



watercolor: Don Watson

The 2008 SBSE Retreat at the New Forest inspired Don Watson to capture the wild ponies in watercolor. How will the 2015 retreat venue inspire you?

RETREAT 2015, "REGIONS AND LOCALITIES"

The Mountain Retreat and Learning Center; Highlands, NC; Tuesday, June 16—Friday, June 19, 2015.

Registration open now through May 1, 2015!

Join us for the 32nd Annual SBSE Retreat, *Regions and Localities*, which focuses on the strategies, tools, and ideas that SBSEers are using to teach and practice appropriate building design for region and place. Systems, energy, materials, and know-how are all subject to *Regions and Localities*. How do we teach appropriate strategies for many locations, and how can we continue to value place while working globally? At the Mountain Retreat Center in the beauty of the nation's oldest mountain chain—the Appalachian Mountains—we'll share ideas, discuss solutions, and learn from others' experiences.

The retreat will be organized around four themes—Global Perspectives on Place, Materials and Embodied Energy, Regional Climate and Appropriate Technology, and Strategies and Tools—as well as a number of “hot topics” in roundtable discussions and working groups.

Opportunities abound for reinvigorating our teaching with new methods, strategies, and ideas; learning (or re-learning) concepts, principles, and perspectives; rekindling professional networks for collaboration; and spurring new publications—all with faculty, researchers, Jeffrey Cook Scholars, Student Retreat Scholars, and other colleagues.

This year we expect a full program that includes exemplar tools and methods (e.g., HDR photography, natural ventilation, energy audits, CFD analysis); design processes that teach the importance of place and appropriateness in architecture (e.g., daylighting, climate responsiveness, construction processes in developing countries); and “hot topics” and global perspectives (e.g., pedagogy, planning, certifications for schools, case studies, opportunities for book and grant proposals, and much more). See you there! 🖐

—Emily McGlohn and Alison Kwok

SBSE ELECTION YEAR!

It's time to nominate folks for President-Elect and Secretary/Treasurer. Make your selections known to Pablo LaRoche via e-mail <pmla-roche@csupomona.edu> or at the SBSE Annual Meeting. The election will be conducted online during the month of October. 🖐

SBSE ANNUAL MEETING

The SBSE Annual Meeting will be held at Solar 2015 in State College, PA. Time and room assignment are yet to be determined. We're on the conference organizers radar, and we should be accommodated. The SBSE meeting is part of a larger room allocation planning effort. Stay tuned! 🖐

LETTERS TO THE EDITOR

Chicago's performance benchmarking may be of interest to SBSEers. See <<http://www.cityofchicago.org/city/en/progs/env/building-energy-benchmarking--transparency.html>>.

—Kaiser Keelan

The detailed information (i.e. building-specific data) will be publicly available in the second year of reporting. That means that next year the data for the nonresidential buildings larger than 250,000 sq.ft. will be available.

—Ralph Muehleisen



We have just won the bid to host PLEA 2017 in Edinburgh!

If we were arranging it so the U.S. schools can come over too, what would be the best time? Can you give me the optimal dates for me to work around for 2017?

Perhaps it is time for a Scottish SBSE retreat, too? 🖐️

—Sue Roaf, Heriot Watt

[I'd suggest sometime between June 15 and 30.

And, wow, I'm looking forward to your Scottish retreat proposal! –ed.]



Photo: Bruce Haglund

A visit to Edinburgh offers the opportunity to tour Scottish Parliament!

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BUILT ENVIRONMENT EDUCATION NOW

As you may know, the proposed "LEED Teach" program is now known as the **BEE_{now}** organization. The founding committee has twelve members and three advisors (Ed Mazria, founder of Architecture 2030; John Fernandez, head of the Architectural Technology Program at MIT; and Daniel J. Lemieux, an architect working with NIBS and ASTM to improve the teaching of technology in architecture schools). A Concept Statement has been drafted and an executive summary of that statement is shown below.

The next step for BEE_{now} is to reach out to individuals and organization for support in order to give our program credibility and to seek further advice after reading the executive summary below. If you are interested in helping, contact us, and then please do one or more of the following:

- Send a letter of support to <lechnnm@auburn.edu>,
- Explain our program to colleagues,
- Explain our program to organizations to which you belong or have some input capacity,
- Send us names of individuals and organizations that might support us so we may contact them,
- Let us know if you want to be even more actively involved.

BUILT ENVIRONMENT EDUCATION NOW (BEE_{now})EXECUTIVE SUMMARY

In the U.S. buildings and their occupants presently use about 50% of the country's energy and are major contributors to climate change through the emissions of carbon dioxide, both in their construction and operation. The organization, Built Environment Education *now*, was created to sharply expand the teaching of high-performance, low-energy design in architecture schools. Our goal is to mitigate or stop climate change by integrating established low-energy design fundamentals and methods into architectural design education from the first through the final year.

Low-energy buildings can only be realized when architects have the appropriate fundamental knowledge and skills to create buildings that conserve energy at every step from pre-design to construction, to occupation, and to retrofitting existing buildings. It is imperative that all architecture students graduate with the knowledge and skills needed to design high-performance/carbon-neutral buildings and built environments. At present, much of architectural education does not require this essential expertise, nor does it provide students many of the tools and design thinking skills necessary to design very low energy buildings. To change this situation, BEE_{now} is creating a voluntary certification program to encourage architecture programs to embrace the teaching of high-performance/carbon-neutral design and to recognize those that already do so.

BEE_{now} is an essential program for achieving both the "2030 Challenge" issued by Architecture 2030, which calls for buildings to meet ongoing energy consumption reduction targets incrementally increasing to carbon neutral by 2030, and the "2050 Imperative," declared by the International Union of Architects (UIA) at the 2014 World Congress held in Durban, South Africa. This imperative is a worldwide commitment to eliminate carbon dioxide emissions from the built environment by 2050.

As with LEED, BEE_{now} certification will become a sought-after and widely-accepted measure of success, thereby encouraging increasingly greater numbers of architecture schools to emphasize low-energy design. Additionally, BEE_{now} certification of architectural programs will enable students to choose schools based on their environmental priorities.

BEE_{now} will initially certify architecture schools in the United States and in Canada. After the process of certifying architecture programs is established, BEE_{now} will expand to include international programs and other educational programs such as interior design, built-environment engineering, and landscape architecture.

Send all feedback to <lechnnm@auburn.edu>. 🖐️

—Norbert Lechner

OPPORTUNITY KNOCKS

OXFORD BROOKES UNIVERSITY

We're currently filling two fully-funded Ph.D. studentships in the Low Carbon Building Research Group, Oxford Institute for Sustainable Development and the School of Architecture in Oxford Brookes University. Both positions were open to UK, EU, and international students. The successful applicant will receive an annual bursary of £11,000/year for three years and fees will be paid by Oxford Brookes.

We are delighted to inform you that there are more funded studentship opportunities forthcoming in the Low Carbon Building Group at Oxford Brookes University. Stay tuned!

—Rajat Gupta

UNIVERSITY OF CALIFORNIA BERKELEY

We are recruiting a Professional Researcher (the research-track equivalent of a teaching-track Professor) within the Center for the Built Environment at the University of California. The mission of the CBE is “to improve the environmental quality and energy efficiency of buildings by providing timely, unbiased information on building technologies and design and operation techniques.”

We are recruiting candidates to perform research aligned with that mission, focusing on HVAC systems or indoor environmental quality, depending on the skill-set of the applicant. The primary duties will include:

- Perform research aligned with the mission of the CBE,
- Publish research in academic journals and at conferences,
- Write project reports for funding agencies,
- Supervise and train master's and doctoral students,
- Supervise postdoctoral researchers,
- Write proposals to obtain funding for future research projects,
- Engage with our industry partners.

We are recruiting personnel to perform research within our Advanced Integrated Systems research program. Over the coming years our focus will be primarily on radiant systems as part of a \$3 million project funded by the EPIC program through the California Energy Commission.

If you are interested in joining our team, please see <<https://aprecruit.berkeley.edu/apply/JPF00644>> for more detail and to start the application process.

—Paul Raftery

WASHINGTON STATE UNIVERSITY

The School of Design and Construction is accepting applications for a nine-month, non-tenure track position in architecture beginning August 15, 2015. We are seeking an individual with deep interest and understanding of sustainable/regenerative/high-performance design initiatives. The ideal candidate will have demonstrable expertise in climate analysis and place response that leads to innovative, high-performing building designs. This hire will be responsible for teaching one upper-division undergraduate studio course and one seminar per semester and is expected to integrate environmental perspectives and tools into their teaching pedagogy. Additionally, the hire will have the opportunity to explore research and teaching collaborations with Voiland College of Engineering and Architecture (VCEA) faculty to further building science research through the materials development, fabrication, and analysis/simulation of building system elements. This research and teaching could explore partnerships, for example, with several centers and institutes in VCEA including the Institute for Sustainable Design, the Composite Materials and Engineering Center, the Integrated Design Experience, and the Frank Innovation Zone.

Required qualifications: M.Arch. or equivalent.

Applicants should present a short statement of interest, a CV, and evidence of successfully integrating environmental perspectives in design teaching or professional practice. Please submit a single PDF document (under 10MB) or a link to <jtheodorson@wsu.edu> or 509.991.5254.

Applications will be reviewed commencing April 9 and continue until position is filled. 🖱

—Judy Theodorson

SOLAR2015 PHILOSOPHY



By locating the conference at a university venue and scheduling it outside of the academic year, we are hoping to appeal to more students and emerging professionals while keeping costs to participate as low as possible. To attract a critical mass of this group, we've set the “early registration” cost for students at a very affordable \$195. Unfortunately, our actual cost per attendee (for the venue, AV, lunch, breaks, awards dinner, registration management) exceeds that amount by almost \$100, so we've been working on how we can survive our own success.

We've grappled with the very low early registration fees for students and are in the process of developing two options to help recoup some of our projected loss from this strategy. The first is a “student scholarship sponsor” package that would allow an entity that would normally assist students in attending the conference and support ASES to do both. This opportunity allows a sponsor to buy 5 registrations plus receive recognition on the ASES website, in the conference program, and at conference events for a slight up-charge. The up-charge offsets the difference between the registration fee and the cost to ASES.

The second option is a sponsorship for one student registration called “Help Send a Student to Solar 2015” for \$100. The sponsor helps make the conference affordable to students while helping maintain the financial viability of ASES. Supporters will be recognized in the awards program and in the conference program.

I've been pushing the National Organizing Committee and the Board to start thinking about the 2016 conference. In my opinion we've made a commitment to expand our relationship with the academic community, and in order to ensure a worthwhile endeavor, we need to team with another university for our conference in 2016. Any suggestions for viable options would be greatly appreciated. *[I believe that the University of Washington would be a very attractive option. Agreed, Rob Peña? Others?—ed.]* 🖱

—David Panich

SBSE PEOPLE

🏆 **Rajat Gupta** and Matt Gregg won the best paper award for, “A quiet revolution: mapping energy use in low carbon communities,” at the PLEA conference in December in Ahmedabad. See <<https://www.brookes.ac.uk/about-brookes/news/low-carbon-community-paper-wins-award-at-international-conference/>>.



photo: Rajat Gupta

Paula Cadima (Architectural Association), PLEA President presents the best paper award to Rajat.

☆ **Bob Koester** and Ball State were part of Chevrolet’s efforts to help U.S. colleges further reduce their carbon footprint, which earned a Climate Leadership Award for Innovative Partnerships from the U.S. Environmental Protection Agency Center for Corporate Climate Leadership.

🏠 **Mary Rogero** was granted tenure at Miami University.

➤ **Kevin van den Wymelenberg** is moving to the University of Oregon. 🖐

STUFF

Andrew Marsh’s 3-D Interactive Sun Path demonstration, a fantastic tool for showing daily and seasonal sunpaths at any latitude as well as other useful items are available at <<http://andrewmarsh.com>>.

To run these applets on a windows computer, open the Java folder, click on “Configure Java,” click the “Security” tab, click the “EDIT the site list” under “Exception Site List,” and type “<http://andrewmarsh.com>”, which allows the applets to run without changing internet security settings. The 3-D Interactive Sun Path demonstration applet is under Blog Posts on page 2. 🖐

—Truett James

RESEARCH

SUSTAINABILITY BY DESIGN—HOW ONE BUILDING IN CHINA COULD CHANGE THE WORLD

Be skeptical. I was. At first pass, the Shenzhen Institute of Building Research (IBR) does not look like a remarkable building. Architectural visitors to Shenzhen usually head to the nearby Vanke Headquarters, designed by Steven Holl. The LEED Platinum Vanke buildings are striking, but as Jerry Yudelson has pointed out in his excellent book, *World’s Greenest Buildings*, the performance of the Vanke building has not been as good as planned.

But the IBR is a more modest design, and having studied it for several years, I continue to be impressed by the spirit that guided its design, as well as its performance over time. First, the building is a very low energy building. At 20 kBtu/ft²-yr (63 kWh/m²-yr) it is among the greenest buildings of its type. The IBR collects data on over 200 commercial buildings in downtown Shenzhen, and their building is among the very lowest of energy users. More important, the building is a lovely place to work, comfortable and inviting, with its heavily landscaped courtyards and “sky gardens.” I’ve been in the outside conference rooms during tropical rainstorms where the rain on the metal sunshades was so loud you couldn’t hear across the table, and the staff simply adjusted the microphones and speakers so we could continue our conversation throughout the brief storm.

The building was designed by the director of the IBR, architect Ye Qing, who espouses a vision of a “sharing architecture.” For her, the building must share with nature, the workers, and the community. Integral to this vision is a very pragmatic approach to sustainable design. The design team evaluated more than 40 green strategies—natural ventilation with CFD modeling of window opening and location, daylighting, and a total integrated design approach that incorporated spatial layouts, local climate conditions, differentiated elevations, building-integrated PV, and user needs. Moreover, the building was very modest in its construction costs, lower than typical construction in Shenzhen in 2009, at 4300 Yuan/m² (\$70/ft²).

We were invited by the IBR to do an independent assessment of the building and its performance, for which my LBNL colleague Wei Feng and I requested extensive data files on sub-metered electricity use, air temperatures, water use, user satisfaction, and other data. We also made several site visits, and interviewed the staff, operators, and others involved in green building design in China. We’ve documented our findings in a report that can be downloaded for free from <http://china.lbl.gov/sites/all/files/ibr_brochure.pdf>. We’ve also made it available on line at cost (\$7) through Amazon if you want a hard copy. Read the book, share it with your students, and visit the building—they give great tours—and decide for yourself if this is a green building that could change the world. 🖐

—Rick Diamond



photo: Rick Diamond

The 6th-floor “sky garden” of the Shenzhen Institute of Building Research is used for meetings and informal gatherings no matter the weather conditions.



Sustainability by Design

How One Building in China
Could Change the World

Richard Diamond and Wei Feng

report cover: Rick Diamond

MORE RESEARCH

OREGON BEST



A cleantech startup that has developed a microbial fuel cell capable of cleaning wastewater at breweries and other food and beverage producers while generating electricity has been awarded a \$225,000 Small Business Technology Transfer (STTR) Phase I grant from the National Science Foundation.

Waste2Watergy, funded in part by Oregon BEST and working with researchers at Oregon State University, is using the new funding to speed development of technology that could revolutionize wastewater treatment for a range of industries, including food and beverage producers, that generate billions of gallons of wastewater containing high levels of organic compounds.

“This novel technology offers significant economic and sustainability advantages to companies by reducing disposal costs and waste volumes, shrinking the footprint of treatment facilities and offering a more sustainable process for wastewater treatment,” said Hong Liu, a professor in the OSU Department of Biological and Ecological Engineering and co-inventor of the core technology. “The social and long-term impact is providing energy from a renewable source while benefiting human health.”

For the past 18 months, the startup has been partnering with Portland-based Widmer Brothers Brewing, where it installed an early prototype of its system and has just installed a scaled-up version to treat the brewery’s wastewater while generating electricity. Brewing is a water-intensive industry, and the wastewater contains an optimal mix of organic ingredients for the microbes in the fuel cell. Those same ingredients cause problems when they reach high concentrations in the effluent stream. Waste2Watergy’s system removes the organics from the effluent stream and uses them to produce power in the process.

“Here at Widmer Brothers we’re pleased to be the first host site and be playing a key role in the development of this innovative technology,” said Julia Person, Sustainability Manager at Widmer Brothers. “It’s been impressive to see our wastewater being cleaned and electricity generated, and it’s exciting to see the technology grow from the first prototype to the larger scale version.”

The new STTR Phase I funding is for one year and is helping the company demonstrate the scalability of its proprietary cathode material in the fuel cell, the cell’s long-term performance, and the feasibility of the overall design to effectively clean beverage wastewater. In 2013, Oregon BEST provided \$150,000 in funding (and ongoing support through the SBIR/STTR Support Center at Oregon BEST) to advance the technology early in its development.

Integration of the low-cost cathode material and the fuel cell’s unique modular design is expected to provide breakthrough performance and cost savings that will enable broad-based commercial deployment of the technology.

USC SCHOOL OF ARCHITECTURE

Kyle Konis was recently awarded \$149,400 from the California Energy Commission (CEC) to support research and development of his project entitled, the Occupant Mobile Gateway (O.M.G.). [*omg is this cool?—ed.*] The objective of the O.M.G. is to leverage mobile sensing as a platform to enable design teams to validate and continually refine the performance of low-energy and environmentally-responsive design strategies. The project is a continuation of a multi-disciplinary collaboration between Konis and Murali Annavaram in the USC Viterbi School of Engineering. 📍

EVENTS

ISES SOLAR WORLD CONGRESS 2015

The International Solar Energy Society and the Korean Solar Energy Society are pleased to invite you to the ISES Solar World Congress 2015 in Daegu, Korea, from 8–12 Nov 2015. *Submit your abstract by 30 Mar 2015* through the online submission process on the SWC2015 web site.

BECC2015

Behavior Energy and Climate Change conference, Oct 18–20, in Sacramento, CA. Therese Peffer is chairing this year and would love to see some representation from the design and building science community. *Abstracts are due April 1*—one can get together with colleagues and create a panel as well. Paper and panel submission at <<https://www.surveymonkey.com/s/BECC2015ab>>.

RBD&C 2016

Submit abstracts by April 15, 2015, for the 3rd Residential Building Design and Construction conference at Penn State in March 2016. Papers for this conference can be related to any type of residential building from single- and multi-family dwellings to hotels/motels.

For more information see <<http://buildingscienceeducation.net/wp-content/uploads/2015/01/PHRC-3rd-RBDC-Conference-Call-for-Papers-and-Presentations.pdf>>.

GEOCON III: CHALLENGES & BENEFITS OF GEOTHERMAL RETROFITS OF EXISTING BUILDINGS

Registrations are now being accepted for the third offering in the Ball State University (BSU) Geothermal Conference Series: Geo Con III on April 8 at the Ball State Alumni Center. This event will offer participants proven financial and institutional strategies for the implementation of geothermal technologies. Four nationally-recognized presenters will cover the innovative capital sourcing, technical assessment, and project packaging used to apply this technology in a campus setting. Financial reviews and tours of the BSU geothermal heating and cooling system—the largest of its kind in the nation—will be included.

DIVA WORKSHOP

At the Pacific Energy Center in San Francisco on Wednesday, April 8 at 6:30pm, Christoph Reinhart will lecture on daylighting. On April 9 the center will host a full-day workshop on daylight simulations. Details and registration information at <<http://registration.daylightinghandbook.com/>>. 📍

BOOK RESOURCES

If you are using *Sun, Wind & Light*, 3rd edition, there is a supporting Excel workbook, the *SWL Tools* spreadsheets available on the Wiley companion site. It facilitates several of the calculations in *SWL3*, allowing a simple annual energy use calculation, and performance relative to energy and carbon targets. I use it with 2nd-year students.

I am also developing a series of rather “un-plugged” videos that can be accessed and downloaded for education from the University of Tennessee iTunesU web site here:

<<https://itunes.apple.com/us/itunes-u/sun-wind-light-resources/id958699915?mt=10>>

You are welcome to anything you find useful there. I use them in a partially “flipped” Intro to Architectural Technology class. I’ll add more to the list soon. 🖱

—Mark DeKay

BRI SPECIAL ISSUES 2015

BRI has published two special issues with topics likely to be close to the hearts of SBSEers. Would someone like to write a review of them for the newsletter?

Net-zero and net-positive design, Ray Cole (guest editor). <<http://www.tandfonline.com/toc/rbri20/43/1>>.

Counting the Costs of Comfort, Sue Roaf, Luisa Brotas, and Fergus Nicol (guest editors). <<http://www.tandfonline.com/toc/rbri20/43/3>>.

Let the *SBSE News* editor know, <bhaglund@uidaho.edu>. 🖱

—Richard Lorch

BOOK CHAPTER OP

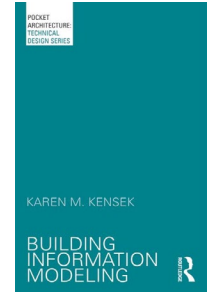
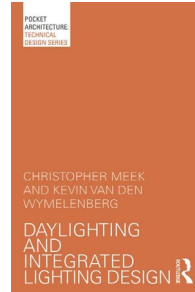
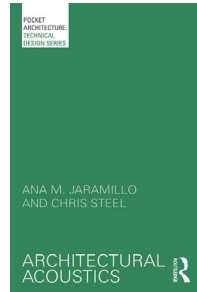
Call for chapter proposals (deadline May 30, 2015) for an IGI Global book, *Collaboration and Student Engagement in Design Education*. More information and submission details can be found at <<http://www.igi-global.com/publish/call-for-papers/call-details/1738>>. 🖱

—Richard Tucker

BOOKS BY SBSEERS

POCKETARCHITECTURE: TECHNICAL DESIGN SERIES

Routledge’s Technical Design Series comprises succinct, easy to use, topic-based volumes that collate in one place unbiased, need-to-know technical information about the subject areas below, three of the four new tomes are written by SBSEers (Ana Jaramillo, *Architectural Acoustics*; Chris Meek & Kevin van den Wymelenberg, *Daylighting and Integrated Lighting Design*; and Karen Kensek, *Building Information Modeling*).

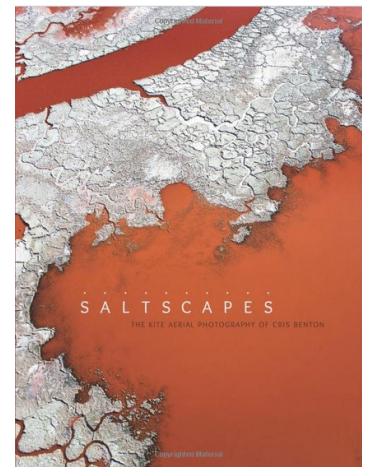


SALTSCAPES: THE KITE AERIAL PHOTOGRAPHY OF CRIS BENTON

On approach to SFO, a passenger glancing out the window will see the vivid patchwork of the south bay's salt evaporation ponds. After a century of industrial salt production, over ten thousand acres of this once vast marshland are now being restored to their natural state. Using a kite to fly a radio-controlled camera to heights of up to three hundred feet, photographer and SBSEer Cris Benton brings this much overlooked part of the San Francisco Bay into sharp focus, highlighting one of the greatest landscape transformations underway in America.

With results as unexpected as they are alluring, Benton explores the “exuberant, otherworldly” south bay salt ponds and marshes in various states of restoration. He reveals saturated colors, subtle textures, and vivid patterns not discernible from the ground. We linger on the lacy elegance of salt mounds; the stark beauty of a rail line running through ripples of bay water; the softness of snowy plovers in flight. Among the most enchanting are images that could be mistaken for Mark Rothko paintings, until closer examination reveals bulldozer tracks across muddy stretches of bay bottom.

Benton’s images allow us to slip our earthly bonds and see the world from new heights, his aerial views offering a fresh perspective on familiar landscapes. Surprising and sublime, *Saltscapes* can be enjoyed equally as a collection of art photography and a portrait of ecological transformation and resilience.

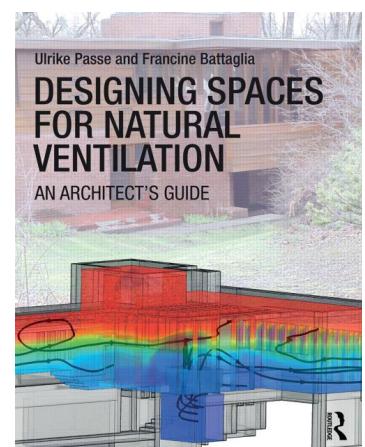


DESIGNING SPACES FOR NATURAL VENTILATION

Ulrike Passe, Francine Battaglia. Forthcoming April 28, 2015: <<http://www.tandf.net/books/details/9780415817776/>>

This accessible and thorough guide shows you how to naturally ventilate buildings in more than 260 color diagrams and photographs illustrating case studies and CFD simulations. By using scientific and architectural visualization tools included here, you can develop ventilation strategies without an engineering background.

Sue Roaf wrote the foreword and all the reviews are from leading SBSEers. This soon-to-be-released book might be of some interest to the SBSE community 🖱



TEACHING SUSTAINABILITY AND ENERGY

Bridging the gap between design and analytics challenges most design professionals as well as studio professors. In my 3rd-year design studio in Fall 2014, students learned about sustainability incrementally and were asked to consider aspects of climate-responsive design one-step-at-a-time through three separate, but closely related, design projects. This approach allowed students to formulate a perspective of the “big picture” by painting in smaller strokes.

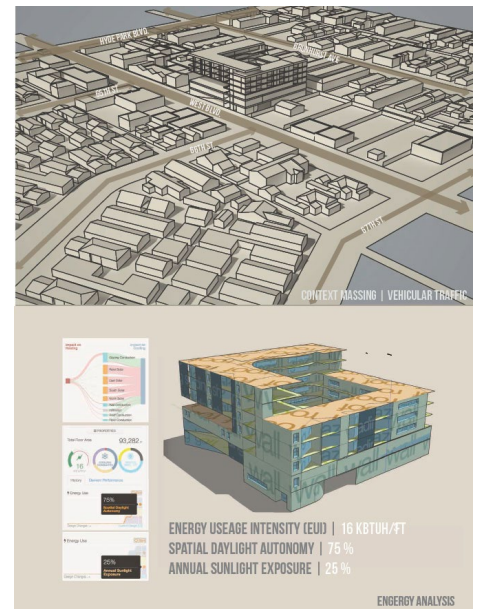
Here’s our process:

1. Sustainability concepts and reference introduction: Basic climate analysis in week one using Climate Consultant and the 2030 Palette in week two. (Note: Climate Consultant has a feature that links climate strategies to the 2030 Palette swatches.)
2. Sefaira’s Desktop Plugin: Using Sefaira to perform conceptual energy analytics, students were asked to develop solutions that would hit an identified EUI target—25 KBTU/SF or less.
3. Sefaira’s Desktop Component for Daylight and Glare: Spatial Daylight Autonomy (SDA) and glare were introduced. Targets for daylight were 75% SDA, while limiting glare to 25% or less. Sefaira’s Daylight Analysis visualization tool allows designers to find where buildings are well lighted, where windows are needed, and where glare might be a problem.
4. Sefaira’s Online analytic tools: Sefaira’s web-based analytical tools make it possible to perform parametric analyses to identify strategies to help further reduce energy use. Students created a massing model for their identified sites, then uploaded them to the Sefaira web application where they were asked to identify optimization strategies for orientation and glazing ratios.
5. Sefaira’s Online analytic tools: Students were later asked to explore approaches that would deepen energy-efficiency through the introduction of high-performance building skins, highly efficient HVAC systems, natural ventilation, renewable energy, and water reuse technologies.
6. Gaining expertise with Sefaira: Students were asked to achieve the same energy targets for each design exercise. While students struggled with the first project, they were able to gain understanding and confidence in the analysis tool and to hit the identified target more easily the second time around. For the third and final project, students were also challenged to see how close they could come to Net-Zero designs, all measured using Sefaira.
7. Evaluating modeling knowledge: It’s time-consuming to do this, but correctly modeling in Sketchup/Sefaira is important. It’s easy for students to misidentify floor elements, which affects energy and daylight scores. It’s equally easy to teach the students to look for and correct these problems so energy use and daylight performance are correctly calculated and rendered. Once students see what they’ve done incorrectly and once they are able to correct their modeling problems, they become proficient with the tool.
8. Require students to include the energy analytics on their final presentation boards: It’s extremely important and a component that design faculty resist [*Not me!—ed.*]. Students were asked to screenshot their Sefaira scorecard, alongside their Sketch-up model, with energy performance and daylight analytics. Some students went further and included screenshots of the daylight visualization. With the last design presentation, more than a few jurors pressed students to explain and defend what they had done with energy and daylight, and many students were able to explain their approaches using the Sefaira analytics.

CONCLUSIONS AND RECOMMENDATIONS

Sefaira was generous in its support of the 3rd-year studio at USC—they made full-year academic licenses available to all students and helped train the studio instructor to support students and answer questions. To fully empower and support these students and to continue to support a desired trend, the following recommendations should be considered by both architecture schools and software developers like Sefaira:

1. Software providers make their educational licenses free and renewable to students, as long as they remain in an academic setting. It is hoped that Sefaira will make their tool available



board vignette: Augustin-Wong

Performance metrics are on final presentation boards.

to my third-year students as they progress through years 4 and 5, even if their instructors don’t include sustainability as part of their design studio syllabi.

2. Architecture faculty make their colleagues aware of the skills their students have used and encourage the use of performance modeling tools in future studios, allowing students to continue to define and develop their skill sets.
3. Students are taught the basics of sustainability as they learn to draw. Such early teaching is important, but at USC, students had already learned to draw with a tool (Rhino) that did not easily integrate with Sefaira. Software tools are either developed to easily integrate with analytics (say a Sefaira plug-in for Rhino), or students are taught to draw with other tools (say Revit or Sketchup).

Like Architecture 2030, this instructor believes that given a problem and the right tools, architects can design their way to a solution. Students are capable and, in many cases, excited to address performance issues. If nurtured, students will play a leading role in our profession as architects more central to conversations about energy performance, daylight quality, sustainability, and the creation of the cities of tomorrow. 🖐️

—Tim Kohut

THANKS AND FAREWELL TO MUSCOE MARTIN

Sadly Muscoe has lost his battle with cancer.

Muscoe Burnett Martin, Jr., 59, an architect who designed environmentally responsible buildings long before the term “build green” became widely accepted, died Sunday, Dec. 28, of cancer at his home in Philadelphia.

Muscoe used sustainable design to create the Environmental Education Center at the John Heinz National Wildlife Refuge in Tinicum, the Horticulture Center for the University of Pennsylvania’s Morris Arboretum in Chestnut Hill, and the Stroud Water Research Center in Chester County. He also designed a “bio” swimming pool for his own house in Chestnut Hill, using plants—not chemicals—for filtration, said his wife, Jennifer Pinto Martin.

He started out designing solar projects in California and then moved to Philadelphia, where he worked as an associate at the Philadelphia architecture firms of Jacobs/Wyper and Wallace Roberts & Todd, then as a partner in Susan Maxman & Partners in 1996. “At each firm, he sought to imbue the principles of sustainable design into all that he did,” his family said in a remembrance. In 2006, Muscoe started his own firm, M2 Architecture, so he could focus on cutting-edge green design. Lately, he had been working on a Living Building Challenge project for the Alice Ferguson Foundation in Maryland.

Read on at <http://archrecord.construction.com/yb/ar/article.aspx?story_id=id:lG4dyFGcB3KQpn7zU4zpSoaNcGNjhOccbiSyqSBiiRzHwITuPs8uFztNIIJ6m9-6>. 🐾



One of Muscoe's Net-Zero-Energy projects, Hard Bargain Farm—Accokeek, MD

Image: Muscoe Martin

SBSE CALENDAR

2015

- Mar 30–31 Climate Change in the Tropics Conference/Jakarta, Indonesia
- Apr 6–9 ARCC Research Conference/Chicago, IL, United States
- Apr 12–15 SimAUD Spring Simulation Conference/Washington, DC, United States
- May 14–16 AIA Convention/Atlanta, GA, United States
- Jun 14–17 International Building Physics Conference/Torino, Italia
- Jun 16–19 SBSE Retreat: Regions and Localities/Highlands, NC, United States
- Jun 24–26 2015 BTES Conference/Salt Lake City, UT, United States
- Jun 29–Jul 3 Int'l Making Cities Livable Conference/Bristol, England
- Jul 28–30 ASES Solar 2015 Conference/State College, PA, United States
- Sep 9–11 PLEA2015/Bologna, Italy
- Sep 10–12 Architecture and Resilience on a Human Scale/Sheffield, England
- Oct 18–21 Behavior, Energy & Climate Change Conference/Sacramento CA, United States
- Oct 28–31 PLDC 2015 Conference/Roma, Italia
- Nov 8–12 ISES Solar World Congress 2015/Daegu, Korea

2016

- Mar 2–3 Residential Bldg Design and Construction Conf/State College, PA, United States 🐾

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OUR 2CENTS
MUSCOE MAIL