Across the Spectrum
THE FLORIDA STATE UNIVERSITY COLLEGE OF ARTS AND SCIENCES
AUTUMN 2013

New Frontiers

Pushing boundaries—on campus and around the world

Photo by FSU Photo Lab

Letter from the dean

Welcome to another edition of *Across the Spectrum*. As the fall 2013 academic year kicked off, the College of Arts Sciences found itself serving record numbers of students. At the same time there was a welcome expansion in the faculty ranks, owing to the hiring of 25 new faculty members. In this issue, we celebrate our college's growth, not only in size, but in the depth and breadth of our research, our educational offerings, and our global impact.

Several of our new faculty hires will spend time at the MagLab, which has become a crown jewel for FSU over the last 20 years. In this issue you will read about its history and get a sense of why scientists flock to Tallahassee from all over the world to do research that literally cannot be done anywhere else. Physicist and MagLab director Greg Boebinger explains why magnetic field environments are so important to modern research projects ranging from materials science to medicine.

One great benefit of having the MagLab at FSU is that it attracts world-class faculty members—such as Lawton Professor of Chemistry and Biochemistry Alan Marshall. Alan's achievements recently earned him the high honor of election to the American Academy of Arts and Sciences. Our article explains why Marshall is so highly regarded in his field, and how he uses the MagLab in his groundbreaking research.

Author Adam Johnson was already a source of pride for FSU, as one of the many brilliant writers that have come through our Creative Writing program. Last spring his talent was recognized with America's highest fiction award—the Pulitzer Prize. In this issue we explore the impact Adam's time in Tallahassee had on his career. Those unfamiliar with his work can also read an excerpt from his Pulitzer-winning novel, *The Orphan Master's Son.*

Archaeology is a discipline that mixes history and culture with careful fieldwork and restoration. Our archaeologists make the old new again by branching out of the classroom and into the field to explore what ancient civilizations can teach us about our world. This *Spectrum* tells us more about the work of our classics faculty and students in advancing the frontiers of archaeology.

The Winthrop-King Institute has inspired students and faculty for over a decade by funding study abroad opportunities and hosting international scholarly conferences. To celebrate, we've included a history of Ada Belle Winthrop-King and her generous gift to FSU, as well as an introduction to the institute's new director, Martin Munro. Martin succeeds founding director Alec Hargreaves, who oversaw the institute's march onto the world stage. Alex retired in 2012 to return to his home in France.

When Paul Dirac, among the pioneers of quantum theory, joined the Department of Physics in 1971, he forever heightened the profile of the sciences at FSU. We explore the 1933 Nobel Prize winner's connection with our university in another of this issue's articles. Dirac's daughter Monica improved what was already a vital collection of Dirac's papers with a recent donation of many of his personal documents to our own Dirac Science Library.

Pushing boundaries and exploring new frontiers is nothing new at FSU. I hope you enjoy this celebration of the faculty, students, and friends who have made and continue to make it possible for us here in the College of Arts and Sciences. Best wishes for a pleasant holiday season and a productive 2014.

Sam Huckaba

In memoriam
2nd Lieutenant Justin Lee Sisson, who was featured on the cover of the Spring/Summer 2012 "Salute to Veterans" issue of *Across the Spectrum,* died from injuries sustained while serving in the United States Army in Afghanistan on June 3, 2013. On behalf of the entire Florida State University community, the office of the Dean of the College of Arts and Sciences wishes to express its pride in Justin's dedication to his country and its sincere condolences to the entire Sisson family.

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On the cover
The ancient city of Cosa in Italy was once excavated by archaeologists, then left to the elements for more than a decade until FSU classics professor Andrea De Giorgi began to work on the site in 2013. Read about De Giorgi's site and other field work in the classics department on page 12.

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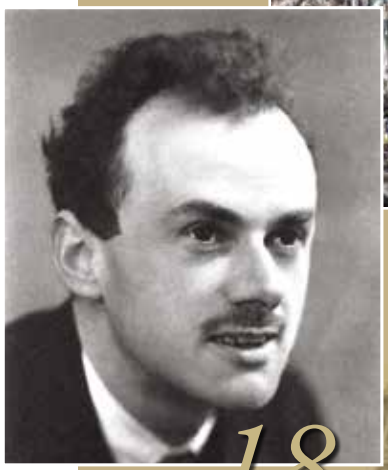
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A career and a passion

The writing life of Adam Johnson, FSU alumnus and winner of the 2013 Pulitzer Prize for fiction

Author and FSU alum Adam Johnson uses a humble tone when talking about the great success his writing career has become.

"As your book makes its long, slow walk toward obscurity," he says, "sometimes it makes a little detour, and I was happy for that."

That's an especially humble sentiment given that the detour his most recent novel, *The Orphan Master's Son*, has taken is none other than the Pulitzer Prize for fiction. It became the 86th book to win the coveted honor—widely considered the highest award offered for American fiction—on April 15, 2013.

The novel, set in North Korea, tells the story of Jun Do, who is raised in an orphanage and whose life becomes ever more entangled in the machinations of Kim Jong Il's government.

The Pulitzer is only the most recent addition to a long list of accomplishments for Johnson; among his many honors are a Whiting Writers' Award and a National Endowment for the Arts fellowship. Johnson, however, sees the presence of fiction in his life as reward enough.

"What's important is living the artist's life, grappling with the story, trying to make things that matter," he says. "In life, we're pretty ordinary people. I've got three kids. I do the dishwasher a lot. I'm in the backyard looking at the lawnmower that's waiting for me. But if you've got art in your life, you can, through application, through orchestration of thought, slowly compose something that's bigger and better than yourself. It's nice to have a readership—that's for sure—but daydreaming about winning big prizes doesn't help you at all. I never really thought about that stuff."

A writer's origins

Those looking for a romantic prelude to self-discovery in an author's biography will be disappointed with Johnson's. He found his way into fiction as an undergraduate at Arizona State University (ASU) only by trying to find his way out of something else.

"I had a buddy, and I used to ask him every semester, 'Tell me an easy 'A' class," Johnson says. "And he was like an old Yoda, a Jedi warrior. He would say, 'Adam… Jazz Appreciation.' He would say, 'Adam… History of Music.' And I remember, I was a sophomore and he said, 'Adam…Creative Writing. Easiest 'A' at ASU.'"

It was that last episode in the search for an easy class that ended up propelling Johnson into a career and a passion.

"I was hooked," he says. "I was hooked immediately."

While in some ways Johnson's interest in writing appears to have come without precedent, he does recall a childhood steeped in storytelling—he was exposed at a young age to a tall-tale style that shows up even now in his work.

"My dad is a very fine storyteller," says Johnson. "His father was as well. I remember as a kid going back to South Dakota with my dad, and the main activity was that people would just sit around and tell stories—the founding of the town, blizzards from years past, the river freezing in '33, the Depression. They would also tell silly tall tales, too, about giant dogs—mythical dogs that roamed the prairie, folks who'd gone on killing sprees."

One aspect of that early writer's education would later be the very thing that put him back on the path to fiction after trying to move away.

"One thing no one ever asked," Johnson says, "was 'Is the story true or not?' And they would mix clearly Paul Bunyan-esque stories with

Adam Johnson's novel *The Orphan Master's Son* became the 86th book to win the Pulitzer Prize for Fiction in April 2013.

Photo by Tamara Beckwith

very personal stories and all that mattered was that you could hold someone, grip them. And who owned the story didn't matter. Often, my dad would say, 'Tell that one.' And my grandpa would say, 'No, you tell it.' And the story would grow and change. There was no fixed version."

That love of a heightened narrative caused him some problems early on. While he was determined to spend his life writing, he feared the difficulties of making a career in fiction, so he enrolled at ASU's Walter Cronkite School of Journalism and Mass Communication.

"My journalism teachers could always tell when I made stuff up. They were like, 'Adam, this quote is a little too perfect. Can you show me your notes?' And I would be like, 'Well… I don't really have them on me.'"

Whatever his shortcomings as a journalist may have been in his younger days, they didn't hold him back as a student of fiction. He went on to get an MFA in creative writing at McNeese State University in Louisiana, where he studied with current FSU professor Robert Olen Butler.

"In the three years I taught Adam in Louisiana, I was particularly struck by his ravenous engagement with life experience," says Butler, who won his own Pulitzer Prize for fiction in 1993 for his collection of short stories, *A Good Scent from a Strange Mountain*. "As impressed as I was by his emerging talent in the workshop, it was his avid exploration of everything from cockfighting to zydeco music that spoke to me of his nascent genius."

FSU and beyond

From McNeese, Johnson went on to Florida State for his doctorate. In Tallahassee, he found a home that would nurture his writing—and that home wasn't limited to the classroom.

"There was just such an amazing pool of talented writers," he says. "We shared our work, and we went and had beers and talked about stories. When we read new stories that jazzed us up, we all called one another and devoured them. It was a really rich environment."

In addition to the artistic growth, Johnson found in Tallahassee plenty of inspiration for a storyteller.

"I remember diving into Wakulla Springs on a hot day," he says. "I used to ride my bike a couple times a week down the St. Mark's Trail, all the way to the water. I used to swim endless laps at the FSU swimming pool. At night, when it was kind of cool and misty, I would walk my Catahoula hound. I remember drinking beers and going to readings at the Warehouse, driving to JB's barbecue across the Georgia border. It was a pretty rich area. Interesting characters everywhere, lots of art going on."

The talent Johnson brought to the table from the beginning of his graduate study was very apparent to his professors.

"I wish I could say any of Adam Johnson's teachers, myself included, could take credit for his writing progress while at FSU," says Professor Virgil Suarez. "He arrived from having worked with my wonderful colleague Robert Olen Butler at McNeese already a very strong writer, and one whose stories always delighted and amazed us in the workshops. Reading an Adam Johnson story was always a treat, and I could not help but feel the pang of jealousy. I kept telling my wife this one student was *amazing*, truly gifted."

Now, with well over a decade under his belt as a teacher and writer (he joined the faculty of Stanford University's creative writing program in 1999), he still approaches his writing with the same simple goal of his family's storytelling sessions.

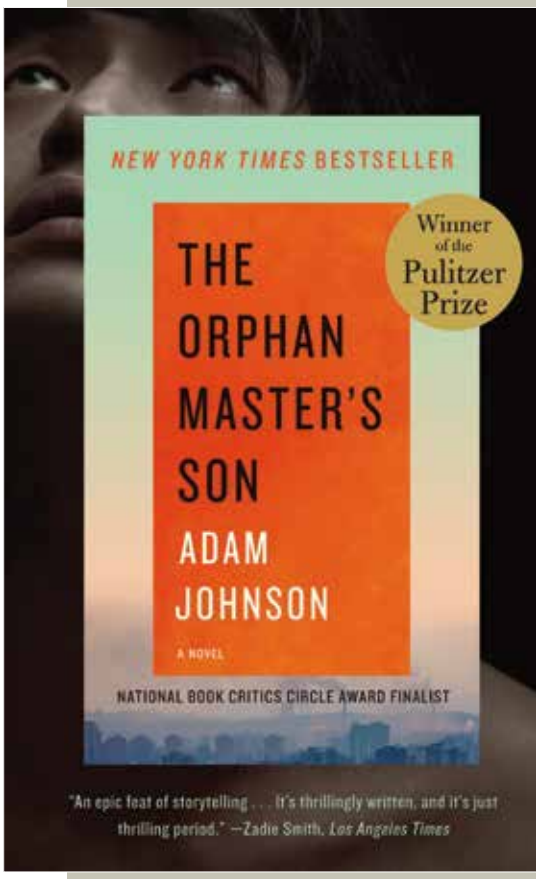
"A story has to hold people's attention, number one," he says. "It's got to move, and reveal, and be about people and say something about a time and place."

Journalistic fiction

While he chose to turn away from the life of a straightforward journalist, Johnson is no stranger to research. While preparing to write *The Orphan Master's Son*, he traveled to North Korea in order to see what life there was like firsthand. In some ways, getting the real picture was impossible.

"It's the most milquetoast, generic, packaged tour," says Johnson. "Everyone who comes sees the exact same thing under the exact same circumstances."

Still, despite the regime's attempts to control the experiences of visitors and cover up the troubling realities of North Korean society, Johnson got some glimpses behind the veil.



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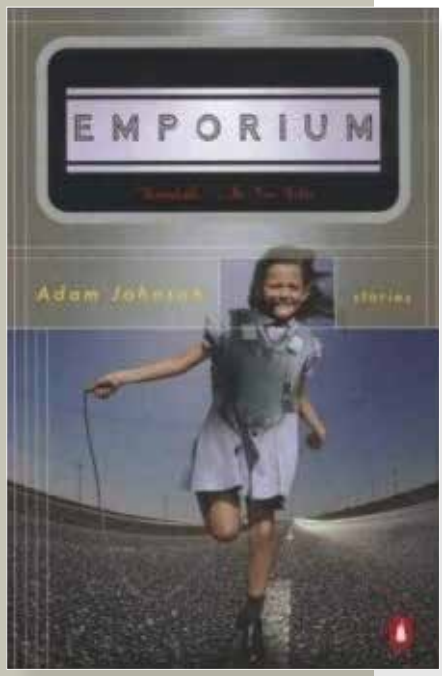
— Virgil Suarez



Johnson's previous books are a short story collection, *Emporium*, and a novel, *Parasites Like Us*.

"There are things that they don't know they should be embarrassed of," he says. "They cannot see past their own insularity. Like moving humans around in the backs of dump trucks is something that they don't know most of the world doesn't do, so they don't know to be embarrassed about it."

By coupling that firsthand experience with time spent reading the testimonies of North Korean defectors, Johnson was able to recreate a way of life unfamiliar to most of his readers. The way that he was able to do so with a unique and engaging voice—the novel often channels North Korean propaganda-speak to great effect—caught the attention of many critics, including Michiko Kakutani of *The New York Times*.

"Mr. Johnson has written a daring and remarkable novel," writes Kakutani, "a novel that not only opens a frightening window on the mysterious kingdom of North Korea, but one that also excavates the very meaning of love and sacrifice."

Many tales to come

While the world continues to clamor over *The Orphan Master's Son*, Johnson has already moved toward his next project, at least mentally—he is still navigating a deluge of interview requests that have poured in since the announcement of the prize.

Until the research and the countless hours of writing and rewriting are complete, the world can only wonder what will come next. With a writer of Johnson's caliber and range, the result is sure to be both surprising and satisfying.

That FSU has played a role in the development of such a gifted artist is a source of pride for the entire university and for the creative writing program in particular.

"He arrived at FSU with everything he needed: voice, style, command, and a prodigious imagination—the Miracle-Gro of imaginations," says Professor Emerita Janet Burroway, who taught Johnson at FSU and was nominated for a Pulitzer herself in 1970. "'Teaching' him was a matter of asking a few questions and identifying favorite phrases. The only advice I ever gave him, really, was at his dissertation orals when I said, 'There is no way you can fall short. The only danger is over the top.'"

That balancing act appears to be one that Johnson has mastered with, happily, many more writing years to come.

An excerpt from Adam Johnson's The Orphan Master's Son

As the oldest boy at Long Tomorrows, Jun Do had responsibilities—portioning the food, assigning bunks, renaming the new boys from the list of the 114 Grand Martyrs of the Revolution. Even so, the Orphan Master was serious about showing no favoritism to his son, the only boy at Long Tomorrows who wasn't an orphan. When the rabbit warren was dirty, it was Jun Do who spent the night locked in it. When boys wet their bunks, it was Jun Do who chipped the frozen piss off the floor. Jun Do didn't brag to the other boys that he was the son of the Orphan Master, rather than some kid dropped off by parents on their way to a 9-27 camp. If someone wanted to figure it out, it was pretty obvious—Jun Do had been there before all of them, and the reason he'd never been adopted was because his father would never let someone take his only son. And it made sense that after his mother was stolen to Pyongyang, his father had applied for the one position that would allow him to both earn a living and watch over his son.

The surest evidence that the woman in the photo was Jun Do's mother was the unrelenting way the Orphan Master singled him out for punishment. It could only mean that in Jun Do's face, the Orphan Master saw the woman in the picture, a daily reminder of the eternal hurt he felt from losing her. Only a father in that kind of pain could take a boy's shoes in winter. Only a true father, flesh and bone, could burn a son with the smoking end of a coal shovel.

Occasionally, a factory would adopt a group of kids, and in the spring, men with Chinese accents would come to make their picks. Other than that, anyone who could feed the boys and provide a bottle for the Orphan Master could have them for the day. In summer they filled sandbags and in winter they used metal

bars to break sheets of ice from the docks. On the machining floors, for bowls of cold chap chai, they would shovel the coils of oily metal that sprayed from the industrial lathes. The railyard fed them best, though, spicy yukejang. One time, shoveling out boxcars, they swept up a powder that looked like salt. It wasn't until they started sweating that they turned red, their hands and faces, their teeth. The train had been filled with chemicals for the paint factory. For weeks, they were red.

And then in the year Juche 85, the floods came. Three weeks of rain, yet the loudspeakers said nothing of terraces collapsing, earth dams giving, villages cascading into one another. The Army was busy trying to save the Sungli 58 factory from the rising water, so the Long Tomorrows boys were given ropes and long-handled gaffs to try to snare people from the Chongjin River before they were washed into the harbor. The water was a roil of timber, petroleum tanks, and latrine barrels. A tractor tire turned in the water, a Soviet refrigerator. They heard the deep booms of boxcars tumbling along the river bottom. The canopy of a troop carrier spun past, a screaming family clinging to it. Then a young woman rose from the water, mouth wide but silent, and the orphan called Bo Song gaffed her arm—right away he was jerked into the current. Bo Song had come to the orphanage a frail boy, and when they discovered he had no hearing, Jun Do gave him the name Un Bo Song, after the 37th Martyr of the Revolution, who'd famously put mud in his ears so he couldn't hear the bullets as he charged the Japanese.

Still, the boys shouted "Bo Song, Bo Song" as they ran the riverbanks, racing beside the patch of river where Bo Song should have been. They ran past the outfall pipes of the Unification Steelworks and along the muddy berms of the Ryongsong's leach ponds, but Bo Song was never seen again. The boys stopped at the harbor, its dark waters ropy with corpses, thousands of them in the throes of the waves, looking like curds of sticky millet that start to flop and toss when the pan heats.

Though they didn't know it, this was the beginning of the famine—first went the power, then the train service. When the shock-work whistles stopped blowing, Jun Do knew it was bad. One day the fishing fleet went out and didn't come back. With winter came blackfinger and the old people went to sleep. These were just the first months, long before the bark-eaters. The loudspeakers called the famine an Arduous March, but that voice was piped in from Pyongyang. Jun Do had never heard anyone in Chongjin call it that. What was happening to them didn't need a name—it was everything, every fingernail you chewed and swallowed, every lift of an eyelid, every trip to the latrine where you tried to shit out wads of balled sawdust. When all hope was gone, the Orphan Master burned the bunks, the boys sleeping around a pot stove that glowed on their last night. In the morning, he flagged down a Soviet Tsir, the military truck they called "the crow" because of its black canvas canopy on the back. There were only a dozen boys left, a perfect fit in the back of the crow. All orphans are destined for the Army eventually. But this was how Jun Do, at fourteen, became a tunnel soldier, trained in the art of zero-light combat.

And that's where Officer So found him, eight years later. The old man actually came underground to get a look at Jun Do, who'd spent an overnighter with his team inside a tunnel that went ten kilometers under the DMZ, almost to the suburbs of Seoul. When exiting a tunnel, they'd always walk out backward, to let their eyes adjust, and he almost ran into Officer So, whose shoulders and big rib cage spoke of a person who'd come of age in the good times, before the Chollima campaigns.

"Are you Pak Jun Do?" he asked.

When Jun Do turned, a circle of light glowed behind the man's close-cropped white hair. The skin on his face was darker than his scalp or jaw, making it look like the man had just shaved off a beard and thick, wild hair. "That's me," Jun Do said.

"That's a Martyr's name," Officer So said. "Is this an orphan detail?"

Jun Do nodded his head. "It is," he said. "But I'm not an orphan."

Officer So's eyes fell upon the red taekwondo badge on Jun Do's chest.

"Fair enough," Officer So said and tossed him a sack.

In it were blue jeans, a yellow shirt with a polo pony, and shoes called Nikes that Jun Do recognized from long ago, when the orphanage was used to welcome ferry-loads of Koreans who had been lured back from Japan with promises of Party jobs and apartments in Pyongyang. The orphans would wave welcome banners and sing Party songs so that the Japanese Koreans would descend the gangway, despite the horrible state of Chongjin and the crows that were waiting to transport them all to kwan li so labor camps. It was like yesterday, watching those perfect boys with their new sneakers, finally coming home.

Jun Do held up the yellow shirt. "What am I supposed to do with this?" he asked.

"It's your new uniform," Officer So said. "You don't get seasick, do you?"

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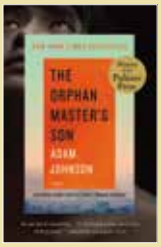


Photo courtesy of the National High Magnetic Field Laboratory.

The 370,000-square-foot facility that houses FSU's MagLab is located about two miles southwest of the main FSU campus in Tallahassee.

A magnetic attraction

FSU drew the world's largest magnet lab to its campus; today the lab continues to draw innovation to FSU

Photo courtesy of the National High Magnetic Field Laboratory.

Greg Boebinger, current director of the MagLab at FSU.

About a 10-minute drive from the front gate of FSU's main campus lies a quiet, leafy loop dotted with what look like corporate office buildings. One of them stands out from all the others because of its sheer size, but a look at the inside will quickly convince any visitor that size is the least impressive thing about it.

And while there are plenty of cubicles to be found there, they are nothing like the kind found in an office building. The ceiling above these cubicles is a hallway full of 400 feet of solid aluminum bars pumping in 56 megawatts of electricity—roughly seven percent of the power produced by the entire city of Tallahassee.

Inside the cubicles? Magnets. The most powerful magnets in the entire world, to be exact.

This is the National High Magnetic Field Laboratory, or MagLab, which has had its headquarters at FSU since 1993. During its first year of operation, the lab installed and successfully operated what was then, at a rating of 27 tesla, the strongest magnet ever.

These days, the crown jewel of the lab's magnet collection produces a field more than 50 percent

stronger—a 45 tesla behemoth that stands 22 feet tall, weights 35 tons, uses 33 megawatts of power, and requires 400 liters of chilled water running through it every second to keep it from melting.

To put that kind of power in perspective, it's about 4,500 times stronger than the magnets holding student artwork to refrigerator doors across America. Strong enough to erase the data off all the credit cards in a person's wallet just from standing within 30 feet of it.

Power for a purpose

The MagLab's race to create the world's strongest magnets is the driving force behind some of the most important discoveries of the last 20 years.

"The primary thing we do is study new materials," says Greg Boebinger, director of the MagLab since 2004. "If you have a new material and you want to know what its possible technological applications might be, you can sit it on the desk and sit back and contemplate it—which is sort of what Plato would have done—or you can poke at it and see how it responds. You can shine laser light on it, you can warm it up or cool it down, you can measure how much it contracts and expands, measure whether it's a metal or an insulator. And one of the things you can do is put it in a magnetic field. Materials behave very differently in a magnetic field."

Boebinger is quick to note that while people give most of the credit for technological advancement to the invention of new methods, the invention of new materials is equally important, if not more so. Modern cell phones, for instance, are full of materials that didn't exist 20 years ago, from the transistors inside to the scratch-resistant glass on the front.

Without the work of people in materials research, such advances would be impossible. And the MagLab is at the global forefront of such research.

The spin cycle

The way the lab's magnets do their job is almost just as amazing as the results they produce. While the magnets themselves are all very large, the actual experiment takes place inside a small bore tube in the center that is often only a half inch in diameter. In ion cyclotron resonance experiments, substances are sprayed into the tube in a fine mist—so fine that each particle is only an individual molecule.

Once inside, the particles spin around like garments in the world's smallest and most intense washing machine.

Radio waves are used to detect what the component parts of the substance are (heavier molecules spin slower, lighter ones faster), and from there, all sorts of discoveries can be made about the properties of the original substance.

However, there are disturbances in the signal—what scientists refer to as "noise." These disturbances can be addressed two ways.

"If you're trying to listen to a radio station and there's lots of static," says Boebinger, "you can either ask the radio station to turn up their signal so it overpowers the static or you can work to get the static reduced."

The MagLab does both, by creating ever stronger magnetic fields and by pushing the earthly limits of extreme temperature.

A higher magnetic field yields a cleaner signal for scientists to observe—but temperature also plays a role, since it causes atoms to vibrate, so researchers have to keep conditions for the experiment cold. Very cold—somewhere in the neighborhood of minus 456 degrees Fahrenheit.

The more extreme conditions give cleaner readings, and also occasionally expose something entirely unexpected about the substance in question. Electrical insulators may become conductors, nonmagnets may become magnets. Materials that don't scatter light may suddenly begin to do just that.

The thresholds of magnetic field and temperature required to achieve these kinds of transformations usually can't be known until they are met—another reason Boebinger and the other researchers at the MagLab must always continue to push the boundaries.

An unlikely proposal

Most of the credit for the MagLab's existence in Tallahassee goes to a team of three scientists—FSU's own Jack Crow, Don Parkin of Los Alamos National Laboratory in New Mexico, and Neil Sullivan from the University of Florida. Led by Crow, they proposed a new lab with three branches, headquartered in Tallahassee, to replace an aging facility located at the Massachusetts Institute of Technology (MIT) in Cambridge.

"I think most people thought the proposal had no chance of winning, but Crow and his team managed to pull it off," says Boebinger, who got

Photo courtesy of the National High Magnetic Field Laboratory.

Vice President Al Gore (second from left) attends the dedication of the MagLab in 1994 with founding director Jack Crow (center).

Photo by Will Oakes

Deputy Lab Director Eric Palm points out pieces of magnets on display at a facility in the lab where new magnets are designed and built.

Photo by Wil Oakes

This large lab houses three high-powered magnets used by FSU researchers for a variety of experiments, including petroleum research.

Photo by Wil Oakes

The MagLab's 45 tesla hybrid magnet is the most powerful of its kind in the world.

his Ph.D. at MIT and directed the Los Alamos branch of the MagLab for six years before coming to FSU.

It was when Crow became ill in 2004 that Boebinger made the move to Tallahassee in order to take over for him. Crow died later that year—a tremendous loss for the lab and for FSU—but Boebinger knew him from his years as a branch director and sees his legacy all around.

"He was friendly to everyone," Boebinger says. "I was always taken by how friendly he was, but he knew what he wanted to do and he went out and got it done. I sometimes call him a riverboat gambler—he was a huge personality, and in order to pull off winning an award like this, there's got to be a lot of substance there, but there's also got to be a little bit of bluster and a little bit of bluff."

Crow's spirit and dream for the lab can be seen everywhere—from the facility where engineers are constantly building more powerful magnets to the sculpture of him that keeps watch over the lab's lobby.

A magnet for all types

The three labs that make up the National High Magnetic Field Laboratory are home to roughly 500 people, including grad students, postdoctoral students, and professors. Visitors come from all over the world to use its state-of-the-art equipment or just to get a look at some truly powerful machines.

During Boebinger's tenure as director—now coming up on its 10th year—he's seen a great deal of change and has loved the experience.

"There's a lot more pinging back and forth of ideas between the different disciplines," he says. "In the early years, you're building each of your facilities up, and as it becomes more mature they start overlapping, they start benefiting from each other. I think the single thing I'm most proud of is that the lab has become so multidisciplinary and interdisciplinary over the years."

Among the FSU personnel who benefit from the lab are representatives of the physics; chemistry; biology; and earth, ocean, and atmospheric science departments, as well as the engineering school.

"Material science doesn't exist as an isolated department at FSU because it's a research topic that bridges all of these other areas," says Boebinger.

For everyone involved, the future is impossible to know but easy to get excited about. The discoveries made by Boebinger's mentors when he was a student—back when 28 tesla was the cutting edge—won them the Nobel Prize. Now the MagLab looks forward to finding the next big breakthrough at 45 tesla, which will of course set them to building a magnet capable of 50 or even 60, even though there's no telling what those future breakthroughs will be.

Photo by Wil Oakes

The corridor that supplies power to the magnets in the MagLab is filled with 400 feet of solid aluminum bars.

Photo by Wil Oakes

Extremely low temperatures are required to get clean readings in high magnetic field experiments. Some are conducted at temperatures as low as -456 degrees Fahrenheit.

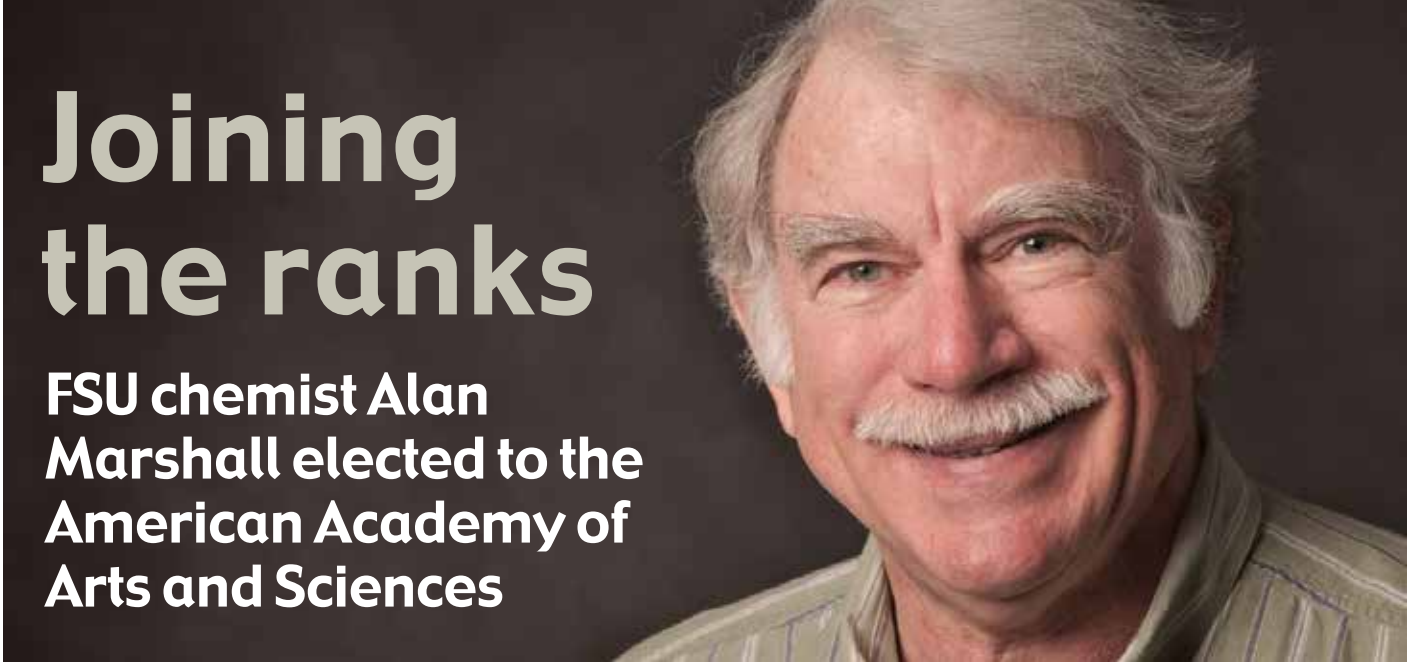
Explaining this to outsiders is often a challenge for Boebinger, so when pressed he makes his answer as simple as possible.

"When someone asks why you're building a magnet that's five tesla stronger than your previous one," he says, "the best answer is often, 'because it's always paid off in the past.'"

To read about FSU Professor Alan Marshall, a fixture of the MagLab and recently elected fellow of the American Academy of Arts and Sciences, see page 10.

Joining the ranks

FSU chemist Alan Marshall elected to the American Academy of Arts and Sciences



All photos courtesy of Alan Marshall.

Since its founding in 1780, the American Academy of Arts and Sciences (AAAS) has counted among its members many of the most famous people from every era and aspect of American history. The spectrum runs from Founding Fathers such as Thomas Jefferson and John Adams to writers including T.S. Eliot, Willa Cather, and Eudora Welty. The list includes journalist Edward R. Murrow, jazz great Duke Ellington, and scientists as well known as Alexander Graham Bell.

Now, it also includes FSU chemist Alan Marshall.

He was among a group of 197 people, from all areas of the arts and sciences, inducted in the AAAS class of 2013.

"Alan Marshall is one of the nation's leading analytical chemists," says Tim Logan, chair of Florida State's Department of Chemistry and Biochemistry. "We are extremely fortunate to have a scientist of his caliber at Florida State University."

A fortunate move

Marshall is now the only AAAS chemist in Florida and one of only five active AAAS members at FSU, so his presence *is* very fortunate. That's especially true considering that, prior to his arrival at FSU in 1993, he was firmly established in his home state at Ohio State University, where two generations of his family before him had gone to school.

"I figured I'd be there forever," Marshall says.

The thing that changed his mind? The establishment of FSU's National High Magnetic Field Laboratory, which replaced the previous lab at the Massachusetts Institute of Technology, in 1990. Marshall needed a high-powered magnet for his research, and set about trying to get one.

"Over the next few years, we went to Washington, D.C., and talked to all the big agencies and said, 'Here's what we could do if we had a bigger magnet—will you give us some money?' And they all said no."

That left Marshall with only one choice: if the magnets were going to be at FSU, that's where he needed to be as well. He moved to Tallahassee before his proposal to conduct research at the lab had even been turned in.

"I was jumping into the pool without any water in it yet," Marshall says.

Fortunately for both Marshall and FSU, he soon became the director of the MagLab's Ion Cyclotron Resonance (ICR) program, which uses the lab's giant magnets to spin tiny samples of materials inside a magnetic field, separating their component parts and allowing researchers to find out what they're made of.

Transforming Fourier

Much of the work that made Marshall a household name in chemistry stems from his applications of the work of a French mathematician of the late 18th and early 19th centuries named Joseph Fourier. One of Fourier's many accomplishments was the development of a mathematical function now known as the Fourier Transform. Marshall was able to use Fourier's function with ICR to interpret the results of super-modern magnetic experiments some 150 years after Fourier's death, but when Fourier first tried to publish his idea, it was hard to find any takers.

After several rejections, he was forced to pay to have his findings published himself.

"It's harder to convince people that you've done something than it is to actually do it sometimes," Marshall says.

Initially, Marshall's own work met with the same fate. When he, along with co-inventor Melvin B. Comisarow and their team, tried to publish their first paper on the Fourier Transform Ion Cyclotron Resonance (FT-ICR) technique, it was rejected. Today, it is among the most well-known methods of measuring masses of particles with extreme accuracy.

"It was only shortly after completing his Ph.D. at Stanford that Marshall (along with Comisarow) demonstrated Fourier Transform Ion Cyclotron

To learn more about the MagLab and how its gigantic magnets—the most powerful in the world—work, see page 6.

Spectroscopy, which no one thought was possible," says John Baldeschwieler, who was Marshall's mentor at Stanford. "His treatment of the fundamental principles of spectroscopy is the best that I am aware of anywhere."

Measuring the masses of particles is what makes it possible to determine the component parts of just about any substance on earth. Since his move to FSU in 1993, Marshall has been using that technique to make useful discoveries about a number of substances, most notably petroleum.

Analyzing oil… and sometimes wine

These days, a great deal of Marshall's work involves the analysis of petroleum. Using the magnets at the MagLab, he can determine an amazing number of specific things about an oil sample—where it originated, what pollutants it contains, or how likely it is to clog a pipe, just to name a few.

"If you know what deposits will form, you know what additive to put in to not clog your pipe," Marshall says. "It's a hundred million bucks to drill your well, so you don't want to undo that too often."

In addition to the financial importance of that data, there are also crucial environmental applications.

"We can identify an oil spill," says Marshall. "We can tell oil from different wells apart. If you want to know who did it, that would become useful."

Samples analyzed in the lab can be checked against a database of world oil deposits Marshall's team maintains. But the environmental importance of the data doesn't end there. Marshall also works with the Deep Sea to Coast Connectivity in the Eastern Gulf of Mexico Consortium (also known as Deep-C), a group of 11 institutions led by FSU that conducts research on the lasting effects of the 2010 Deepwater Horizon oil spill.

"We analyzed the oil as it was before it was released into the ocean and after (i.e., tar balls on the beach) and managed to find that—much to everyone's surprise—there were three times more compounds," Marshall says. "Light from the sun and bacteria change those molecules into other ones that weren't there in the first place. We can tell what those are—and some of those are not good for you."

The same magnets that can make those important discoveries about oil samples can also analyze other complex materials. Marshall has done experiments on biomarkers—substances used to help pinpoint and treat causes of disease—and even run samples of red wine through FSU's massive magnets.

"If you want to know where a wine comes from, you analyze the metals in the soil," he says. "That tells you if it's Italy or France or wherever. If you want to know whether it's cabernet or pinot or something else—and the price of the wine depends a lot on what they tell you is in the bottle—we can tell those apart. That was a lot of fun."

An honor well earned

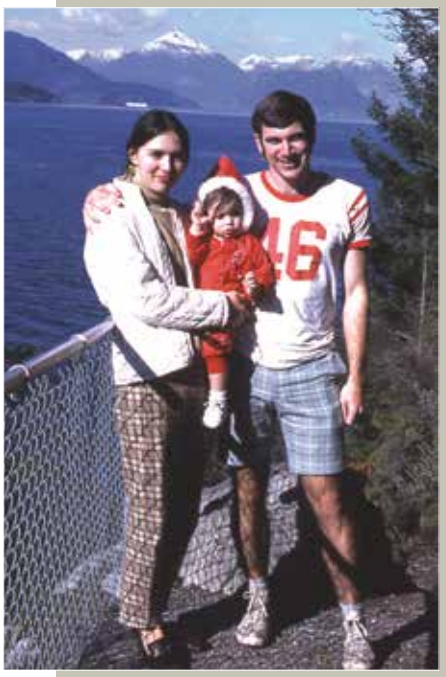
The trajectory of Marshall's career has been upward since his grad school days.

"Alan Marshall was an extraordinary graduate student," says Baldeschwieler. "What I remember most clearly was his perseverance until he really understood the fundamentals of a research issue. It was obvious that he was going to be a great success."

Since then, Marshall has been recognized with a professorship named for famed FSU chemist Michael Kasha, as well as FSU's highest faculty award, the Robert O. Lawton Distinguished Professor award, on top of dozens of national and international honors. The addition of his AAAS membership is only the most recent in a string of well-deserved recognitions of his work.

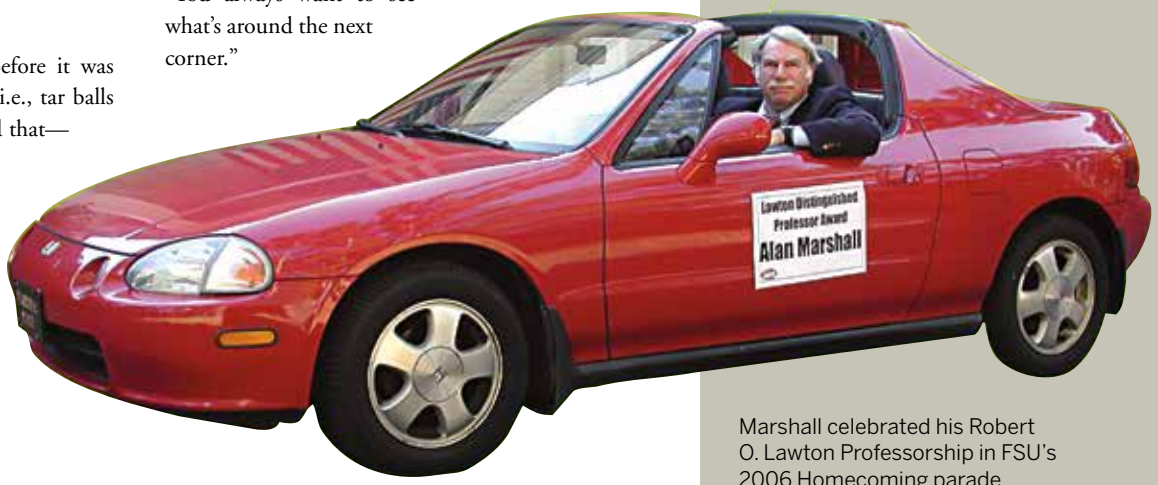
For Marshall, though, it is a love of science that continues to propel him forward more than anything.

"There are always new wrinkles," he says. "You always want to see what's around the next corner."



Marshall with wife Marilyn and daughter Wendy in Vancouver, British Columbia, Canada, 1969.

Marshall during his time at Ohio State University in the 1980s.



Marshall celebrated his Robert O. Lawton Professorship in FSU's 2006 Homecoming parade.

Photo courtesy of Daniel Pullen

Professor Daniel Pullen's crew in 2007, with the peninsula of Kalamianos lying low in the mid-background.

Going out and finding it

The impact of FSU's archaeological field sites on research and education in the Department of Classics

On a high perch in Italy's Tuscany region with breathtaking views of the Tyrrhenian Sea sit the ruins of an ancient Roman city called Cosa. On this spectacular site, one can find ancient inscriptions, the foundations of homes, and the walls of large buildings still standing more than 20 centuries after they were built.

And since the summer of 2013, there's one more thing to be found at Cosa—Florida State University students.

The force behind that development is FSU professor Andrea De Giorgi, an Italian-born archaeologist who joined the faculty in 2012. He decided to take on the excavation of Cosa, which had been left to the elements since the late 1990s, both to restore an important landmark and to study the techniques of ancient Roman architects and city planners.

Thus, a new field research site, replete with opportunities for FSU students to expand their horizons, was born.

De Giorgi's site is only the most recent addition, however, to the department's offerings in the realm of field research. In addition to the site at Cosa, students can choose to work on a site at Cetamura, also in Tuscany, under Professor Nancy de Grummond, or on artifacts from Kalamianos in Greece where Professor Daniel Pullen completed field work in 2011.

The broad reach of these programs reaps dividends in more ways than one.

"I think it's a great opportunity for FSU grad students," De Giorgi says. "And it gives FSU a fantastic opportunity to enhance its visibility on that side of the ocean."

Starting from square one

The original excavation of Cosa began in the late 1940s under the auspices of the American Academy in Rome.

"The rationale behind doing an excavation at Cosa is that it was, and still is, a beautifully preserved Roman city that dates back to the late third century BCE," De Giorgi says. "We know a lot of information about this town—primarily thanks to textual sources. We know a lot about the vicissitudes that led to the founding of this city."

But after a half century of work, the program was terminated and Cosa was allowed to languish, a decision that De Giorgi and others in the field still lament.

"Many of the buildings that had been excavated in the '50s and '60s, that are very much hallmarks of Roman building techniques and architecture and appear in most architectural manuals and scholarly studies—many of the buildings are covered by shrubs, by dirt," says De Giorgi. "They lie in a terrible state. They are no longer visible."

It was both the loss of so much archaeological progress and the desire to break new ground that drew him to the site.

"I decided to tackle this project with a twofold approach," De Giorgi says. "On the one hand, we are excavating a new building, a hitherto unknown site that seems to be the *thermae* complex, the baths. The second facet that I'm particularly interested in is to bring back to life all of those fabulous buildings that have been excavated in the past."

To De Giorgi, those buildings provide powerful insights into what life was like in ancient times. The artifacts he finds shed new light on everything from building techniques and architectural ingenuity to the ins and outs of local politics and day-to-day life.

That amounts to a lot of important information waiting to be learned, especially considering all the eras of human history the town has seen. Cosa was inhabited as a city from the third century BCE until the Middle Ages, and since then has been used for things as varied as a monastery and an artillery base for Italian and German troops during World War II.

Just recovering what was lost while the site was left vacant is a big task, however. De Giorgi hopes to have it all excavated again in 10 years.

Harvesting history in Italy and Greece

The other archaeological field sites associated with FSU's classics department are no less fascinating. De Grummond has been doing research now for a full 30 years at the settlement called Cetamura. Despite such thorough excavation, the site never ceases to surprise her.

"The discoveries we make each year are always exciting and the work is thrilling for the students," de Grummond says. "Through the years we have discovered an Etruscan artisans' zone and sanctuary, a Roman villa, and a medieval fort, with all the relevant artifacts that go with them. The latest thing is that we are digging in a very deep Etruscan well."

Pullen's work uses less traditional methods, surveying features already on the surface and using technology like ground-penetrating radar to generate archaeological data.

His efforts at Kalamianos in Greece have, since 2011, shifted from on-site archaeology to study seasons in which graduate students work on preparing the results of a decade of research.

Photo courtesy of Andrea De Giorgi

FSU grad students Ann Glennie and Christina Cha inspect a building's foundation.

Photo courtesy of Nancy de Grummond

Near these rock altars and chambers were found carbonized remains of grapes, olives, apples, grains, and chickpeas.

Photo courtesy of Daniel Pullen

An aerial photo shows the remains of a Kalamianos building beside a meticulously drawn stone-by-stone diagram of the site.

Photo courtesy of Andrea De Giorgi

De Giorgi's team spent part of their summer unearthing this *laconicum,* a dry sweating room that was part of the baths complex at Cosa.

Photo courtesy of Daniel Pullen

Pullen leans against the corner of a well-preserved building in Kalamianos.

What he and his students were able to find and are now sorting out has big archaeological value—the buildings at Kalamianos date back to between 1350 and 1200 BCE.

"We have almost the entire plan of a Mycenaean Greek town preserved," says Pullen, "including a circuit wall, streets, over 50 recognizable buildings and many, many more walls. And on a nearby hill we have a second, but smaller, well-preserved Mycenaean town."

Photo courtesy of Andrea De Giorgi

"De Giorgi (far right) sits with FSU grad students Glennie (far left) and Smith (3rd from left) as well as Bryn Mawr College student Sam Palumbo (2nd from left) and former FSU undergrad Sophie Crawford-Brown, now earning her M.A. at the University of Pennsylvania."

What's more, Kalamianos may be the answer to an age-old mystery.

"While it's partly conjecture, and may be difficult to prove, our site of Kalamianos may well be the previously unlocated town of Eïones, one of the towns along the coast that sent ships to the Trojan War, according to Homer," Pullen says.

The discoveries at each of FSU's sites have the potential to shape the future of classical archaeology, but they may have an even bigger effect on the future in how they help develop the scholars who will take on that study. At each of these sites, students from FSU contribute to the discipline while honing their own skills as archaeologists.

Photo courtesy of Nancy de Grummond

Students Nat Coombes and Jordan Samuels carry out the process of flotation, which archaeologists use to sift tiny artifacts from dirt, at the Cetamura well.

Learning to dig by digging

At Cetamura, students are heavily involved in just about every aspect of de Grummond's projects. Her site provides undergraduates the chance to sink their teeth into research opportunities they could never find on campus.

"The students dig on a daily basis, and learn how to do basic jobs such as laying out an excavation unit, digging with different tools, sifting the dirt, recording measurements of the objects found, bagging and tagging the finds, and later, cataloguing them in our laboratory," she says.

For more advanced tasks, graduate students hoping to step into the profession after graduation get a chance to learn on the job.

But the work they do isn't just a learning experience. Students on the site make real contributions to the scholarship. De Giorgi, who had five graduate students working with him this past summer at Cosa, gives a large amount of the credit for the dig's success to his team.

"They were particularly great at stepping up and taking responsibilities in helping with the excavation, the planning, the realization of the database, and the study of the materials," he says. "On an archaeological dig, there are so many tasks that are all interwoven, and yet, thanks to this great group of people, I was able to cover them all. Their presence is critical."

De Giorgi's students value his leadership and the experience the dig provides just as much as he values their work.

"It is a great honor to follow in the footsteps of an American excavation that has such a rich and successful history," says Ann Glennie, one of the grad students from the summer session. "It was a pleasure to go to work every day because of the stunning coastal location of the site, because of the mature and knowledgeable graduate student staff of which I was a part, and because of the leadership and support of Andrea."

Her feelings are echoed by her student colleague Allison Smith.

"The experiences we shared at Cosa were truly unique, even in comparison with other archaeological excavations," she says. "First and foremost, the people who participated this season were intelligent, friendly, and kind. Although the makeup was eclectic (there were students from Florida State, Penn, Bryn Mawr, Indiana, and even from the University of Tübingen (Germany)), the atmosphere was always relaxed and open."

A global department

The opportunity to travel around the world and make education a hands-on experience is a source of inspiration as well as invaluable training for students, and one that the classics department is uniquely equipped to provide.

For faculty members, the benefits of student-professor collaboration can't be understated.

"I'm especially proud of the leadership roles the students took on, often without me needing to supervise daily activities," says Pullen. "It allowed me to also work actively in the field."

And their experiences abroad translate into better classroom instruction back in Tallahassee.

"I try to convey that excitement in the classroom environment," De Giorgi says. "I use the raw data—the images of a building at the excavation in progress—to engage them and entice them into archaeological discourse. Being an archaeologist is basically dealing with a gazillion questions, so I take those questions to the classroom environment and share them with my students."

Archaeology, after all, is a discipline inextricably tied to field work. By supporting its faculty and students in their ambitions to discover the past by going out and finding it, FSU is creating a culture of top-notch archaeological research and education.

Photo courtesy of Andrea De Giorgi

FSU grad student Allison Smith examines a large fragment of an imperial inscription.

Photo courtesy of Andrea De Giorgi

Among the artifacts De Giorgi and his crew turn up are fragments of imperial inscriptions.

Photo courtesy of Nancy de Grummond

Professors de Grummond (center) and Cheryl Sowder of Jacksonville University (bottom left) pose with FSU undergrads Nat Coombes, Tyler Haynes, and Ellie Margedant (clockwise from top left).

The French connection

FSU's Winthrop–King Institute provides opportunities for students to experience language and culture abroad

by Barry Ray

Ada Belle Winthrop-King, whose bequest made the Winthrop-King Institute possible.

Alec Hargreaves, former director of the Winthrop-King Institute.

Martin Munro, current director of the Winthrop-King Institute.

Ada Belle "Pat" Winthrop-King was passionate about French culture; the language, people, art and cuisine of Paris, the fabled City of Light, enchanted her. So profound was this enchantment, in fact, that for many decades the Florida State University devotee traveled to the French capital every year.

Winthrop-King's passion for all things French began after she earned a college scholarship that allowed her to study at the Sorbonne. Some 60 years later, her wish for other students to have a similar opportunity to experience that passion was the genesis of the Winthrop-King Institute for French and Francophone Studies (www.winthropking.fsu.edu), an interdisciplinary program in FSU's College of Arts and Sciences that allows students to experience firsthand the treasures, cultural and otherwise, of the French-speaking world.

"The institute is an invaluable resource," says Martin Munro, a professor of French in the Department of Modern Languages and Linguistics and current director of the Winthrop-King Institute. "It opens up amazing travel and study opportunities for our students that simply would be unavailable otherwise."

A former teacher of French and Spanish at the Florida State College for Women, Winthrop-King (1900-1997) was an accomplished scholar, a stock market wizard and a devoted supporter of FSU. Her love of Florida State was such that she welcomed the opportunity to make a major contribution in order to help students enrich their educational opportunities and meet their personal and professional goals. That contribution came in the form of an $8 million bequest that, when combined with matching funds from the state of Florida, provided some $16 million for the establishment of the Ada Belle Winthrop-King Endowed Memorial Fund.

The endowment, administered by the Winthrop-King Institute for Contemporary French and Francophone Studies, supports scholarships to enable students to engage in foreign travel and study, as well as an extensive program of activities that brings to campus scholars, writers, and other public figures from the French-speaking world.

Not only students of French, but those studying all languages within the modern languages department, benefit from the institute's presence, Munro says.

"While we offer more scholarships in French than in the other languages taught in the department," he says, "each language does have at least one Winthrop-King scholarship for summer study abroad. We also fund graduate students' travel to conferences and research trips, which helps them greatly in their work and in enhancing their competitiveness in the job market.

"Our students go to France, Spain, Latin America, Italy, Germany, China, Japan, Brazil and Lebanon. Without the institute, they would not be able to do so."

Munro points out that students also benefit from the extensive range of guest speakers and international conferences organized by the Winthrop-King Institute.

Mark Pietralunga, chair of the Department of Modern Languages and Linguistics.

Faculty member Zeina Schlenoff (top right) with students at a Winthrop-King Institute dinner event in 2013.

"Students can meet and engage with some of the leading figures in French and Francophone studies, right here at FSU," he says.

Another person who was instrumental in the creation of the institute is Mark Pietralunga, a professor of Italian who is currently serving his second tenure as chair of the Department of Modern Languages and Linguistics. (His first tenure coincided with the establishment of the Winthrop-King Institute in 2001.) He is quick to praise some of the other individuals who were instrumental in making the institute a success.

"One of the great pleasures I had during my first tenure as chair," Pietralunga says, "was to work closely with Bill Cloonan, who was then director of the department's French program, and former College of Arts and Sciences Dean Donald Foss in developing the future of the Winthrop-King Institute and hiring an outstanding scholar and administrator to direct it.

"After a long and challenging recruitment process, I'm proud to say that we made the perfect hire in Alec Hargreaves, a world-renowned specialist in French immigration issues. Alec laid the foundation and rapidly made the Winthrop-King Institute for Contemporary French and Francophone Studies the internationally recognized institute that it is today."

Hargreaves served as director of the institute from its creation until his retirement in 2011.

Pat Winthrop-King received some major recognition of her own. In 1989, the French government bestowed on her the rank of Chevalier des Arts et des Lettres. The honor recognizes significant contributions to the arts, literature, or the propagation of these fields in French culture. Also, in recognition of her many years of service and generosity to the University, Winthrop-King received an honorary doctorate of humane letters from FSU in 1991.

All photos courtesy of the Winthrop-King Institute for Contemporary French and Fracophone Studies.

Schlenoff (third from left) with Winthrop-King students at the Eiffel Tower in Paris in 2013.

A haven and a home

The legacy of famed physicist Paul A.M. Dirac at FSU

Dirac in 1933, during his early years as a fellow of St. John's College, Cambridge.

Anyone associated with FSU is likely to have at least encountered the name Paul Dirac. He is the namesake of the Dirac Science Library on the main campus. Paul Dirac Drive in southwest Tallahassee is named in his honor. The Nobel Laureate Walk near the new psychology and life sciences buildings includes a bust of Dirac that keeps company with other great FSU professors. His legacy is everywhere.

It might seem like an excessive amount of memorializing, especially for a man who spent only the tail end of a long career at the university. The relationship between FSU and Dirac, however, was a mutually and tremendously beneficial one. Even now, just a year shy of three decades since Dirac's death, his contribution to FSU lives on in ways big and small.

Dirac's impact on the world was so enormous that his impact on FSU was almost automatic once he agreed to join the faculty.

Between 1971 and 1984, the faculty of Florida State University included one the greatest scientists of the twentieth century. He co-invented the most revolutionary theory of the past 150 years, quantum mechanics—an achievement that earned him the Nobel Prize for Physics in 1933—and is now revered as the first truly modern physicist.

Joe Lannutti, a prominent physics professor at the time Dirac was being recruited, said getting him to the FSU physics department "would be like the English faculty recruiting Shakespeare."

Overcoming a dark youth

Dirac endured a difficult childhood. The son of an English mother and a Swiss father, he was born in Bristol, England, where his father was a teacher of modern languages. Language played a key role in the father-son relationship, as Dirac's father struggled with English and forced his son to speak only French to him.

Dirac, who, by his own admission, was not skilled at language acquisition, often chose to say nothing rather than speak to his father, who would punish him severely for even small mistakes in his French. Dirac formed a bitterness toward the man that lasted the rest of his life.

Whether that relationship is the direct cause or not is up for debate, but Dirac remained a quiet and reserved man for the rest of his life. His colleagues, both in England and at FSU, found him peculiar and troubled. But he was also brilliant.

Albert Einstein, who later became an admirer of Dirac's work and whose theory would become instrumental in Dirac's signature achievement, commented on the precarious line between the two sides of Dirac's mind.

"I have trouble with Dirac," he told a friend. "This balancing on the dizzying path between genius and madness is awful."

Despite the pain he endured in his youth, Dirac went on to earn two degrees with top honors at the University of Bristol. He then made his way to St. John's College at Cambridge University, where he studied relativity and the new field of quantum mechanics. He earned his Ph.D. in 1926 and became a fellow of St. John's immediately after.

Dirac spent almost his entire career at Cambridge, the one major exception being his 13 years in FSU's physics department.

Luring a genius across the pond

The process that brought Dirac to FSU was a slow one, subject to Dirac's notoriously deliberative nature. As he aged, Dirac felt he was being marginalized by his colleagues at Cambridge, and his wife wanted desperately to emigrate to the United States, where their daughters Mary and Monica and her brother Eugene were at the time.

Several universities, including the University of Miami, competed with FSU to draw Dirac to their campuses. Even after FSU made a formal offer of a professorship to Dirac in early 1971, he weighed the prospect a full five months before agreeing to come.

Dirac's arrival at FSU was surrounded by fanfare. By simply joining the faculty, he had raised the profile of the university and drawn a great deal of publicity. He was an odd person on which to place all that hype, however, as he was known to be very withdrawn and difficult to talk to.

"This famous French scientist came to visit, and all he wanted to do was meet Paul Dirac," says Kurt Hofer, a biology professor and one of Dirac's very few confidants at FSU. "Bernie Sliger, who was the president then, took the Frenchman to Dirac's house on Chapel Drive and Dirac was just not feeling very well. So he didn't allow them in."

Still, while Dirac could be reclusive, he could be persuaded with the right approach. Dirac had as close a relationship as he seemed capable of with Hofer, who had helped him rid himself of a lifelong digestive problem and earned Dirac's undying trust. Sliger knew that if anyone could coax Dirac out, it was Hofer.

"They called me in my laboratory," Hofer recalls, "and I had to walk up there and, indeed, the house was locked. But I knew the layout of the house, so I climbed over the fence to the back door, which I knew was not secure. I walked in, and there was Paul. He wasn't even surprised that I had showed up. I told him I knew he wasn't feeling well, but it would help his mind and mood to get up and meet people. And he got up and went to the door."

Dirac found in FSU an ideal place to finish his career. He was free to work on whatever he liked and treated with a respect that had faded for him back at Cambridge. He took long walks and enjoyed swimming in the beautiful lakes and sinkholes of North Florida. He spent his working days in an office in the Keen Building, where no one would question his normal greeting for those who knocked on the door—"Go away."

It was an odd match—FSU had no prior connection to Dirac, and Dirac was an ill-suited public face for a department on the rise—but the relationship reaped dividends on both sides.

A lasting impact

After his death in 1984, the importance of Dirac to FSU's scientific history only expanded. His wife, Manci, formally opened the Paul A.M. Dirac Science Library in 1989, and, not long after, had his archive moved there from its previous home at Cambridge.

In May of 2013, Dirac's daughter, Monica, a longtime Tallahassee resident, donated even more of her father's papers to FSU, expanding what was already a resource of huge historical and scientific importance. Her contributions included the priceless correspondence between Dirac and Manci between 1933 and 1937—papers that Dirac's biographer Graham Farmelo says 'shed wonderfully bright light on Dirac's character.'

Both Dirac and his wife are buried in Tallahassee's Roselawn Cemetery. In the years since Dirac—often referred to as the father of modern physics—chose FSU, the physics department has flourished and the stature of science in general at FSU has grown tremendously.

The addition of the National High Magnetic Field Laboratory, which is located on the street bearing Dirac's name, has brought some of the world's most advanced researchers in a variety of fields to the university. New buildings dedicated to science, new advancements made by FSU faculty, and new resources for students have proliferated over the past three decades.

Those achievements can't be singularly attributed to Dirac's influence, of course. But it's hard to ignore the importance of having one of history's truly great scientists choose FSU as a haven and a home.

And for all his inscrutability and difficulty expressing his feelings, it seems FSU, and the people he met there, may have had a greater impact on him than most could see.

"He just was not demonstrative," Hofer says. "Once you got to know him, you got to interpret very tiny signs of emotion that normally would escape you with another person."

This article is based primarily on a biography of Dirac titled The Strangest Man, *by Graham Farmelo, which won the Los Angeles Times Science Book Prize in 2009. For more information, see grahamfarmelo.com.*

Photo by Wil Oakes

This statue of Dirac was unveiled outside FSU's Dirac Science Library at its opening in 1989.

Photo by Nima Kasraie

Dirac and his wife, Manci, are buried in Tallahassee's Roselawn Cemetery. Dirac died on October 20, 1984.

Photo by Wil Oakes

A bust of Dirac, celebrating his 1933 Nobel Prize, can be found near FSU's new science buildings on the Nobel Laureate Walk.

Ruby Diamond

New Frontiers

Over the past 10 years, Florida State University has seen dramatic change. Renovations, new construction, and expansions of the campus have improved the facilities that serve its students, faculty, and staff. With more than 40,000 students, the FSU campus is under extreme strain every day, but the many improvements made in the past decade have enabled the university to keep up with its growth. The College of Arts and Sciences, as FSU's largest college, has benefitted tremendously, from new academic buildings for its own programs as well as the communal facilities that benefit the entire university community.

Ruby Diamond Concert Hall exterior

Ruby Diamond Concert Hall interior

Ruby Diamond aerial

Ruby Diamond Concert Hall interior

Renovations on Ruby Diamond Concert Hall began in 2008 and were completed in 2010. The original auditorium was built in 1911.

Photos courtesy of the FSU Facilities Design & Construction Department and the FSU Photo Lab.

Life Sciences

Chemistry Building

Psychology Building

Chemistry Building

King Life Sciences Building

King Life Sciences Building

Psychology Building

Several new science buildings were built on the former site of the Florida State University Schools starting in 2000. They included new buildings for life sciences, psychology, and chemistry.

Site of the original Florida State University Schools, known to many as Florida High

Photos courtesy of the FSU Facilities Design & Construction Department.

Wildwood

Wildwood Hall, completed in 2006, is one among several new residence hall constructions and renovations completed over the past decade.

Wildwood Hall

Photos courtesy of the FSU Facilities Design & Construction Department.

Wildwood Hall

Werkmeister

Photos courtesy of the FSU Facilities Design & Construction Department.

The Werkmeister reading room was renovated in 2011 and now hosts the FSU Heritage Museum.

Werkmeister renovation

Werkmeister empty

Seminole Surge

General Motors fills its ranks with FSU grads

by Jeffery Seay

Based on a decision to stop using outside information technology contractors and, instead, begin building an in-house technology group, General Motors has hired 39 Florida State University IT students and recent graduates since the fall 2012 semester.

The dramatic number of hires from Florida State within only a few months is a result of the emphasis the university is placing on career readiness — helping its students keep up with the latest technologies to allow them to get hired and to hit the ground running once they embark on their careers.

The new hires have been filling intern and full-time positions in various GM research and development hubs across the country, including Atlanta, Austin, Texas, and Warren, Mich.

16 of the 39 hires came from the Department of Computer Science, housed in the College of Arts and Sciences.

"It is not surprising to see that our students are doing well in industry, with some of them being actively recruited by GM to fill the skills gap," said Robert van Engelen, chair of the Department of Computer Science, who has led the department in producing software development tools that are heavily used in the automotive and embedded-systems industries. "Close to 100 percent of our students secure employment before graduation or in the months shortly after earning their degree."

In addition to the 16, two computer science students worked as interns this summer. They are likely to receive employment offers from GM next spring, according to van Engelen.

"This news confirms the high quality of our Department of Computer Science degree program and the lofty performance of our students," said Sam Huckaba, dean of the College of Arts and Sciences. "It is no secret that today's high technology needs demand a prepared and talented work force. I couldn't be more pleased to learn that our own faculty have built a program that is producing exactly the type of student that a powerful company like General Motors wishes to employ, and in great numbers."

GM also hired 12 students from the School of Library and Information Studies, housed in the College of Communication and Information.

"This is a good validation of a strong IT program in the School of Library and Information Studies," said Larry Dennis, dean of the college. "It shows that our students are prepared to enter a dynamic job market with a great company."

Ebe Randeree, associate dean of the college, has been coordinating the university's relationship with GM's IT recruiters.

"The GM recruiters first visited the School of Library and Information Studies in the fall of 2012," Randeree said. "Our IT students impressed them so much that they accepted applications beyond the initial cutoff dates, offering interviews to several candidates. They returned again in the spring to recruit the next round of qualified students."

Derik Goodall, who is leading GM's IT recruiting efforts nationwide, praised Florida State's information technology students as "energetic" and "talented."

"The FSU students we have brought on have a passion in technology interests, proven analytical and problem-solving skills, and leadership experience," Goodall said.

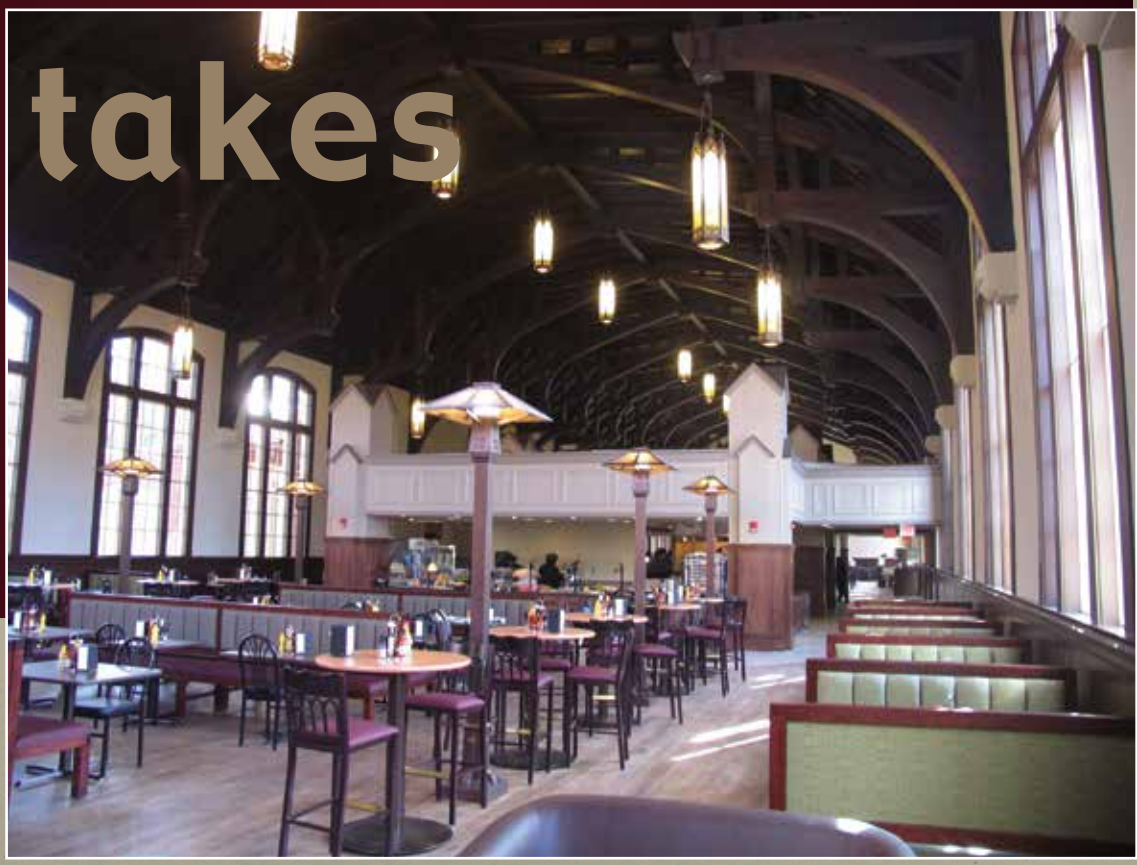
This article was adapted from Jeffery Seay's original piece, which appeared on news.fsu.edu.

College of Arts and Sciences alumni score major FSU awards

2013 has been an auspicious year for alumni of the College of Arts and Sciences. The college had two representatives among the recipients of the Thirty under 30 award, recognizing excellence in young alumni. **Michael Lowry,** the hurricane specialist for the Weather Channel, earned his bachelor's and master's degrees at FSU in 2005 and 2009. **Joe O'Shea,** a member of the undergraduate class of 2008 and a former Rhodes Scholar, is the current FSU director of undergraduate Research.

Two A&S alumni were honored this year through the Grads Made Good program which, since 1974, has honored alumni who have made significant contributions through their careers. Veterinarian and philanthropist **Jim Cook**—who was named America's Best Veterinarian in 2007—joined anthropologist and University of West Florida president **Judy Bense** in taking the honor. Cook earned his B.S. from FSU in 1988. Bense earned her B.A. at FSU in 1967, as well as her M.S. in 1969.

final takes



The Suwannee Dining Hall was originally constructed in 1938 to serve the Florida State College for Women. It has been a popular dining spot for students for many years since FSCW became Florida State University, and after its renovation in 2006, it is prepared to serve generations of FSU students to come.

Nancy Smilowitz

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Assistant Dean of Development Nancy Smilowitz says she loves working with people who have a thirst for knowledge and a desire to enhance higher education. May 2013 will mark 15 years that Nancy has been in the Office of Development at Florida State University's College of Arts and Sciences. She began at FSU as an associate director, became senior director in 2002 and assistant dean in 2008. In her 15 years as a liaison between the college and the FSU Foundation, Nancy has raised over $30 million through outright and deferred gifts.

Nancy earned her bachelor's degree in sociology from Penn State University, where she also worked part-time fund raising in the phone center. Between her time at Penn State and her arrival at FSU, Nancy served as the assistant director of annual giving at Ball State University in Muncie, Ind.

Jeff Ereckson

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Following a 17-year career in the financial services industry in Atlanta, Jeff Ereckson joined the FSU Foundation in March 2005 as director of planned giving. As a liaison to as many as seven colleges within the university, Jeff worked with to raise more than $8 million in just over four years. He also helped raise funds and gifts-in-kind to build the new FSU President's House. In November 2009, Jeff joined the College of Arts and Sciences as the director of development.

In addition to being a graduate of Florida State University (B.S., Finance, 1985), Jeff was on the Renegade Team while in school and was Chief Osceola in 1983 and 1984. Jeff also served on the FSU Alumni Board and the College of Arts and Sciences Leadership Council for eight years. He and his wife, Renee, live in Tallahassee with their two sons.

John Trombetta

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John Trombetta joined the foundation in July of 2012. John came to FSU from Valdosta State University where he served as the Director of Alumni Relations. Prior to his work in Higher Education, John worked for 10 years in financial services. A native of Tallahassee, he is happy to be back in his hometown and to have the opportunity to work at FSU. It energizes John to see the talent and passion that faculty have for their subject and the university.

John is a graduate of Valdosta State University (B.A. Political Science). While there he was Comptroller of the Student Government Association, a member of the Georgia Board of Regents Student Advisory Council where he served as Chair of the Academic Affairs Committee and received the Student Advisory Council Tom McDonald Award for Career Achievement. Currently, John is pursuing his doctoral degree in Educational Leadership also at Valdosta State.

Brett Lee

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Brett is a native of Crestview, Fla. In 2011, he earned a Bachelor of Science degree in marketing from Florida State. After graduation, he immediately accepted a position in Data Management with the FSU Foundation and worked most recently in the Department of Gift Processing before moving over to the College of Arts and Sciences.

For fun, Brett plays on the FSU Foundation flag football team and enjoys hiking and kayaking. In his new role as a development officer, he will be advancing the many initiatives of the college and working with faculty, staff and students throughout the university to raise interest and awareness among current and prospective donors.

Torri Miller

Development Coordinator
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Torri Miller, born and raised in Miami, graduated from FSU in 2006 with a bachelor's degree in residential science. The first time she visited Tallahassee and toured the campus, she realized that FSU was the place for her. Torri met her husband, Blake Miller, while a student, and they were married shortly after her graduation. From 2002-2008, she worked at the Tallahassee Leon County Civic Center, where she learned all about catering events and the restaurant industry, and from 2007-2010, she worked at the Tallahassee Builders Association as their marketing coordinator. In April 2010, Torri joined the College of Arts and Sciences, where she is happy to be working at the university where she experienced some of the best moments of her life.

Barry Ray

Media & Communications Officer
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Born and raised in Jacksonville, Fla., Barry Ray graduated from FSU in 1988 with a bachelor's degree in English literature. He credits his college studies with helping him to hone the skills needed to become a successful writer, editor, and communications professional. He has held communications positions in state government and with a statewide association, and has worked extensively as a freelance writer and editor. In 2005, Barry returned to FSU, working with University Communications to focus national and international media attention on the groundbreaking research and accomplishments of Florida State faculty.

Barry moved to the College of Arts and Sciences early this year and is excited about this new opportunity to promote the college. He and his wife, Susan (a 1987 FSU grad), whom he met while he was working his first job at a daily newspaper in Tallahassee, have two children.

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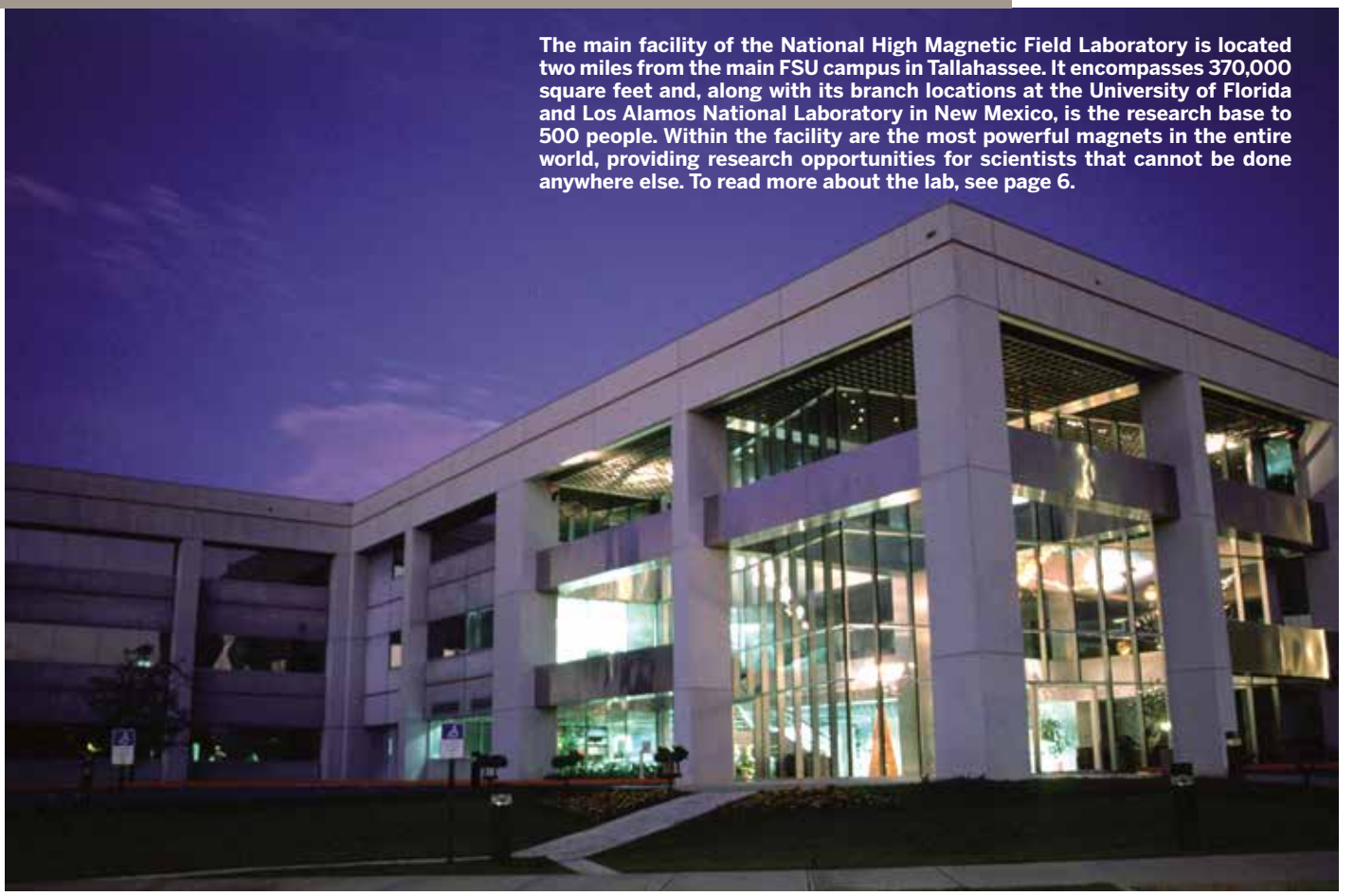

The main facility of the National High Magnetic Field Laboratory is located two miles from the main FSU campus in Tallahassee. It encompasses 370,000 square feet and, along with its branch locations at the University of Florida and Los Alamos National Laboratory in New Mexico, is the research base to 500 people. Within the facility are the most powerful magnets in the entire world, providing research opportunities for scientists that cannot be done anywhere else. To read more about the lab, see page 6.