

ANSWERING

BEYOND IMAGINATION: THE ST. OLAF CAMPAIGN FOR THE FUTURE OF MATH + SCIENCE

A SHORTAGE OF MATH + SCIENCE STUDENTS IN THE UNITED STATES BLUNTS OUR NATION'S ABILITY TO COMPETE GLOBALLY. ST. OLAF IS RESPONDING WITH AN EXPANSIVE NEW FACILITY DESIGNED TO ENHANCE OUR NATIONALLY RENOWNED MATH + SCIENCE PROGRAMS.

BY SCOTT A. BRIGGS '88

THE CALL

TO DISCOVER HOW SCIENCE INCREASINGLY TOUCHES OUR EVERYDAY lives, just open a newspaper. Or, perhaps more appropriately, check the Web through your wireless network or download a podcast to your MP3 player. We're engaged in debates over global warming and stem cell research. We're seeking new energy sources. We're celebrating medical breakthroughs while we monitor avian flu outbreaks and strive to combat a devastating global AIDS epidemic.

Read, watch or listen long enough, and you'll likely encounter another story too: The United States is facing a potential crisis. The need for scientific and engineering professionals is on the rise, yet the number of young Americans entering the job market with appropriate skills isn't keeping up with demand. Our country ranks 17th among the world's nations for the proportion of students who earn science degrees. A generation ago, we ranked third.

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This digital rendering of the new Science Complex shows how it will look when seen from the north side of Old Main. The complex will include a 180,000-square-foot building on the site currently occupied by Flaten Hall, plus 23,000 square feet of renovated space in the existing Old Music Hall and a link between these two buildings, carrying the sciences at St. Olaf deep into the 21st century. RENDERINGS COURTESY OF HOLABIRD & ROOT ARCHITECTS

Meanwhile, many countries, including China, India, Singapore and South Korea, are bolstering scientific achievement within their borders at a blistering pace. As the world's people and their economies become more tightly intertwined, institutions such as the National Academy of Sciences and individuals including *New York Times* columnist Thomas L. Friedman, author of *The World Is Flat*, have concluded that the United States must accelerate its scientific and technological progress or risk losing competitive advantages in the global marketplace.

St. Olaf College is well positioned to answer the call. Upwards of 40 percent of our students graduate with a major or concentration in mathematics or the sciences, and the college has a well-established track record of distinguished programs in these academic disciplines. In Minnesota, only the University of Minnesota — an institution with an undergraduate population 10 times that of St. Olaf — grants more bachelor's degrees in math, statistics and the physical sciences. Among the country's baccalaureate liberal arts colleges, St. Olaf ranks first in the number of math and statistics majors who go on to earn Ph.D.s. The college also ranks fourth for medical sciences and sixth for chemistry, physics and the life sciences. Finally, St. Olaf is consistently included within elite groups of grant recipients rewarded for excellence in scientific research.

Those who recognize St. Olaf's success often cite several contributing factors: outstanding science and mathematics faculty; the college's commitment to innovative, contemporary teaching methods; abundant undergraduate research opportunities; a liberal arts curriculum that prepares students to apply their scientific knowledge within various academic and industrial settings; and a grounding in strong values, which produces graduates who consider how scientific possibilities coexist with ethical standards and relate to social need.

Now, to carry its renowned programs deep into the 21st century, St. Olaf looks to add one crucial component: a new Science Complex. Plans are underway to build a state-of-the-art facility that will support modern education practices and ensure that St. Olaf continues to draw students and faculty who want to teach, learn and practice cutting-edge science in a world-class undergraduate academic environment.

"The new Science Complex will be more than just a beautiful new building with the latest in equipment," says St. Olaf President David R. Anderson '74. "It has been carefully designed by our math and science faculty around our curriculum and the way we teach at St. Olaf today. It will promote the kind of active, interdisciplinary learning —

ST. OLAF RANKS FIRST AMONG THE NATION'S BACCALAUREATE LIBERAL ARTS COLLEGES IN THE NUMBER OF MATH + STATISTICS MAJORS WHO GO ON TO EARN DOCTORAL DEGREES.

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— PRESIDENT DAVID R. ANDERSON '74

among science and non-science majors alike — that will keep St. Olaf a national leader in science education."

St. Olaf's new Science Complex will include a newly constructed, 180,000-square-foot building on land now occupied by Flaten Hall, Old Main Annex and Manitou Cottage as well as 14,000 square feet of renovated space in Old Music Hall and 9,000 square feet of space in a connecting link between the new building and Old Music Hall. Upon completion, the facility will house 26 teaching laboratories, more than two dozen classrooms and seminar rooms of varying sizes and layout, five computer rooms, 17,000 square feet of research space and an 8,000-square-foot Science Library providing dedicated gathering and study spaces, along with access to books, journals and robust computer-based databanks.

A TWO-PHASED APPROACH

The St. Olaf Board of Regents has firmly backed the Science Complex project, first by endorsing the college's strategic plan, which declares the new facility a top priority, and also by contributing personally to the fundraising campaign, Beyond Imagination: The St. Olaf Campaign for the Future of Math + Science.

"We needed to step up and assure those who have given so much to the college that we are now willing to make a real stretch to build a new Science Complex," says St. Olaf Regent and campaign co-chair Ruth Hustad '55 who, with husband Wally Hustad '55, owns Hustad Development Corp. and Hustad Real Estate. "Now we must get this message out to alumni and friends of the college. We need every student and alumnus to contribute."

With science and technology playing an increasingly visible role in daily life, it is critical that St. Olaf remain on the cutting edge of modern science education and conduct its programs in 21st-century spaces.

"The new Science Complex will help us continue to attract exceptional faculty and students who want to have a broad educational experience and do advanced work in the fields of math and science," says Board of Regents Chair O. Jay Tomson '58. "Having this facility will help solidify our position among liberal arts colleges as a leader in science education."

To cover the projected cost, the college will conduct the campaign in two phases. For the first phase, plans call for generating \$53.5 million — enough to complete the new building exteriors and about 65 percent of the new portion's



interior work, followed by the renovation of Old Music Hall. St. Olaf's immediate goal is to raise its first \$22 million by January 2007. That would allow groundbreaking to take place shortly thereafter, and students could begin using the facility as early as fall 2008. During phase two of the campaign, St. Olaf will seek \$12 million. The second-phase fundraising will pay for the final 35 percent of the Science Complex's interior work.

"There are some real advantages to breaking ground on this facility in early 2007," says Ron Bagnall, St. Olaf's interim vice president for advancement. "Construction material prices are running far ahead of general inflation, due to worldwide demand and the impact of petroleum costs. Getting started on the building as early as possible helps ensure that we make the best use of our resources."

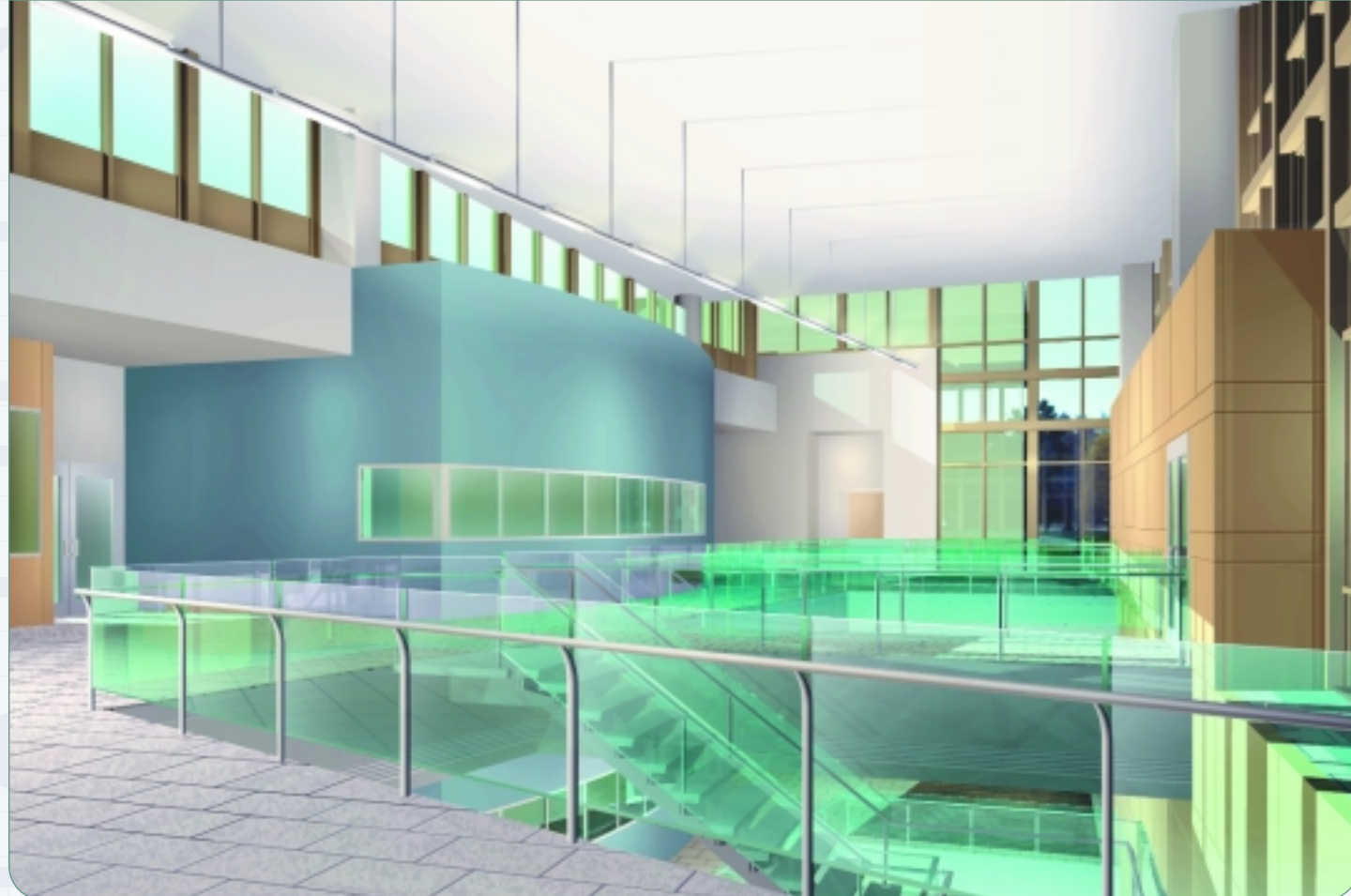
The decision to replace St. Olaf's existing Science Center was driven, in part, by a need for space. "We have roughly 80 percent more math and science majors now than we had in 1968, when the current building was constructed," says science campaign co-chair and St. Olaf Regent John Benson, a retired 3M executive. "So we're cramped. But we

"Statisticians have to be in the trenches with other researchers so they can get at what can and cannot be measured," says Associate Professor of Statistics Julie Legler (above right, with Janine Wetzel '05) who also is director of the St. Olaf Center for Interdisciplinary Research. PHOTO BY BILL KELLEY

don't just need *more* space. We also need different kinds of space. A lot of that has to do with how math and science has changed."

"To sustain our excellence, we must have facilities that match the quality of our programs and professors," Bagnall notes. "We can't simply rest on our past laurels. Other universities and colleges have seen the need to upgrade their science facilities. In many cases, they've already done so. It's a matter of maintaining quality for future generations."

Since the teaching of science and mathematics has become progressively interactive, new classrooms and lab spaces will encourage interdisciplinary work. One area of the building will include both psychology and biology, to

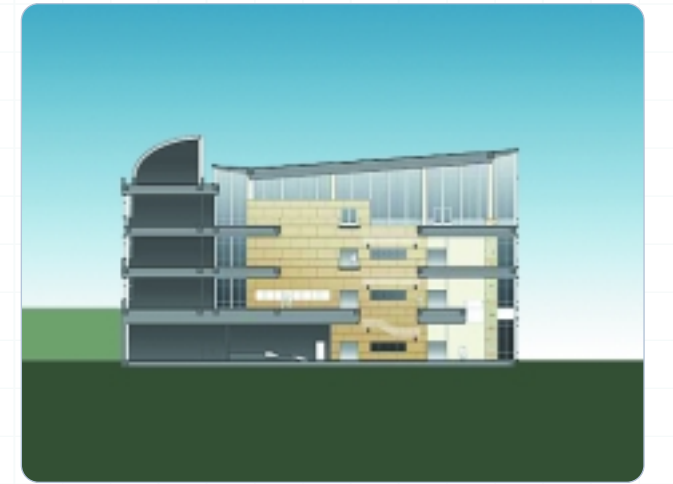


cultivate collaboration in the field of neuroscience. Another area will blend biology and chemistry faculty, who can team to work in the biomolecular disciplines.

Dave Van Wylen '80, professor of biology and associate dean for natural sciences and mathematics, says spreading study across academic disciplines has become a natural and necessary practice among modern scientific thinkers. The leader of a team charged with guiding the Science Complex's design, Van Wylen cites several hybrid fields, including neuroscience, bioinformatics and biophysical chemistry, as areas in which much of today's most innovative and important scientific work is occurring.

St. Olaf science faculty members already collaborate, Van Wylen says, "but when people are physically located together, they tend to work together even more." The same holds true for students, says Ian Vaagenes '07, a biology major with a concentration in neuroscience and one of two student representatives on the Science Complex design team.

"One can imagine physics students learning about voltage and current by studying neurons — electrically active brain cells — with biology majors," says Vaagenes, who is conducting research with Psychology Professor Shelly Dickinson on the neuroscience of alcohol addiction. "The lines that differentiate the disciplines of chemistry, biology



Many of the teaching labs will have windows that look out into a three-story atrium (above, and opposite page, top) or into the building's halls and common areas (opposite, bottom). This will help blur the lines between disciplines and prepare students for the kinds of interdisciplinary environments they may encounter as future scientists.



The Science Complex will include 26 teaching labs, 17,000 square feet of student-faculty research space, seven tiered classrooms, 11 flat-floored classrooms, eight seminar-style rooms, five dedicated computational rooms, an 8,000-square-foot Science Library, numerous individual and group study spaces, and many informal gathering spaces designed to extend learning beyond the classroom and laboratory.

Many light-filled gathering places, like the one above, are intended to encourage casual discussions among students, whatever their academic interests.

and physics are getting hazier by the day. The new Science Complex layout acknowledges this fact and prepares students for the interdisciplinary environments they'll encounter as future scientists."

Some of St. Olaf's new labs will accommodate research by more than one department at a time, allowing spontaneous interaction among students from different fields to take place. "That's really important," Van Wylen says. "Collaboration produces good ideas, and those collaborations don't always arise during scheduled time together. Often, they come out when you just walk by and see what someone else is doing, and you say, 'I wonder if...'"

Building planners want student conversations to spill into less formal settings, too. The Science Complex design calls for an assortment of comfortable gathering places. Many will be filled with natural light to encourage lingering. Ian Campbell '07, a math and physics double-major, is researching Antarctic ice dynamics and its role in global climate change with Physics Professor Bob Jacobel and instructors Brian Welch and Rickard Pettersson. He also is part of the design teams for the Science Complex and Science Library. "Many of the teaching labs will have windows that look out into the building's halls and three-story atrium," says Campbell, "so passersby may see — and potentially be intrigued by — what's happening inside."

Powerful technology will be apparent throughout the complex. St. Olaf will outfit many teaching spaces with displays and audio systems for digital multimedia presentations. Dedicated rooms will house nuclear magnetic resonance equipment, specialty microscopes and mass spectrometers. Students will have access to the powerful computational software that science and math professionals

use to tackle sophisticated problems such as the decoding of the human genome.

Finally, says Campbell, “the entire building will be filled with study nooks, both for groups and individuals. There are spaces for those seeking quiet and for those looking for more social study areas. A lot of planning has gone into common areas and into examining how students of all study habits can best utilize the space.”

PRODUCTIVE PLANNING

More than a decade has passed since St. Olaf began planning how a physical structure could best accommodate the educational needs of students preparing for 21st-century scientific careers. The project design team, consisting of faculty, students, campus facilities staff and college administrators, has considered possibilities and set priorities. The college selected an architect, Holabird and Root of Chicago, Illinois, that has designed science facilities for several Midwestern colleges, including the University of St. Thomas in St. Paul, Minnesota. Oscar J. Boldt Construction, which oversaw the building of Buntrock Commons and the Tostrud Center, will serve as general contractor for the Science Complex.

St. Olaf brought the builder and architects into early

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planning stages, so both firms could influence designs. “Often, when contractors look at architectural plans, they have really good ideas,” Van Wylen explains. Boldt has even solicited input from some of its subcontractors.

“If we start talking about mechanical aspects of the building, we have mechanical engineers on hand as well as the people who are going to install the ventilation system,” Van Wylen continues. “When we discuss electrical work, we’ve got electrical engineers, electricians and our own campus facilities staff involved. As the building moves through design phases, it’s constantly being evaluated for cost and functionality as

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Site plans call for a dramatic redesign of the land surrounding the Science Complex on the south-east side of campus. Roads and parking lots that now dominate the space on the west side of Old Main will be replaced by green space.

beyond imagination^x

THE ST. OLAF CAMPAIGN FOR THE FUTURE OF MATH + SCIENCE

THE FACES BEHIND THE CAMPAIGN

BY SCOTT A. BRIGGS '88 · PHOTOGRAPHS BY JOHN DANICIC, JR.

ADVANCES IN SCIENCE AND TECHNOLOGY are changing our world in ways that are nearly “Beyond Imagination.” The professional practice of science has become an intricate discovery process that melds tools and techniques of multiple academic disciplines. St. Olaf graduates, experienced in these collaborative, interdisciplinary and investigative approaches to science and mathematics, must continue to provide ethical leadership while confronting tomorrow’s challenges.

Spearheading the St. Olaf campaign for the future of mathematics and science are campaign co-chairs John Benson and Ruth Hustad '55.

Benson is a retired 3M executive vice president who capped off his career overseeing his company’s business in health-care markets. His relationship with St. Olaf began when his daughter, Kristen Benson MacVey '93, enrolled at the college. Son David Benson '96 followed.

“Through them, my wife, Barbara, and I really came to appreciate and love St. Olaf,” Benson says. “What attracted us initially was the college’s reputation for academic excellence. Having that underpinned by strong values really appealed to Barb and me. St. Olaf lived up to its reputation. We feel our children got outstanding educations, and I think they became lifelong students as a result.”

Benson joined the St. Olaf Board of Regents in 1999. He’s now serving a second term that runs through 2011. In his new role as a fundraising campaign co-chair, he enjoys sharing with others his enthusiasm about St. Olaf.



St. Olaf Regent and campaign co-chair Ruth Hustad '55, with husband Wally Hustad '55. Three of their four children are Oles.

“It’s wonderful to meet with Oles and friends of the college, and to share the story of math and science at St. Olaf,” Benson says. “It’s a fun and easy story to tell, because math and science are so strong at St. Olaf, and the vision for taking this already exceptional program to new heights is so well thought out.”

Hustad, with husband Wally Hustad '55, owns Hustad Development Corp., Hustad Land Co. and Hustad Real Estate. Three of the couple’s four children — Susan Hustad Seeland '78, Wallace Hustad '81 and Kelli Hustad Hueler '81 — are Oles, and their only child not to attend St. Olaf, Elizabeth Hustad Simenstad, married alumnus Mark Simenstad '81.

Hustad, who received a Distinguished Alumni Award in 2001, has an impressive history of supporting St. Olaf. She served on her class reunion committees in 1990, 1995 and 2000 and also co-chaired her 2000 reunion gift committee. A St. Olaf regent since 2001, she believes that the new Science Complex can drum up support among alumni and currently enrolled students as well.

“I’d like to challenge the students at St. Olaf this fall to create their own campaign for the new Science Complex,” she says. “It’s a wonderful way to start giving back, and it could have a phenomenal impact on the college. If students get into a pattern of giving and sharing now, our alumni giving could get so much higher each year hereafter. I’d be happy to help the student body get this launched.” 🦉



St. Olaf Regent and campaign co-chair John Benson and his wife, Barbara, are parents of two St. Olaf graduates.

well as aesthetics. You save some money because it's a more efficient process. And you get a better building."

The college will more than double the square footage it now allots to scientific research. The expansion reflects what Benson describes as an increasingly important element of the undergraduate educational experience.

"To have a leading undergraduate math and science education program, you need to offer independent student research opportunities," Benson says. "When I was a chemical engineering student at the University of Minnesota in 1966, just a handful of us had a chance to do independent research as undergraduates. But that's no longer

another valuable educational environment.

"Perhaps the most impressive aspect of the Science Complex design process has been the commitment to create a building that functions as a focal point of the college and as a learning tool itself," says Vaagenes, the biology student. "The green roof exemplifies that."

"Students will be able to examine the relative advantages of different types of plants, soils and fertilizers in helping the

"THIS BUILDING WILL INSPIRE STUDENTS, FACULTY AND STAFF TO THINK ABOUT HOW TEACHING AND LEARNING CAN HAVE ENVIRONMENTAL IMPACTS."

— CHARLES UMBANHOWAR JR., PROFESSOR OF BIOLOGY

good enough. I'm astounded by the research conducted by St. Olaf students. In my day, their work would have been master's-level study."

The Science Complex also will serve as a flagship example of St. Olaf's ongoing commitment to sustainable buildings and the concept of "green science," building upon years of groundwork already laid by faculty, staff and students. The college will use construction materials made from recycled content wherever possible. Chemistry labs have been designed to minimize the number of fume hoods and the production of toxic chemicals.

"This building will inspire students, faculty and staff to think about how teaching and learning can have environmental impacts," says Charles Umbanhowar Jr., professor of biology and environmental studies and leader of the Science Complex green team. "Our students will see what environmentally friendly practices are possible in a building. Then they'll apply those practices in their own homes and workplaces after they graduate."

The complex will be topped off — literally — with a green roof. A collection of plantings in containers will cover much of the structure's upper surface. The green roof will improve the facility's insulation, reduce storm-water runoff and create

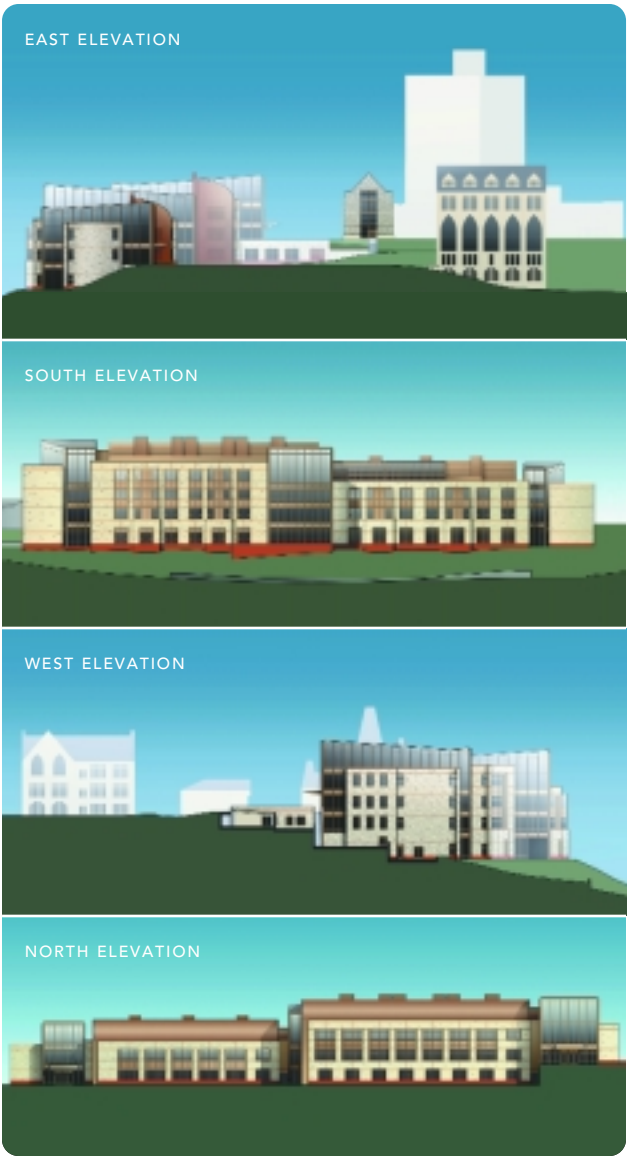
green roof absorb water and nutrients," Umbanhowar explains. "This space will allow students to experiment with new and existing green technologies."

The Science Complex will transform the southeast side of campus.

Roads and parking lots that now dominate the space on the west side of Old Main will be replaced by green space. The entrance to campus via the new road in front of Old Main — the door that looks out over the Northfield community — brings back a more historic entrance to The Hill. The new road also creates a safer, more direct passage to the west and south sides of campus.

The new facility ultimately will produce benefits that may impact society and even the world. "As new medical miracles emerge through better science and math education, we all will benefit from the outstanding education a new Science Complex will afford our students who go on to graduate school," Hustad says.

With its new Science Complex, St. Olaf can influence key decisions requiring both scientific expertise and social awareness, Benson says.



The new Science Complex will more than double the square footage that the college now allots to scientific research, and the facility will serve as a flagship example of St. Olaf's ongoing commitment to sustainable buildings.

"I'm an engineer, and I have strong feelings about the importance of math and science in our world today," he explains. "We must send graduates out with a strong science education that is underpinned by the kinds of values represented by St. Olaf. Our math and science programs achieve the college's mission of educating young people who are dedicated to a life of worth and service. It's math and science with a conscience." 🦉

Scott A. Briggs '88 is a Twin Cities-based freelance writer.