadline—June 27, 2017

The winning studios and accompanying student work will receive invaluable exposure by appearing in the September issue of ARCHITECT, both in print and online. In addition, the program’s exclusive sponsor, Sloan, has made available $20,000 in student prizes, as well as a $5,000 prize for students in a studio or studios with a focus on sustainability or water conservation.

For more details and eligibility requirements, visit <https://www.studioprize.com/a>.

—Ned Cramer

THE AIA NATIONAL RESILIENCE INITIATIVE ANNUAL REPORT 2016

How six university studios are embracing resilience

Real inroads in bolstering resilience won’t be made without collaboration across communities. This report from AIA and the Architects Foundation examines six university-led architecture studios and their innovative work within the built environment. You can discover how your colleagues at Cal Poly SLO, Hampton, Mississippi State, NJIT, UArkansas, and UMinnesota are dealing with resilience in their studio teaching.


—AIA Architect

SBSE RETREAT UPDATE

Faculty, students, and practitioners will gather at the 2017 Annual SBSE Retreat at the Silver Falls Conference and Cabin Center on July 25–28, 2017, for an action-packed event with expert presentations/workshops and relaxing open times.

Presentations will be interactive sessions on diverse topics such as GIS and Twitter data for visualizing the streetscape, designing buildings through sensory experiences, embodied energy of structural materials, the Race to Zero student competition, passive house curriculum offering, vernacular design, enclosure assemblies, research methods, design studio integration, building science pedagogy. An evening lecture by Peg Boulay (UO Environmental Science Institute) features an opportunity to “think like a bear” using design skills and natural history knowledge to plan a habitat structure. Also planned are a thermal delight poetry slam around the bonfire, a trip to Frank Lloyd Wright’s Gordon House and Aalto’s Mt. Angel Abbey, sharing new publications, and our tradition of sharing “omiyage” (gifts).

If you missed registering for the retreat, please contact Alison Kwok <akwok@uoregon.edu>, there may be a space available. If you cannot make it to the retreat, please register for the post-retreat tour <https://www.eventbrite.com/e/2017-society-of-building-science-educators-retreat-craft-tickets-29959688234>.

See you in Oregon! 🦊

—Alison Kwok

Designed by NJIT’s Center for Resilient Design, the Garden State Ecohub in Ewing, New Jersey, transforms former industrial sites into lush “carbon factories.”
**BOOK REVIEW CORNER**

**THE RECOVERY OF NATURAL ENVIRONMENTS IN ARCHITECTURE**

*Air, Comfort and Climate*, by Alan Short

Alan Short has spent three decades thinking deeply about how and why air moves through buildings. To read this book is to forget, for a time, that the world can be moved by 140-character tidbits. Short chronicles artificial conditioning’s conceptual underpinnings back to antiquity, lingering a bit in the eighteenth and nineteenth century. (If you don’t know the word “phlogiston”, you don’t know the whole story.) Short writes broadly across contemporary programs and climate types. More than “case studies,” these detailed narratives explicate the emergence of the projects’ technical, aesthetic, financial, and functional aspects. The chapters on theaters and hospitals should be required reading for studios broaching either type.

A book about natural conditioning must attempt to describe the “complex and diverse factors which derailed [x] well-documented interest in making natural environments in buildings” in favor of artificial ones, as Marsha Ackerman, Gail Cooper, Stan Cox have done elsewhere at length. The stage is then set for Short’s argument, reminiscent of Reyner Banham’s, that the body of professional knowledge for making naturally-conditioned buildings was rapidly lost after the advent of A/C. However, the projects in the book make it clear that the glow of that lamp of knowledge is not altogether extinguished. To address the question, “Can one make a viable, safe, naturally-ventilated, free-running building?” several of Shorts’ firm’s buildings are discussed, from the Queens Building at DeMontfort University to the as yet less published Maltese brewery and Beijing Future House. The answer appears to be “yes”.

Short intuits that change is coming to both the architectural zeitgeist and the earth’s climate. He argues that naturally-conditioned buildings will have greater viability as the climate warms, and find applicability across larger territories. His is a cautiously optimistic tone. He writes near the end of the book “Might it be that widespread disenchantment will arise with sealed artificial environments, the potential implications for health and well-being, revulsion at the profligacy in energy and carbon, and realization that homogenized and insubstantial transparent building forms no longer capture the ‘spirit of the age’?” Let it be so.

If you, like this reviewer, have toiled to educate thermodynamically and mechanically literate architects while shunning the model of exquisitely tempered sealed boxes, read this book.

—Martha Bohm

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**EMBODIED CARBON NETWORK**

Volunteer led | No cost | Professional collaboration

The Carbon Leadership Forum and Architecture 2030 recently convened the Embodied Carbon Network, a group for individuals to collaborate with other professionals focused on reducing embodied carbon emissions. The Network comprises several Taskforces, which will bring together people with similar topic interests and objectives to connect, exchange resources, and work toward shared goals.

To become a network member, please join via <http://www.carbonleadershipforum.org/embodied-carbon-network/> or e-mail us <ksimonen@uw.edu> to confirm your participation and preferred taskforce. We will follow-up to add you to BaseCamp, our communication forum for taskforce and network collaboration

Please refer to our web page for more information, and let us know if you have any questions. We also encourage you to forward this invitation to others focused on reducing embodied carbon in the built environment. We look forward to hearing from you soon!

—The Embodied Carbon Network Team

*Tina Dilegge (University of Washington), Chris Magwood (The Endeavor Center), Erin McDade (Architecture 2030), Kate Simonen (University of Washington), Wil Sruber (University of Colorado)*
NEW BOOKS BY SBSEERS

EFFECTIVE DAYLIGHTING WITH HIGH-PERFORMANCE FAÇADES

The book, co-authored by Kyle Konis (USC) and Stephen Selkowitz (LBNL), explores advanced building-façade daylighting design practices based on diverse energy and human factors performance metrics. It defines effective daylighting by rethinking the simplified approach to glazing and façade systems to incorporate the local climate and the needs of building occupants as critical drivers of building performance, design solutions, and technological innovation. It discusses state-of-the-art approaches in the context of simulation-based design workflows, innovative technologies and real project case studies, all targeting low- and net-zero energy solutions that enhance occupant comfort. Readers benefit from a comprehensive approach that improves the feedback loop between design intent and performance in use. The book is intended for architects, lighting designers, façade engineers, manufacturers, and building owners/operators, as well as advanced students.


—Kyle Konis

INTEGRATING BUILDING PERFORMANCE WITH DESIGN

By Elizabeth Grant, this book shows the importance of designing for building performance early in the architectural design process. It offers simple tools and exercises, along with examples of built professional work and successful student projects illustrated by more than 200 images. Topics include site, solar orientation, thermal comfort, building enclosure, daylighting, passive heating and cooling, active heating and cooling, indoor air quality, stormwater, and rainwater harvesting.

—Routledge book blurb

From its title I guessed this book would be some sort of manual, but what I discovered was a compelling narrative with great illustrations. It offers rationale, methods, stories, and encouragement for teaching and learning integrated architectural design that does not ignore issues of performance. It’s a must-have selection for teachers, students, and practitioners alike. SBSEers who teach studios will register some “aha” moments!


—Bruce Haglund

ENERGY ACCOUNTS

Architectural Representations of Energy, Climate, and the Future

Edited by Dan Willis, William W. Braham, Katsuhiko Muramoto, Daniel A. Barber

How does one tell the story of energy production, use, or conservation in a manner sufficiently convincing to influence policy, behavior, and design? Energy Accounts explores potential answers to this question through compelling images, data visualizations, narratives, and other examples of accounting for energy. Organized into a collection containing both examples of best practices and critiques, this impressive array of projects and contributors combines text and graphic material to explore different representations of energy data. Including work from Kieran Timberlake, SHoP, AMO, Lateral Office, WOHA, and many more, the book boasts a unique graphic design which supports and enhances its role as a valuable resource for professionals and students in architecture, engineering, and urban design. [It’s already on my bookshelf!]—ed.


—William Braham

AIA COTE TOP TEN [CONT.]

INNOVATION2030

A student competition to transform the course of design

Although last year’s program received hundreds of submissions, the hope is that this year’s program and prizes will expand the pool of students and studio professors even further.

More details to follow at <http://innovation2030.net/>. 

—Heather Gayle Holdridge
RACE TO ZERO STUDENT DESIGN COMPETITION

Collegiate institutions can start preparing for the next U.S. Department of Energy Race to Zero Student Design Competition planned for April 2018 at the National Renewable Energy Laboratory (NREL) in Golden, CO.

The DOE Race to Zero inspires college students to become the next generation of building science professionals through a design challenge for zero-energy-ready buildings. Teams can successfully compete with a group of undergraduate or graduate students for one to two semesters.

The fifth annual Race to Zero competition will include a commercial building design contest in addition to the residential building contests, giving teams many options of building types as the focus of their design challenge. Key dates for the next competition are:

- July 2017—Release of Race to Zero Competition Guide and team application opens
- September 2017 to March 2018—Webinars and building science training
- November 2017—All participating teams must complete the team application and are encouraged to submit a 3-page design concept
- April 2018—Finalist teams complete their project submittals and compete with presentations to industry leaders.

Learn more about the Race to Zero competition by visiting <https://energy.gov/eere/buildings/us-department-energy-race-zero-student-design-competition>.

—DOE

EVENTS

BIM 2017

It is time to register for the eleventh annual USC BIM conference “BIM 2017—what’s next?” on Friday, July 14 at the USC School of Architecture, Los Angeles, CA. We usually sell out, so please sign up soon: $55 early registration; $125 after June 30 (last year we sold out before then). Go to <http://events.usc.edu/esvp/> (code: bim2017) to register after reading the conference schedule, available at <http://arch.usc.edu/calendar/bim-2017-whats-next>.

The list of expert speakers is long (over 40 speakers) and varied (architecture, construction, VR, 3-D scanning, visual programming, parametric modeling, codes, etc.).

The conference is organized in two tracks. The conference schedule shows you the preliminary breakdown. Please note which track you are more interested in. You will need to know that when you register. We use that information to decide which lecture room to assign to which track.

If you have come before, I am sure that you would agree that it is not an exaggeration to say that this one-day conference is a BIM highlight. If you have not attended before, it is your opportunity to find out why we think it is so. And lunch is provided!

I hope to see you in July!

—Karen Kensek

BUILDING SIMULATION 2017

Building Simulation 2017 is happening August 7–9 in San Francisco. Content includes more than 300 peer-reviewed papers/posters plus at least 100 presentations and panels on best practices and emerging topics. The conference is hosted by IBPSA–USA <http://www.ibpsa.us> on behalf of IBPSA World <http://ibpsa.org>. The volunteer organizing committee has been working hard to create a rewarding conference. The preliminary program includes 451 contributions, with a mix of peer-reviewed papers with other presentations by industry experts on simulation best practices and new developments. There are four sessions on the topic of teaching simulation. The preliminary program can be found at <http://buildingsimulation2017.org/program.html>. The early registration deadline has been extended by one week to June 9. More info is available at the conference web site <http://www.buildingsimulation2017.org>.

—Erik Kolderup

INTERNATIONAL RADIANCE WORKSHOP

The Energy Studies in Buildings Laboratory (ESBL) is pleased to host this year’s International Radiance Workshop at the University of Oregon campus in Portland, OR. With a long tradition of gathering academics, professionals, and enthusiasts of the Radiance simulation tools, and lighting-related topics in general, the workshop is a great opportunity to connect, learn, and exchange ideas!

The event will begin with an optional viewing of the 2017 total solar eclipse on the morning of Monday, August 21 at the Sokol Blosser Winery in Dayton, OR. The traditional three-day Radiance workshop will continue August 22–24. Friday, August 25 will feature an optional one-day, hands-on Radiance training aimed at professionals and students seeking to learn more about Radiance daylighting simulation.

Registration is open until July 31. Students get a 40% discount for the three-day workshop and a 50% discount for the Radiance training. More information on pricing and the registration process can be found at <https://radiance.uoregon.edu/registration>.

Direct inquiries to Alen Mahic <alen@uoregon.edu> or Stephanie Luiere <sluiere@uoregon.edu>. We’d love to see you in Portland!

—Alen Mahic

—DOE

The dining hall at Silver Falls.
RESEARCH NEWS

OVERTAKE PROJECT AIMS TO REDUCE IMPACT OF OVERHEATING IN NEW HOUSING

The Low Carbon Building (LCB) Group of the Oxford Institute for Sustainable Development (OISD) at Oxford Brookes University in the UK has launched a new research-based collaborative project with Encraft, an independent engineering consultancy firm.

The Knowledge Transfer Partnership (KTP) project entitled OVERTAKE (Tracking overheating in new-build homes) will run for 34 months and has received funding of £225k (US$ 280k) from the UK Government (Innovate UK) and Encraft, to develop novel tools and products for assessing and preventing the occurrence of summertime overheating in new-build housing and extra-care homes built to high energy-efficiency standards. This issue is of rapidly growing importance as the climate warms.

OVERTAKE is led by Rajat Gupta (Oxford Brookes University School of Architecture). Ella Quigley has been appointed as the KTP Associate, while Adorkor Bruce–Konuah is providing specialist input related to data analysis. The LCB Group has a track record in conducting research on overheating in buildings. OVERTAKE will build on the research of LCB group on building performance evaluation and climate adaptation in care settings. The project will use empirical evidence, simulation, and analysis to develop unique solutions for mitigating overheating risks in new housing. New datasets will be generated to inform future standards on overheating. We are now recruiting households interested in and willing to participate in building monitoring and occupant surveys for two summers.

For further information, please contact Rajat Gupta <rgupta@brookes.ac.uk>.

—Rajat Gupta

AIA UPJOHN AWARD

Principal investigator Kyle Konis (USC) has been awarded an Upjohn grant for “A Circadian Daylight Metric and Design Assist Tool for Improved Occupant Health and Well-Being”

All zones within a building that do not regularly achieve the lighting conditions necessary for effective circadian stimulus can be labeled biologically dark and considered zones where regular occupancy may be problematic for health and well-being. The objective of this research is to develop a daylighting metric and a design assist tool capable of assessing the circadian potential of architectural space. Procedures using annual, climate-based daylight analysis of eye-level light exposures will be developed to map the circadian effectiveness of a given space. The design assist tool can be used to assess and differentiate the performance of various daylighting strategies during the design phases of a project or to quantify the circadian effectiveness of existing spaces.

—AIA

REFLECTIVE ROOFING RESEARCH PROJECT COMPLETE

A team of Virginia Tech students and I have completed a study of the effects of reflective roofs on air temperatures above them and temperatures of building materials and surfaces adjacent to them. The study was conducted by the Center for High Performance Environments at Virginia Tech’s School of Architecture + Design. We affixed overlays of white thermoplastic polyolefin (TPO) and black ethylene propylene diene monomer (EPDM) membrane to an existing roof, and installed a weather station and 102 temperature sensors to measure the roof surface temperature, the air temperature at four heights above it, and the temperature of electrical metallic tubing (EMT) at the same four heights. We also measured temperatures at four heights at opaque and glazed walls adjacent to the roof.

Results of the first phase of the research were published in *Architectural Science Review* and can be accessed at <http://www.tandfonline.com/eprint/abUI5JS65apniscUTEJe/full>. I will be presenting results from the second phase at the PLEA Conference in Edinburgh, Scotland, in July 2017. I’m looking forward to seeing my fellow SBSEers there and at the Tool Day just prior.

—Elizabeth Grant

SCHOLARSHIP REMINDERS

SOLAR 2017

SBSE will provide up to six scholarships valued at $650 each to support student engagement in Solar 2017. The objective is to provide support to students who are presenting papers at (or otherwise actively participating in) Solar 2017, the annual conference of the American Solar Energy Society (ASES), this coming October in Denver, CO. Due date for applications is 1 August 2017.

PASSIVE HOUSE

SBSE is once again pleased to offer support to students with a keen interest in passive house principles. Two scholarships to augment student travel to the 2017 North American Passive House Conference (NAPHC) (at $650 each) will be available to successful applicants. Due date for applications is 23 August 2017.

—Walter Grondzik

photo: Rajat Gupta

Low-tech, block-in-the-gap solution to natural ventilation in legacy housing.

photo: Elizabeth Grant

Sensor tripods placed on the black (foreground) and white (background) roofs.

photo: Elizabeth Grant
MEET NORM

HASSALO ON EIGHTH’S NATURAL ORGANIC WATER RECYCLING MACHINE

If you have visited our community or leased with us, chances are good that you’ve heard about NORM, our natural wastewater treatment, re-use, and disposal system. In short, the system recycles 100% of the black and grey water used at our community. It creates non-potable water for toilet flushing, irrigation, and air conditioning. What makes NORM even cooler? Besides how it looks at night—ed. It’s the largest (and only) urban-scale residential wastewater treatment and reuse system in all of North America.

How NORM helps the environment:

• Treats roughly 47,000 gallons of water a day, significantly reducing our contribution to the city’s sewer system.
• Returns non-potable irrigation water to the landscape.
• Doesn’t generate any waste of its own. Biosolids are used for fertilizer off-site, and fats, oils, and gases are used for fuel.
• Reduces water usage for our buildings by 38%, or 7,300,000 gallons of water per year.

Read more at <http://hassalooneighth.com/introducing-norm/>. 🌿

—Hassalo on Eighth

SBSE CALENDAR

2017

Jul 2  SBSE Tool Day/Edinburgh, Scotland, UK
Jul 2–5  PLEA 2017/Edinburgh, Scotland, UK
Jul 14  BIM 2017 Conference/Los Angeles, CA, USA
Jul 25–28  SBSE Retreat/Sublimity, OR, USA
Aug 7–9  Building Simulation/San Francisco, CA, USA
Aug 24  Net Zero 2017/Commerce, CA, USA
Sep 6–9  EAEA13 Conference/Glasgow, Scotland, UK
Oct 5–15  Solar Decathlon/Denver, CO, USA
Oct 9–12  ASES Solar Conference/Denver, CO, USA
Nov 1–4  PLDC2017/Paris, FRANCE

2018

Mar 12–15  Cold Climate HVAC 2018/Kiruna, SWEDEN 🌿

FALL ISSUE SUBMITTAL DEADLINE—SEPTEMBER 1

SBSE NEWS
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TO: SBSE MEMBERS & FRIENDS
PLANET-WIDE

* Ralph Lewis Knowles (now Professor Emeritus) and his heliodon at USC (circa 1964).