



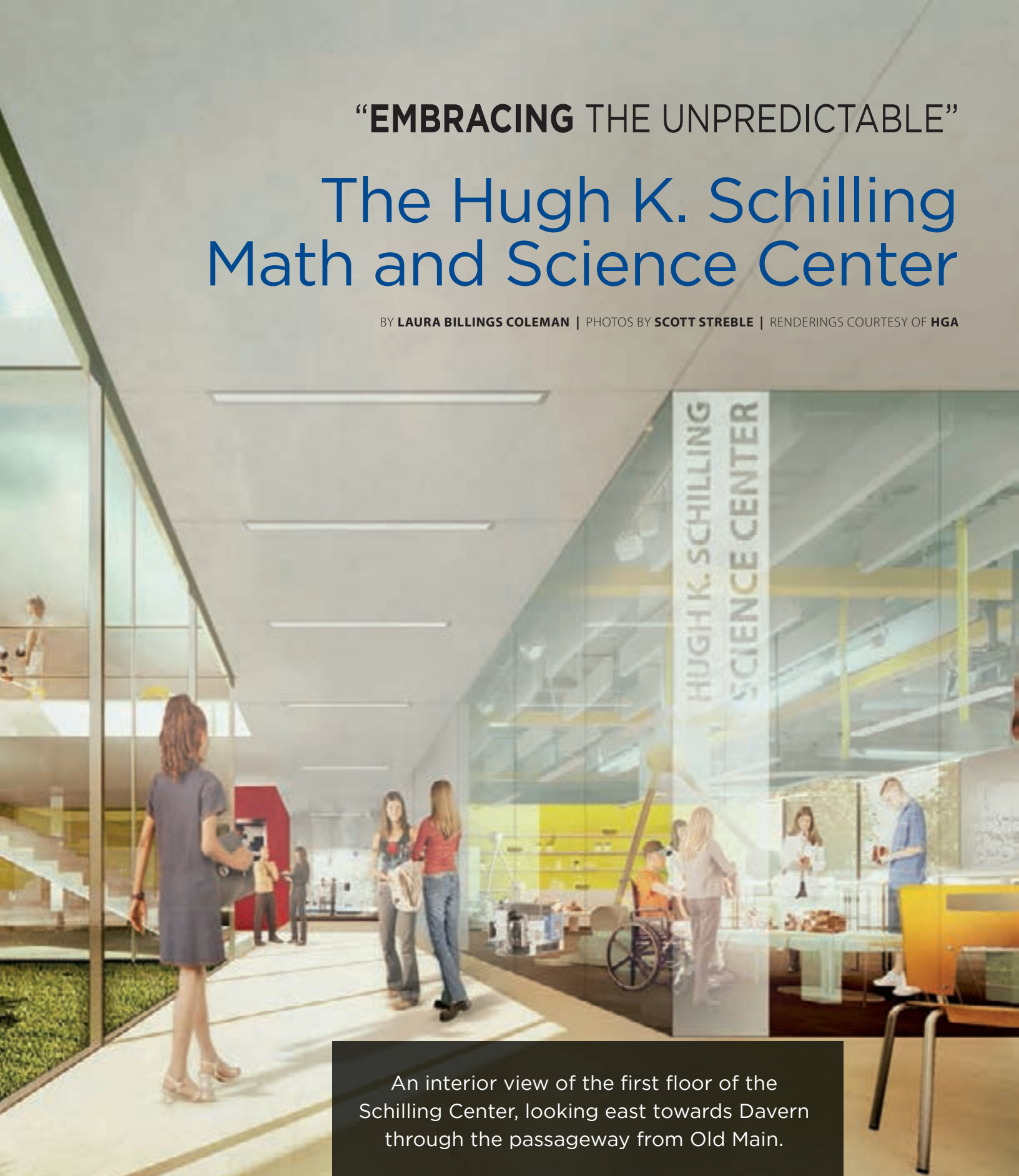
In September 2016, SPA announced the largest single philanthropic donation ever received by the school or by any independent school in Minnesota: a \$15 million gift from Hugh K. Schilling '43.

The gift will help fund the construction of the Hugh K. Schilling Math and Science Center, a reflection of the transformative role of math, science, and technology at SPA.

“EMBRACING THE UNPREDICTABLE”

The Hugh K. Schilling Math and Science Center

BY LAURA BILLINGS COLEMAN | PHOTOS BY SCOTT STREBLE | RENDERINGS COURTESY OF HGA



An interior view of the first floor of the Schilling Center, looking east towards Davern through the passageway from Old Main.

SPA's Class of 2017 began kindergarten in 2004, the same year that a group of students at Harvard launched a website they called "the Facebook,"—now, the world's most popular social media platform. A few years later, smart phones hit the market, putting powerful handheld computers into the pockets of half of the world's population in less time than it took those seniors to move from multiplication tables to algebra. As the Class of 2017 now looks forward to their final months at SPA, the driverless concept cars that seemed like science-fiction fantasy in the early 2000s are expected to be rolling into full production by the time they graduate from college.

"We're experiencing nothing short of a technological and scientific revolution," says Head of School Bryn Roberts, who calls this era "the age of acceleration": "The speed with which innovation is now taking place sometimes seems abstract, but for those of us in education, that acceleration is the timetable by which we must gauge our evolution as a school."

Roberts notes that when today's high school students were born, the cost of mapping a single human genome was \$95 million—a technological price tag that's fallen to \$1,000 in less than two decades. "What that means for schools like SPA is that experiences that used to be reserved for graduate school or very advanced fields of scientific study can now be introduced to students who are in Upper or even Middle School," says Roberts. "Our math and science curricula at SPA have always encouraged students to think and work like scientists, but with the acceleration of technology and scientific discovery, the demands are very different now," Roberts says. "In the future, we need to provide the facilities to support that demand."

That vision for the future is the driving force behind the Hugh K. Schilling Math and Science Center, the nearly 40,000 square foot math and science wing that will be built on the northeast corner of SPA's Randolph Campus. The new facility is primarily funded by a \$15 million gift to SPA from Hugh K. Schilling '43, which was announced in September 2016. Designed by HGA Architects and Engineers, the award-winning architectural firm that also designed the Huss Center for the Performing Arts, the Schilling Center will be built along Davern Street and connected to Old Main through a stunning two-story glass passageway. It will house SPA's Upper School math, science, computer science, and engineering courses in expansive and flexible spaces that will accommodate laboratory work, collaborative learning, design thinking projects, and independent study.

Most important to Roberts is that the Schilling Center will give SPA room to grow and adapt to technological innovations that aren't even on the horizon. "This ability to evolve with technology is the most important element of the new space," says Roberts. "Take computing as just one example: we've moved from desktops to laptops to tablets more powerful than anything anyone could have imagined twenty years ago," he notes. "Our challenge with this project is not just supporting what our students and teachers are working on now, but what they will be working on fifteen, twenty, or thirty years down the road." In that unknown future, Roberts says, technology "will help to solve problems we don't even know



about yet, with new instruments yet to be invented. This wing will give us the space SPA needs to adapt and change to accommodate that future. The promise of the Schilling Center is not just what we'll do today—it's what it will make possible tomorrow."

The construction of the Schilling Center will set in motion a complete interior renovation of Old Main, the original St. Paul Academy building built in 1916 and its 1970s-era additions. Once the Schilling Center is complete, SPA plans to completely renovate the rest of the Upper School, with an emphasis on humanities classrooms and learning spaces. But the school knew that the construction of the Schilling Center needed to come first, says Timothy Welsh, President of SPA's Board of Trustees, and a parent of three current SPA students.

"We're in an educational world where math and science, which have always been critical, are only going to become more front and center," Welsh says. "The ability to analyze, sort through, and solve problems with the wealth of information that students now have available to them is an incredibly important set of intellectual capabilities that will be required in the future. I believe that the math and science training our students will be able to build on here, combined with the extraordinary liberal arts education they also receive at SPA, will allow our students to be the leaders that all of us want them to be in the decades ahead."



The exterior of the Schilling Center, facing southwest from the corner of Randolph and Davern.

FLEXIBLE SPACES FOR “WHAT COMES NEXT”

Imagining a new math and science facility for SPA has been a process years in the making—one that Roberts says started before he even was installed as Head at SPA in 2006. During Roberts’ first meeting with Hugh K. Schilling, which took place after he had accepted the job but before his tenure officially began, Schilling asked him what he would be doing to bring SPA’s math and science curriculum into the 21st century—a story Schilling shared with students during the assembly at which his gift was announced in September [read more about *Hugh Schilling* in our profile on page 30—Ed.].

For Roberts, that initial conversation was the beginning of a years-long process of preparing the groundwork for not just a new building, but a new approach to the Upper School experience at SPA. New faculty, the new block schedule, and fundamental shifts in the curriculum—including more science electives and independent research opportunities—were all necessary pieces to have in place well before the idea of building anything was on the table.

“This is about so much more than a building—it’s really about the curriculum, the teachers, and the students,” says Roberts, who asked the Upper School math and science faculty to start visiting state-of-the-art labs and learning centers and creating a wish list of features they’d want to see in future classrooms at the same time he was

talking with Schilling about funding a new facility. “The faculty have played a fundamental role in shaping the designing of the Schilling Center.” Roberts says. “We wanted to empower our faculty and have them assume intellectual and personal responsibility for what a new space might encompass. They’re the most knowledgeable, they know what our strengths and weaknesses are, and where we need to evolve and grow.”

Karissa Baker, who chairs the Department of Science, helped guide the process of gathering her faculty’s feedback about what shape the new facility might take. Baker says the science faculty knew they needed larger classrooms with flexible areas for collaborative work and quiet study. Yet with technological advances that have made everything from robots to 3-D printers easily accessible, science teachers could also see SPA would need flexible spaces for what comes next. “That’s one of the reasons we started thinking about having these open-ended maker space labs in the Schilling Center, because we may someday need to accommodate equipment that’s not even on the market yet,” Baker says.

The finished design of the new building will create 14,000 square feet of additional space for math and science programs, including the addition of four flexible study spaces, five new hybrid labs, six project rooms for student-led small-group collaboration, seven small study rooms, and a grow room for plant specimens. The new learning suites—which will include both laboratory and

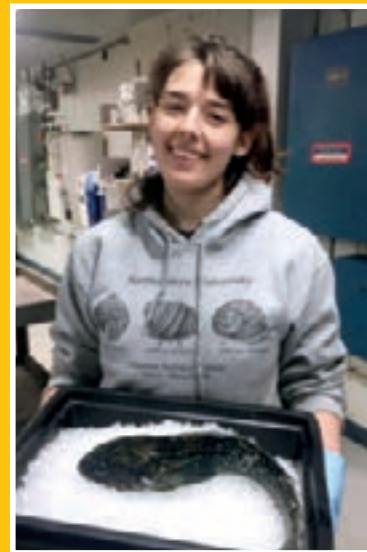


classroom space—will provide 40 percent more room for hands-on, experiential work. “Creating space for collaborative groups and problem-solving was really on the forefront of our thinking,” says Upper School Principal Chris Hughes. “That’s really become an emphasis in industry and business, and we now have a slate of new electives that will be immeasurably better-served in these new classroom spaces.”

SPA’s mathematics department was also asked to provide ideas about what a new math space might entail, with an eye towards preserving the elements of SPA’s math culture that students and faculty value. As an example, Math Department chair Bill Boulger points to the “math area”—a common study space where students often gather to get help from both teachers and peers—as a feature worth replicating in a new space. “That common math area is something that already works well, so we wanted to build on that,” says Boulger. “But we also knew we needed larger classrooms that will give teachers more flexibility” to work quietly in one-on-one sessions, or to regroup students for more collaborative study. In the new addition, SPA’s math department will gain two new classrooms, and more than double its total footprint.

Embracing the Unpredictable: Laura Goetz '14

Laura Goetz graduated from SPA in 2014 and is now studying marine biology at Northeastern University in Boston. From May to November 2016, Laura lived and worked at Palmer Station, Antarctica, doing a research co-op with Professor William Detrich from Northeastern, whose work takes a comparative approach to adaptational evolutionary biology. During Laura’s research co-op, she worked with Professor Detrich on laboratory experiments with the Antarctic icefish, looking at the impact of water temperature on fish development.



Laura in the lab at Palmer Station, Antarctica

Now back at Northeastern, Laura spoke with *SPA Magazine* about her experience in Antarctica, and how SPA prepared her for the rigorous science she’s now performing in college.



Another view of the passageway between Old Main and the Schilling Center, with the school's main entrance off Davern to the left.

SPA Magazine: Describe your work in Antarctica with Professor Detrich.

Laura Goetz: The main project focused on raising icefish embryos, as part of Professor Detrich's overall research on this specific family of notothenioids—the suborder that Antarctic icefish belong to. They are white-blooded fish, meaning that they have adapted to not having hemoglobin in their blood. They survive by a variety of adaptations coupled with the high oxygen content of the Southern Ocean waters. We raised the embryos in different temperatures and also raised a somewhat closely-related species with red blood (from a different family of icefish) to see differences in development based on water temperature. Other projects used in situ hybridization to analyze their development and typical dissections of adult fish to collect samples for other laboratory projects.

SM: Has science always been your academic passion?

LG: Not at all! Before my junior year biology class at SPA, I always envisioned myself pursuing a career in the arts. But Mr. Nelson [*Larry Nelson, who taught science in the Upper School until retiring in 2012—Ed.*] really inspired a passion for biology in me that has stayed with me ever since. The way he organized the class really helped me figure out how to best absorb scientific data, and he really encouraged me to feel good about my abilities in science—something I was always unsure about.

I started at SPA in Kindergarten, and there are so many teachers who had an impact on me, even when I was small.

I remember my Lower School science teacher, Mr. Rongstad, or not only making science exciting and fun, but for encouraging all of us to try. I will never forget the legendary game during assemblies called “Will It Float?” This was essentially Mr. Rongstad on stage with a giant tub of water and a bunch of random objects, and he would sing a song that basically went, “will it float, will it float, will it float?” He would ask the audience if we thought the object would float or sink, then he would throw it into the water and we'd all cheer. To this day, the “will it float” song pops into my head when I'm washing beakers in the lab.

SM: Aside from the “will it float” song, are there any particular experiences at SPA that informed your pursuit of science in college?

LG: I loved my senior-year Advanced Science Research course at SPA. It really helped me see if conducting research was what I actually wanted to do. It was a lot of work: I had to develop a research question on my own, and figure out the best way to conduct research to answer my question. My teacher was Ms. Baker [*Karissa Baker, Chair of SPA's Science Department—Ed.*] and she was always so encouraging and knowledgeable, and she treated bumps along the road as learning experiences and not “mistakes.” It was a great course, and a great environment in which to learn that you don't make huge findings every day during scientific research, and the findings you do make can lead you to unexpected conclusions. ♦

COMPUTER SCIENCE: “THE NEW LITERACY”

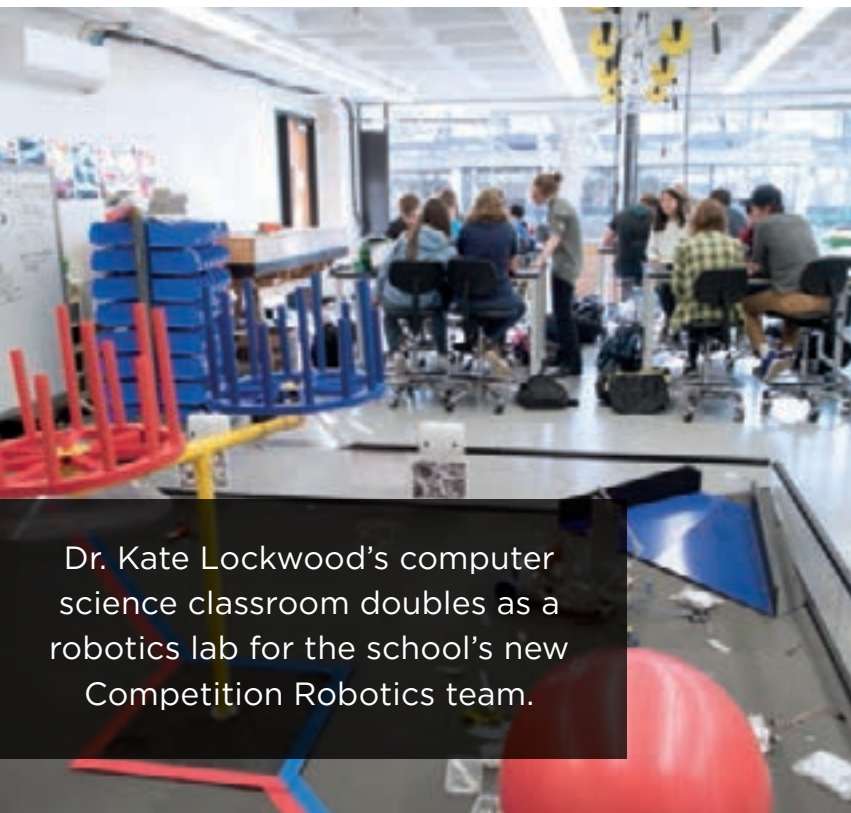
The Schilling Center will open to students at the start of the 2018-19 school year—not a moment too soon for Dr. Kate Lockwood, who arrived at SPA over the summer of 2016 to take on the new role of Director of Computer Science and Engineering for the Upper School. Lockwood’s work over the summer included developing three new courses for the fall focusing on technology, robotics, and engineering. “Coding and computational skills are becoming ‘the new literacy,’” says Lockwood. “Technology is woven into nearly everything we do, every day, so learning this language and understanding how to apply these tools creatively to solve problems is a huge benefit to students in nearly any discipline.”

With a Ph.D. in Computer Science from Northwestern University, Lockwood began her academic career as an assistant professor in California’s university system, and more recently at the University of St. Thomas in St. Paul. But her new role working with SPA’s Upper School mirrors a growing trend in educational thinking, as experts from the late Steve Jobs to the National Science Foundation advocate for computer science to be viewed as a new liberal art,



a discipline that students should begin to master long before they reach college.

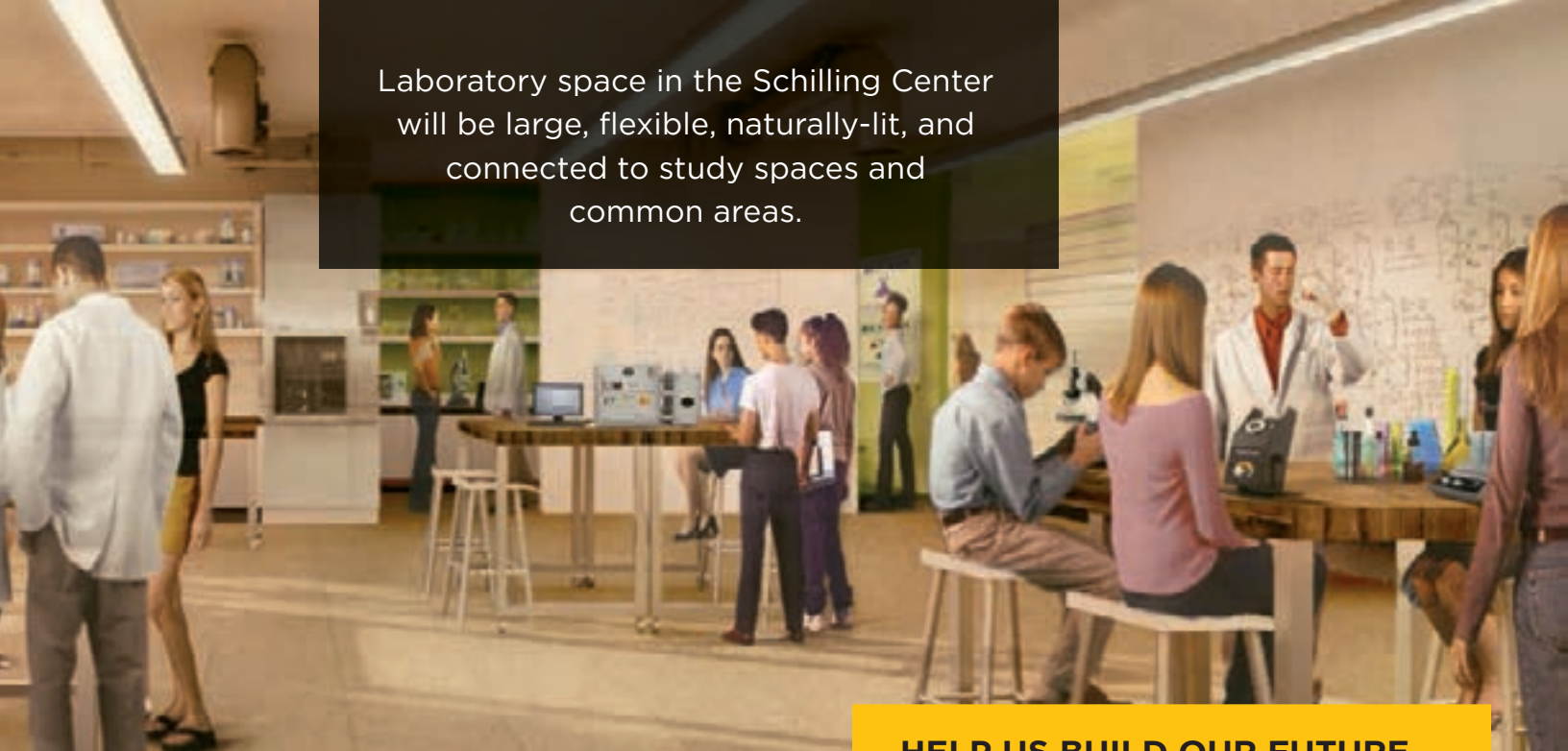
“Being able to break problems down into small parts, iterative problem-solving, and testing solutions to see if they work are all computer science skills that are broadly applicable in a lot of disciplines,” Lockwood says. “That’s why you’re starting to see a big push in education toward introducing these opportunities to students much earlier in their academic careers.” SPA students have been quick to embrace the new offerings, filling up all four sections of Lockwood’s Introduction to Computer Science course. She’s also teaching a section of Computer Science Principles and a Robotics course, the latter of which serves as training ground for SPA’s new Competition Robotics team, which began competing in fall 2016 and took fifth in the Minnesota State Robotics Competition in its debut year.



Dr. Kate Lockwood’s computer science classroom doubles as a robotics lab for the school’s new Competition Robotics team.

“BUILDING FUTURES,” ONE PHASE AT A TIME

The Schilling Center marks the second phase of SPA’s “Building Futures” campaign, a transformational capital improvement effort that began with the Huss Center for the Performing Arts, unveiled in the fall of 2015. Hughes says that watching how students have made themselves at home in the Huss Center has



Laboratory space in the Schilling Center will be large, flexible, naturally-lit, and connected to study spaces and common areas.

offered some useful lessons that have already helped shape the design of the Schilling Center. “We know we need lots of undefined spaces where students can spill out of classrooms and work on small projects, or just hang out,” he says. “Our students now have more down time in their class schedule, so we’ve had to consistently keep adding furniture to these areas because there’s so much demand for it.”

The Huss Center has also demonstrated the value of creating inspiring spaces for learning and gathering as a community. “We’ve seen that there’s something about sitting in that auditorium that asks you to raise the bar even higher, and that’s a very clear message that students, faculty and the community all respond to when we create a beautiful shared space,” Hughes says. “Your aspirations for what should go on in this space actually rises. Like the Huss Center, this will be a building that says very clearly, this is a place where academics and the life of the mind is taken very seriously.”

Hughes has worked closely with the teams from HGA and McGough Construction (the construction company that also built the Huss Center) to create a construction timeline that aligns with SPA’s academic calendar and will disrupt life at school the least. The east wing addition, which currently houses Upper School World Language and History classes, will be demolished over spring break of 2017, and 12,000 square feet of portable classrooms will provide comfortable classroom space for those classes that will be temporarily displaced by the construction.

HELP US BUILD OUR FUTURE

To contribute to the construction of the Hugh K. Schilling Math and Science Center, please contact Dorothy Goldie, Director of Institutional Advancement, at dgoldie@spa.edu or 651-696-1422.

“This is going to be an astounding building, but I really do hope that the message students also get from this effort is the extraordinary kindness and generosity of Mr. Schilling, and that they see him as a role model who cares about their community,” says Welsh. Schilling’s gift—the largest private contribution ever made to an independent school in Minnesota—also demonstrates a growing confidence in SPA’s capacity to take on transformative projects. “Before the Huss Center, I’m not sure people were so sure something this aspirational could be achieved,” Welsh says. “Now that we’ve done it, and it’s so beautiful and is such a benefit to the school, it proves that we can succeed at creating something even bigger.”

Roberts says he believes the same lessons about boldness, innovation, and risk-taking will soon play out in the classrooms of the new Hugh K. Schilling Math and Science Center. “When students leave SPA, we want them to embrace the technological and scientific challenges that are right on the horizon,” he says. “When they leave here, we want them to be able to embrace the unpredictable.” ♦

Embracing the Unpredictable:
Hugh K. Schilling '43



Hugh Schilling addressed the Upper School on September 13, 2016, when his \$15 million gift was announced to the SPA community. During his remarks, he referenced his own iPhone as an example of the need for continued innovation in math, science, engineering, and technology. After his talk, students and faculty lined up to shake Mr. Schilling's hand and thank him for his gift (pictured left).

“How are you planning to bring St. Paul Academy and Summit School into the 21st century and the technology age?” That was the question Hugh K. Schilling, class of ’43, put to Bryn Roberts when the pair met for the first time. It was 2006, and Roberts had embarked on a listening tour with St. Paul Academy and Summit School’s alumni/ae prior to beginning his new role as Head of School. It was a question not easily answered, and one the two have returned to in frequent conversations during Roberts’ tenure as Head. And last spring, Roberts presented him with the answer: A hard-bound prospectus of the Hugh K. Schilling Math and Science Center, the nearly 40,000 square-foot wing designed especially for SPA’s rapidly evolving Upper School programs in science, math, computer science, and engineering.

“It was a little pricier than we expected,” Schilling says about the \$15 million Math and Science Center that will soon bear his name. “But we’re awfully glad to be able to do it.”

Schilling’s gift is the largest individual donation ever made to one of Minnesota’s independent schools, and the latest in a long history of philanthropic commitments Hugh and his wife Peggy, who graduated from the Summit School in 1943 and passed away in early February 2017, have made to benefit their hometown of St. Paul. Long-time supporters of Junior Achievement, Presbyterian Homes, and cultural institutions like the Como Park Zoo and Conservatory, the couple provided the funding for the new Schilling Amphitheater at the Minnesota State Fair’s recently renovated west end. The couple also funded the Schilling Family Plaza, the native plant landscape garden that frames the entrance of the Huss Center for the Performing Arts at SPA.

The Hugh K. Schilling Center for Math and Science is a legacy Schilling leaves to SPA for two reasons: an appreciation for the education he received at St. Paul Academy, and a desire to launch the next generation of technological innovators in the region. “I got a great education, no question,” he says, “and you want to do what you can to make sure this next generation graduates and goes on to college with the kinds of experiences that will be relevant in the real world.”

Schilling himself graduated from SPA at the height of World War II, joining the U.S. Air Force and serving on a B29 bomber squadron based out of Saipan. “When we weren’t flying, we played poker until somebody had all the money and the

game broke up and you played the next payday,” he recalls. “I was fortunate at poker, and every pay day, I’d send about 80 percent of my winnings home in a money order.”

By 1951, newly married, and with a baby on the way, Schilling turned down a job transfer with a large company in Chicago, and decided it was time “to be my own boss,” persuading two partners to help him purchase Horton, Inc., a clutch manufacturing firm with a customer list and a few active patents that was about to be liquidated. “I didn’t know a slipping clutch from a hole in the wall, but when you’ve got your last buck in it, you start learning,” he says. By listening closely to the business needs of Horton’s manufacturing customers, the company began generating new problem-solving technology, including fan clutches for diesel engines.

The energy-saving design put the company on the rise during the energy crisis of the 1970s, becoming standard equipment by the 1980s. Today, the family-owned, professionally-managed firm has three plants—two in the U.S. and one in Germany—with a line of manufacturing and cooling products that are sold in more than 80 countries.

That willingness to change, evolve, and adapt to new problems is a source of pride for Schilling, who wants the teaching and learning in the Schilling Center to follow that same model. “The business

today is nothing like what we started in,” says Schilling, who prides himself on being a technological “early adopter”: he delights in showing off the Apple watch on his wrist and the iPhone in his pocket, both of which regulate and amplify his hearing aid. “This is the twenty-first century. And the rate of change is only going to pick up.”

Bryn Roberts says that making sure SPA’s students are ready for what comes next has been a life-long passion for Schilling, who funded a math department chairmanship in honor of his late brother Paul, class of ’41, and co-chaired a capital campaign that helped merge St. Paul Academy with the Summit School in the 1970s. “He believes that you, those of you sitting in this auditorium, are the keys to a better future,” Roberts told SPA students gathered for the September 2016 assembly announcing the \$15 million gift. “In funding this building, and the programs designed by our faculty, he’s demonstrating enormous confidence in you—faith in your ability, faith in your power to innovate, and faith in your imagination. ♦

An outstanding education,
a lifetime of industrial innovation,
and good luck at cards
all played a hand in
Hugh K. Schilling’s
\$15 million gift to SPA,
the largest private contribution
ever made to one of
Minnesota’s independent schools.

Sam McVeety '04

A \$25,000 gift from Sam McVeety, now an engineer at Google, will keep Bill Boulger's spirit of inquiry alive in the next generation of SPA faculty

With nearly fifty years of teaching tenure, and a track record of success with thousands of students, it would be easy for SPA mathematics teacher Bill Boulger to fall back on familiar lesson plans. "But like so many great faculty members at SPA, he's always learning himself, and looking for ways to tweak the experience and keep it fresh and exciting for his students," says Sam McVeety '04. "The ability to take risks and try new things and travel is an essential part of learning at every age, and it's something that I believe SPA really values in its faculty, and it's one of the things that made being a student there such a privilege."

"The ability to take risks and try new things and travel is an essential part of learning at every age, and it's something that I believe SPA really values in its faculty, and it's one of the things that made being a student there such a privilege."

Making sure the next generation of SPA faculty have the funding and the support to take the same risks is the reason why McVeety, 30, now a Senior Staff Engineer at Google, recently made a generous donation to launch The Bill Boulger Fund for Teaching Excellence. McVeety's \$25,000 gift will be dedicated exclusively toward supporting faculty members pursuing professional development, travel opportunities, and other off-campus experiences that can enrich SPA's classrooms

and curriculum for years to come. “As a student, it was such a privilege to spend one period learning ceramics with an outstanding artist, and then to be part of an orchestra preparing for a concert, or then to be learning mathematics with an amazing teacher,” McVeety says. “The passion and skill that these teachers brought to their respective classrooms was so impressive, and I wanted my gift to the school to reflect that. These are the people who are my heroes.”

A 2008 graduate of the Massachusetts Institute of Technology, McVeety lives in the Seattle area with his husband, Jordan, and serves as technical lead on Cloud Dataflow, a platform that aims to democratize the field of large-scale data processing. The son of SPA math teacher Jim McVeety, Sam says his family connections allowed for an even greater understanding of Boulger’s positive influence on the school community, both as a beloved and life-changing teacher, and a respected friend and mentor to many other faculty members. “He has a demeanor of inquiry that is so inspiring,” McVeety says. “Almost anytime you’d walk in to the math area he’d be working with a student and his mechanical pencil. There is never a moment when he doesn’t have time for a student, meeting them where they are with a tremendous ability to teach and reteach something to so many different minds.”

McVeety’s \$25,000 gift will provide \$2,500 per fiscal year toward teacher development projects, until the balance is extinguished. If the size of the restricted gift reaches \$100,000 through additional donations, St. Paul Academy and Summit School can establish the fund as a permanent endowment supporting teacher professional development. It’s an effort McVeety hopes other SPA alums will support through additional gifts. “Think how easy that would be,” he says. “Through relatively small collective action, we could all do something permanent to honor this fantastic teacher, together.” ♦

*Alumni/ae interested in supporting
The Bill Boulger Fund for Teaching Excellence
may contact Sarah Johnson at 651-696-1320
or sjohnson@spa.edu.*

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CLASS AGENTS

Jessie Markman
markman.jesse@gmail.com
Noah Mehlan
nmehlan@hotmail.com
Megan Sullivan
Ann Marie Winskowski
winskowski@gmail.com



▲ **Brendan Moriarty** and wife **Elissa '99** welcomed their son, **Avery Hewitt Moriarty**, in December 2015. The pair is delighted in his friendly, happy nature, and love taking him on adventures in the mountains. Avery loves spending time with his family, including “Grandpapa” **Chuck Fisher**, former SPA Psychologist, and his aunts **Carrie (Fisher) Childs '97** and **Meaghan Moriarty '99**. The family is currently living in Berkeley, California.

'01

CLASS AGENTS

Aram V. Desteian
desteian@gmail.com
Anne O'Connor completed her emergency medicine residency at the University of North Carolina and her pediatric emergency medicine fellowship at The Johns Hopkins Hospital, and recently

joined the emergency medicine team at Dartmouth as a faculty physician and assistant professor at the Geisel School of Medicine. At Dartmouth, Anne will teach residents and students in health economics, medical decision making, and wilderness and austere medicine. She will also further develop Project ADAPT, an international nonprofit dedicated to pediatric critical care training in resource-poor environments.

'03

CLASS AGENTS

Thomas Christ
kiselblat@gmail.com
Aleksander K. Sims
aleksander.sims@gmail.com
Kendra Ackland
Jillian Degerness
Brenden Goetz
brendengoetz@gmail.com



▲ **Max Lipset** and **Jill Stein Lipset** welcomed **Erica Hope Lipset** to the world in November of 2016. Max reports that Baby Erica shares the exact same birthday with older sister **Sasha**, as well as the same birth weight and length. Everyone is adjusting well to the new baby, Max says, including **Cal** the dog.