

Writer

Emily Davis

Graphic Designer

Klansee J. Tozer

Contributing Photographers

Arkansas Department of Parks and Tourism

Kelley Bass

Center for Arkansas History and Culture

Emily Davis

Megan Douglas

Kimberly Wessels Kaczinski

Prince Sultan University

Marie Sandusky

Sequoyah National Research Center

Lonnie Timmons III

Office of Research and Sponsored Programs

Abhijit Bhattacharyya

Interim Vice Provost for Research (Beginning July 1, 2016)

Paula Casey

Interim Vice Provost for Research (Retiring June 30, 2016)

Staff

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Stacey Moran, *Administrative Specialist*

Emily Davis, *Editor/Grants and Contracts Administrator II*

Grants and Contracts Processing and Submission

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ORSP Mission Statement

ORSP provides information, services, and support to members of the UALR community to enable them to compete successfully for outside funding to conduct scientific research; create works of art; compose music; write books and articles; improve their performance in the classroom; and better serve their students, professions, and the public.

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Letter from the incoming Vice Provost for Research and Dean of the Graduate School



Students at the University of Arkansas at Little Rock pursue excellence in a wide variety of disciplines, honing their critical thinking skills under the leadership of outstanding faculty. These faculty members partner with students, each other, and external partners to launch and conduct groundbreaking research projects. Having experienced the caliber of both our students and our faculty first-hand, I am privileged to serve as the new Interim Vice Provost for Research and Dean of the Graduate School, beginning in July 2016.

I take this opportunity to thank my predecessor, colleague, and friend—Dean Paula Casey—for her immense contributions to the institution as the Interim Vice Provost for Research and Dean of the Graduate School. I wish her all the best as she begins her retirement. She will be missed.

I've been a member of the UALR community since 2002, when I joined the erstwhile Department of Applied Science as an associate professor. My personal research has focused on smart materials and thin films. Over the past 14 years, I have had the privilege of collaborating with students at every point in their academic career, from high school to postdoctoral work. The fresh ideas, astounding work ethic, and unstoppable ambition that they display are a testament not only to the power of young minds but to the culture of creativity and innovation fostered by the UALR faculty and staff. They constantly push one another to ask questions, challenge answers, and find solutions to seemingly impossible problems.

UALR has a vibrant research and creative activity enterprise in the arts, social sciences, education, physical and natural sciences, information technology, and engineering. It will be my objective to make sure that the vibrancy is not only maintained but also reinforced through synergistic collaborations. I also consider it my obligation to continually find ways to connect our outstanding faculty with the community and find solutions to problems in order to contribute to the quality of life of the resident population in Central Arkansas and beyond. This is part of the university's commitment as it pursues its quest to become one of the top metropolitan, community-engaged research universities among the sixteen member states of the Southern Regional Education Board (SREB).

In my new role, I am deeply humbled by the opportunity to collaborate with our community's passionate minds and dedicated students, faculty, and staff every day.

A handwritten signature in black ink that reads "A. Bhattacharyya". The signature is written in a cursive style.

Dr. Abhijit Bhattacharyya
Interim Vice Provost for Research and Dean of the Graduate School

Letter from the outgoing Vice Provost for Research and Dean of the Graduate School



Since 2013, I've had the honor of serving as the Interim Vice Provost for Research and Dean of the Graduate School at UALR. During that time, I worked with some of the university's best minds—from educators to physicists to radio hosts. Every project idea that's come across my desk has been a testament to the caliber of research that this community promotes, and I've come to see that the drive to make a difference is synonymous with the UALR spirit.

All across campus, researchers are working together to find new methods of treating diseases, supporting differently abled individuals, and protecting our nation. In the College of Engineering and Information Technology, for example, Dr. Mary Yang and Dr. Kenji Yoshigoe are developing computational methods for observing and tracking cancer-causing genetic mutations, with the support of the National Institutes of Health. In the Center of Integrative Nanotechnology Sciences, Dr. Alex Biris is investigating the use of nanostructures to pinpoint and possibly destroy individual breast cancer cells, funded by multiple grants.

In the last year, Professor of Systems Engineering Dr. Cang Ye has proposed and began developing multiple assistive robotic devices for the blind and elderly—and received funding for each. The Arkansas Research Alliance fellow is making life easier for these populations with each new discovery he makes.

And in the Department of Information Science, Dr. Nitin Agarwal is taking the social media research world by storm, earning four major grants in a single academic year. The inaugural Jerry L. Maulden-Entergy Endowed Chair Professor of Information Science is hard at work investigating how terrorist organizations and other deviant groups use Internet-based platforms to spread propaganda and promote violence.

But scientists aren't the only ambitious innovators at UALR—our archivists, artists, and writers are the campus's tireless, unsung heroes. The Sequoyah National Research Center has been collecting, preserving, and honoring the creative works of Native peoples for over 30 years, and with fresh programs and archives always in development, they show no sign of slowing down. Likewise, the staff at the Center of Arkansas History and Culture continually develops relevant events and collections that draw crowds and highlight important social issues.

The number of groundbreaking projects and unparalleled creative works taking place at UALR every day is staggering, and it's been my privilege to watch dozens of them unfold over the last three years. As I begin my retirement, I know that Dr. Abhijit Bhattacharyya, the next Interim Vice Provost for Research and Dean of the Graduate School, will promote and nurture research on campus in innovative ways. I look forward to seeing how the next generation of UALR researchers changes the world.

Paula Casey

Interim Vice Provost for Research and Dean of the Graduate School

Letter from the Director of the Office of Research and Sponsored Programs



From carrier robots to collaborative radio stations, the projects of UALR innovators have continually made the news over the last year. At the Office of Research and Sponsored Programs, we partnered with researchers, writers, archivists, teachers, and performers with faculty and staff from every college at UALR to make their scientific and creative goals a reality.

We've experienced these minds at work in a new way this year with the launch of our Research Colloquium series. At these monthly gatherings of faculty, staff, and students, we heard from a number of researchers about their recent projects, then engaged in discussions with them. From the College of Business, for example, Dr. Lenita Davis walked us through the Holy Land Experience in Orlando, Florida, and presented an analysis of the park's rhetoric and marketing strategies. Dr. Joseph Williams, Associate Professor of Rhetoric and Writing, and Dr. Amar Kanekar, Assistant Professor of Health, Human Performance, and Sport Management, showed us their in-development video game that will be used to teach students how to run a public health campaign.

Throughout 2015 and 2016, I have been impressed by the innovation, ambition, and excellence that UALR's faculty and staff exude. Our researchers continually represent the university well to outside organizations, from the National Institutes of Health to the Corporation for Public Broadcasting. And with the UALR Seed Grant Program, exceptional project ideas don't have to wait for outside funding. The program funded two research initiatives in 2015 and two more in 2016, enabling four interdisciplinary teams of UALR faculty to launch new efforts in science, community support, compassion, and criminal behavior.

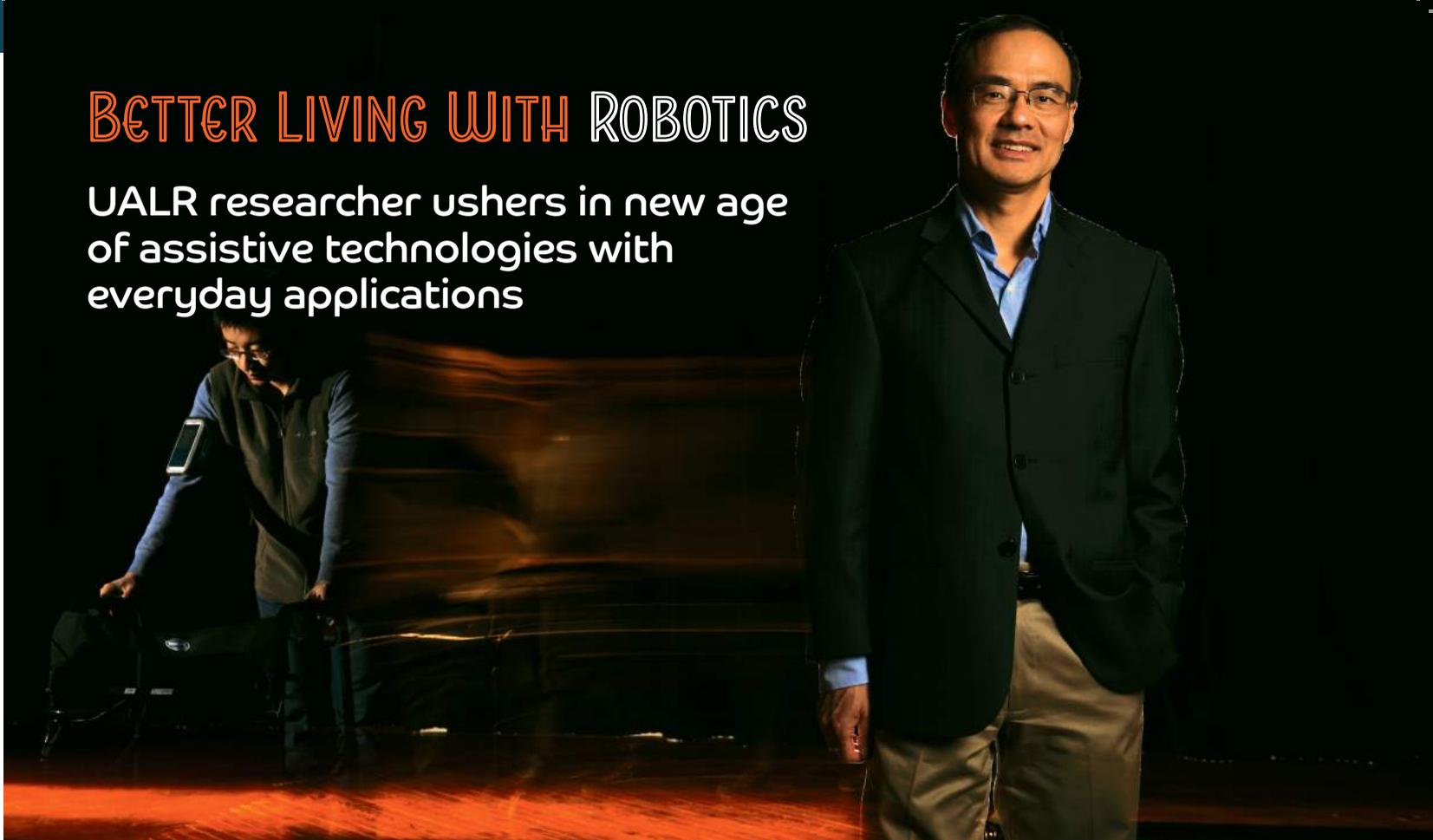
In each research project, special event, and educational program of the past year, the campus community has displayed a commitment to cutting-edge research, vital community service, and insightful artistry. Research in the Rock offers just a small glimpse into the diverse world that's thriving at UALR. We hope you enjoy learning and collaborating with these scholars as much as we do every day.

A handwritten signature in cursive script that reads "Tammie Cash".

Tammie Cash
Director of the Office of Research and Sponsored Programs

BETTER LIVING WITH ROBOTICS

UALR researcher ushers in new age of assistive technologies with everyday applications



In pop culture, robots have a bad reputation for plotting against their human counterparts. Countless movies show them taking over the world, ruling over people with, literally, an iron fist. But these doomsday visions don't reflect the future of robotics as UALR's Dr. Cang Ye sees it, since Ye predicts robotic devices will only continue to drastically improve our lives down the road. With funding, collaborators, and passion to spare, he's making this hope-filled vision a reality.

"The root of my passion in robotics is science fiction. I was fascinated by the robots R2-D2 and C-3PO when watching Star Wars," said Ye, an Arkansas Research Alliance Fellow. His interest may have been sparked by a galaxy far, far away, but his projects propose solutions to real problems in the real world.

Supported by the National Institutes of Health (NIH) through the multi-agency National Robotics Initiative, Ye's research focuses on developing innovative robotic devices to assist elderly and visually impaired individuals with everyday tasks such as exercising, grocery shopping, and crossing the street. Not only do the devices have the potential to increase users' quality of life, but Ye is also designing them to be as unobtrusive and intuitive as possible. One will take the familiar form of a walker, one will be worn on the user's hand, and one will be a cane.



Independence for the visually impaired

Ye, a professor of systems engineering, began designing the robotic cane after observing the current aids available for the visually impaired. "I often saw visually impaired students walking on campus with a white cane, and I believed that they should not [have to] use such a low-tech mobility tool in the age of driverless cars," he explains. In contrast to the traditional white cane, Ye's cane interacts with the user and his or her surroundings to "see" upcoming objects and obstacles before the user reaches them. It also orients the user in an indoor environment and guides him or her to the desired destination. As a result, the user can navigate spaces more safely and independently.

The robotic cane could serve many of the nearly 23 million Americans living with vision loss estimated by the American Foundation for the Blind, as could the hand-worn device Ye is

developing. Sponsored by an \$820,263 NIH grant, Ye, his team of postdoctoral, graduate, and undergraduate students, and his research collaborator Dr. Yantao Shen at the University of Nevada, Reno, are creating a Wearable Robotic Object Manipulation Aid (W-ROMA) for the visually impaired. Equipped with a camera, the device detects the user's surroundings and guides him or her to interact appropriately with them.

The device should make it easier for visually impaired people to remove obstacles and perform essential tasks, such as finding a door handle. The project also provides student researchers the opportunity to receive rigorous scientific training in robotics, biomedical engineering, and other advanced subjects.

Support for seniors

The number of senior citizens in America grows rapidly every day, with the total senior population expected to reach 88.5 million within the next 40 years, according to the U.S. Census Bureau. Ye recently partnered with a team of researchers from three other universities to address the mobility obstacles this population faces. Backed by an over \$1 million NIH grant, these researchers are developing a quadrupedal human-assistive robotic platform (Q-HARP), a support device that could help seniors stay active and live independently. If successful, the Q-HARP will dramatically outperform walkers and powered wheelchairs, as well as existing comparable robotic technology.

Ye is the project's subcontractor, which is led by the University of Alabama's Dr. Xiangrong Shen. In addition to Shen and Ye, Dr. Anne Halli-Tierney of UA, Dr. Lena Ting of Emory University, and Dr. Sanford Meek of the University of Utah will serve as principal investigators on the project.

The researchers plan to study the physical movements and needs of real senior citizens and their caretakers to ensure that the Q-HARP is as practical and user-friendly as possible. The Q-HARP's user will stand while utilizing it and hold on to supports on each side, similar to a walker. However, unlike any currently available support devices, the Q-HARP's four robotically powered legs bend, allowing the robot to navigate stairs, curbs, and other obstacles that usually stop wheelchairs and walkers.

Additionally, the enhanced walker is interactive with and responsive to the user. Ye, assisted by a UALR doctoral student, is creating the computational system that monitors and detects users' movements. This system will minimize the risk of falling and maximize users' control over the device.

The robot is designed to help seniors stay active and independent, potentially increasing their quality and length of life. With these capabilities, the Q-HARP could make otherwise difficult or impossible tasks, such as shopping alone and taking walks, accessible for older adults.

Research that rocks reality

After over 20 years in robotics, Ye still hasn't lost his love for the field. He joined other top-notch, robotics-minded scientists in Washington, D.C., this summer for the Congressional Robotics Caucus, where he presented the robotic cane. Even with his success, the satisfaction of producing tangible results and practical applications keeps driving Dr. Ye to pursue innovative projects. "I enjoy that I can see my projects turn into something that works in the real world," he says—an ending many scientists do not achieve. And when this work could change the lives of millions, it's no wonder the research community is taking note of Dr. Cang Ye.

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Spotlight on Student Researchers: Amit Saha



Though originally from India, Amit Saha has made his home in Little Rock for the past 14 years. As a doctoral student in the Integrated Computing program, he works

closely with Dr. Nitin Agarwal to research the power of social media to affect our lives. In fall 2015, he attended the Social Media Technologies, Communication and Informatics Conference in Barcelona, Spain, with Dr. Agarwal, earning a top paper award for his research.

What brought you to UALR? What program are you in?

I decided to continue my unfinished education and found UALR to be more accommodating to international students. I joined UALR in fall 2009 in the Master of Science in Information Quality program and completed my master's in fall 2011. I joined the Integrated Computing Ph.D. program in fall 2012 and graduated spring 2016.

Why did you choose this field?

Information quality is an emerging field, and for working professionals the topics and subjects covered under information quality are quite relevant. My Ph.D. work is based on social media use in the healthcare arena. With increasing use of social media by all ranges of populations, there should be more research-oriented work on social media use in the healthcare arena.

Describe your work with Dr. Agarwal

With the high prevalence of autism spectrum disorder (ASD) among the younger generation, there is a shortage of adequate resources to deliver care for individuals dealing with autism. Families face huge economic costs and emotional stress to provide care for persons diagnosed with ASD. Globally, almost two billion people use social media regularly to connect and stay in touch with their friends, family, and acquaintances, irrespective of distance. For families dealing with autism, social media provides an open and easily

accessible platform to share, gather, and exchange information. Systematic analysis of this vast interaction among autism community members on social media can be used to build a learning tool for others who are dealing with autism.

In the study, we systematically analyzed the interactions between families in autism communities on different social media platforms. We found that the autism community provides significant social support to its members on both Twitter and blogs. It was also found that autism community members on social media add minimal stress to the community. Families dealing with autism have a better quality of life, reduced stress, and additional social support facilitated by interactions with fellow autism community members in social media.

What interests you about this research?

I am working at UAMS with patient support and with a high rate of children diagnosed with ASD. My research motto is to assist people who are dealing with autism-related issues, enabling them to find better sources of information and ultimately improving their lives. Professionally, this research can help me connect to others who are working in the healthcare arena and social media, which in turn can help me reach my future goals.

You recently attended the Social Media Technologies, Communication and Informatics Conference. How was that experience?

It was a great experience attending the conference in Spain. I was able to interact with many researchers in this field and exchange ideas on various research topics. The feedback I received from the audience on my research is helping to turn my work in a much better direction. Personally, I think this conference was very well organized and successful. I gained a lot of insights and knowledge by attending.

Putting Data on the Map

The Ottenheimer Library adds a new weapon to their arsenal of student learning aids: the Geographical Information System.

From state-of-the-art technology to study tools, the Ottenheimer Library has provided the public with free access to diverse, constantly evolving resources for decades. In 2015, this list got just a bit more exciting, thanks to a \$4,000 grant from Amigos Library Services, a national not-for-profit library network.

The Amigos Fellowship and Opportunity Award allowed the university's Collections and Archives Division to purchase a workstation for a Geographical Information System (GIS), a computer program that creates dynamic visuals out of inputted data. Spearheaded by Library Director J.B. Hill, Research and Community Engagement Librarian Karen Russ, and Research and Scholarly Communication Coordinator Carol Macheak, the new GIS station will be free and open to the public. As the resident Government Information Specialist, Russ will be the campus liaison for the GIS station, helping users find and utilize sound data.

What does it do?

A popular tool in both the academic and professional worlds, the GIS translates complex information such as statistics or census data into visual representations, often maps. "It's a way of taking any amount of data, whether it's the number of people in the area, the race, the ethnicity, the age, or all of the above, and spreading it out in a geographic piece," Russ explains. "It can be the county, it can be the state by counties, it can be the nation... You could get as focused as a census group, a census block."

By creating images out of this data, the GIS makes it accessible and engaging for visual learners and business and classroom presentations. "A lot of people don't want to deal with statistics because all they see is a great big table of numbers that they don't want to have to see," Russ says. The GIS's visualizations alleviate this burden, turning stale numbers into dynamic pictures.

Who will use it?

Russ is passionate about the GIS's potential to improve student and community learning. "I can't honestly pick a department on campus that couldn't



Ottenheimer librarians Carol Macheak and Karen Russ with a GIS map.

make use of it," she asserted. From history to engineering to the Clinton School, every branch of UALR will be able to benefit from the GIS's capabilities and Russ's expertise. The Library team estimates that nearly 2,000 students belong to programs that could use the GIS—and that's just at UALR. Local high school students and teachers, independent researchers, and interested community members can consult with Russ and utilize the GIS station. Russ, who has helped students navigate data for years, will partner with GIS users to optimize their experience with the tool.

It was this potential demand—and Little Rock's inability to meet it—that prompted the Library to pursue funding for the GIS station in 2015. Before the Library's new addition, a few UALR departments housed spaces with GIS capabilities, but they were reserved for students and faculty. According to Hill, who led the team that wrote the grant proposal, placing a GIS station in the Library gives the community unparalleled access to this unique resource. It also allows the Library to provide a valuable service that capitalizes on the expertise of its faculty and staff.

Though Russ will be the primary facilitator of the GIS's services, all UALR Collections and Archives faculty and staff received four days of training on the system. Macheak coordinated the training efforts, which were led by Jess Porter, Associate Professor of Geography. The sessions invited research leaders from the Center for Arkansas History and Culture to the Sequoyah National Research Center to see how beneficial the GIS can be.

As the GIS's place in the Library is established, the GIS team plans to reach out to additional faculty across campus, urging them to experience the tool for themselves. Hill states that faculty involvement will be essential for making the GIS a success—if faculty recommend it, students will come.



Spotlight on Student Researchers: Shelby Linck

A Clinton, Arkansas, native, Shelby Linck is pursuing her master of arts degree in Public History. As a graduate assistant in the William J. Clinton Presidential Library, she puts her education to use in the real world.



What brought you to UALR?

After graduating from the University of Arkansas at Fayetteville, I moved to Little Rock. I had a few friends who attended UALR and were extremely pleased with their overall experience. The Public History program was exactly what I was looking for, as I was interested in pursuing a career in the museum and archival field.

Why did you choose this field?

I have always been interested in history. Public History provides a great opportunity for me to work with museums, archives, historic sites, and societies. I also love the opportunity to convey history to the public. I think that is a really important and fun thing for me to be able to do. I became interested in museum work during my time as an undergraduate. Tell me about your position at the Clinton Library. I became a graduate assistant for the education department at the Clinton Library in fall 2015. Becoming a GA here has been an incredible opportunity for me. I have helped give school groups tours of the library and assisted with classroom programs that are taught to visiting school groups. I also help guide schools that visit for educational events. I am also learning how to plan educational programs for permanent and temporary exhibits.

What interests you about this work?

The education department is a very important part of any type of institution. It deals with the day-to-day handling of visitors. I really like that aspect. I also wanted to learn more about programming directed toward younger visitors, such as school groups. I think it is very important to learn how exhibits are communicated to children as well as adults.

Have any faculty members been especially influential during your time at UALR?

All of the faculty I have worked with at UALR have been wonderful. Dr. (Charles) Romney has been especially influential during my time here at UALR. He always takes the time to meet with me to listen to concerns and discuss research. He also lets me know of opportunities when they come up.

How do you think this program will benefit you professionally?

It has allowed me to make connections in the community with professionals in the history field. I've learned skills in archiving and public tours, as well as research methods in history. The methods I have learned will allow me to pursue research in the future.

The Social Media Sleuth

Dr. Nitin Agarwal
takes on the world's
favorite pasttime.



Dr. Nitin Agarwal leads a discussion with fellow researchers

Since arriving at UALR in 2009, the Jerry L. Maulden-Entergy Endowed Chair Professor of Information Science has established himself as a leader in the emerging realm of social media research. Now, with roughly half a million dollars in recent grant funding and a new research consortium to his name, Agarwal is partnering with students, faculty, and industry partners to make world-changing advances in the field.

He's investigating how individuals and groups use social media to spread their messages and create action—for both positive and negative purposes. The research has resulted in five books and over 100 peer-reviewed publications, including journal articles, book chapters/encyclopedia entries, and conference proceeding papers. The research studies received the Best Information System Publication of 2012 Award from the Association for Information Systems Senior Scholar Consortium, a few Best Paper Awards, and several best paper nominees.

On the heels of funding announcements from the U.S. Office of Naval Research and U.S. Army Research Office, Agarwal sat down for a conversation with ORSP about his past, present, and future work.

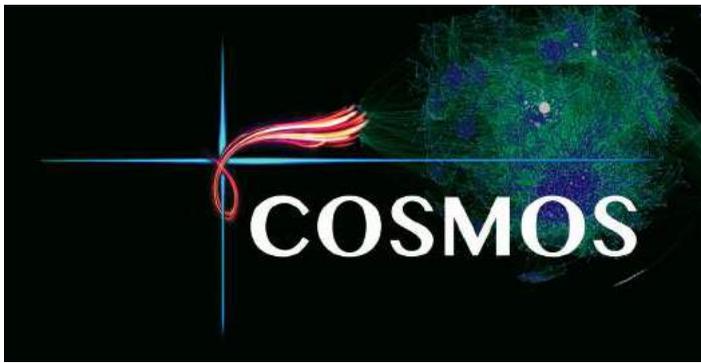
Tell us a bit about your professional journey. What brought you to the research focus you're at now?

I started my research in modern social information systems, social media, and the like during my doctoral studies

(2003-2009) at Arizona State University. I was always curious about online behaviors as they manifest in virtual spaces, specifically how our behaviors are influenced by our social networks and our immediate ties. I wanted to know how virtual communities emerge and evolve. These questions led me to explore the vast scientific literature and theories in the social sciences that date back to the 1960s. However, my interest in the new communication platforms (social media) also drove me to explore these theoretical constructs in modern Information and Communication Technologies (ICTs).

When I joined the Information Science Department at UALR, I had full support from my department and college to explore this research domain and create courses in the area of social computing, social media mining, and analytics. Even as electives, these are among the most popular courses our senior undergraduate and graduate students take.

Now, with the help of funding from the National Science Foundation (NSF), the U.S. Army Research Office (ARO), the U.S. Office of Naval Research (ONR), and the Air Force Research Laboratory (AFRL), as well as the support of the Jerry L. Maulden-Entergy Endowment at UALR, I have established the Consortium of Social Media and Online Behavioral Studies (COSMOS) at UALR where my group—the cosmographers—explores the good, bad, and ugly side of social media.



What does COSMOS do?

At COSMOS, we systematically investigate communication strategies, influential actors, powerful groups, and network structures dominating social media. Our focus ranges from the role of social media in the Arab Spring, Saudi Arabian Women's campaigns for equal rights, and autism awareness drives, to the disturbing use of social media by terrorist groups (such as ISIS) and propaganda campaigns against NATO and the West.

We have also developed an interdisciplinary research program in social computing at UALR that has both foundational and practical emphases. In addition to information scientists, the research program brings together researchers from various disciplines, such as social science, economics, political science, communication and organization science, and computer and mobile networks. It also attracts organizational professionals, including defense analysts from NATO, U.S. Naval Research Lab, Dillard's, Acxiom, @WalmartLabs, and other organizations.

What inspired you to dig into social media research?

I started researching social media around 2006, before some of the most popular social media sites, such as Twitter, Facebook, and YouTube, actually became popular. The idea that how our behavior is shaped by social media and the underlying virtual social network drove me to explore this emerging research area more.

Social media promotes democratization. However, it is not always a vehicle for positive change. Terrorist groups and other non-state actors effectively use social media for radicalization, recruitment, and provoking hysteria and anger in their audiences. Our research investigates these communication strategies and measures the effectiveness of such engagements.

The field of social media research is in its early stages. We need more people and resources to develop the standards and research procedures necessary to systematically tackle the challenges of this highly dynamic and rapidly changing domain.

What areas of modern life has social media impacted most significantly? Would you say this impact has been more positive or more negative?

As I mentioned earlier, there are good, bad, and ugly sides to the social media. In our own research, we have explored the role of social media in affecting socio-political transformation in the Middle East and North Africa (MENA) region. For example, the use of social media by the women of Saudi Arabia to create awareness around some of that region's most gender-biased and inequitable laws and practices earned international attention.

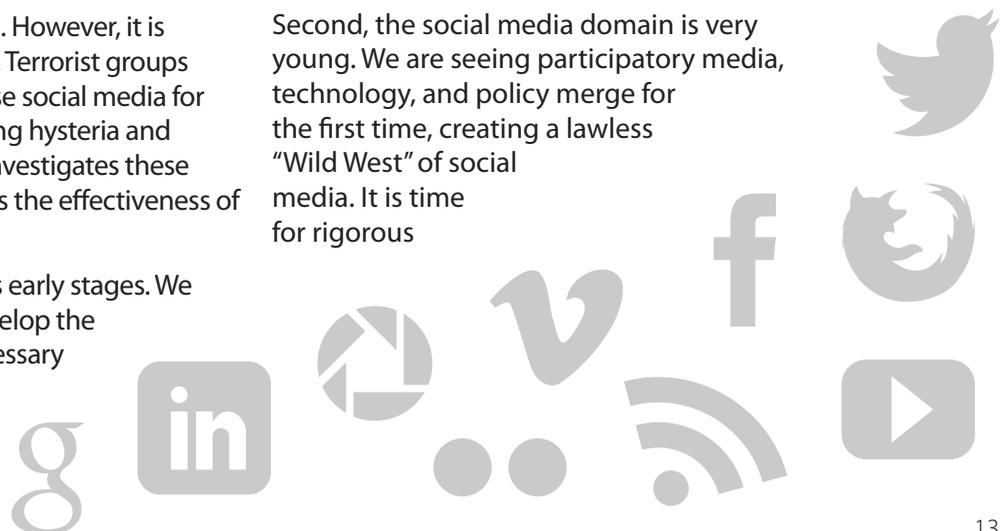
Social media has also played a major role in spreading awareness about autism spectrum disorder and busting the common, but scientifically baseless, myth about vaccinations. However, social media is frequently used for insidious purposes. Some of these ugly sides of social media pertain to the breach of information privacy due to over-sharing and advertising of our personal information by social media service providers. Even more disturbing uses of social media include cyber bullying, cyber stalking, cyber jihad, cyber espionage, and cyber warfare.

At COSMOS, we are studying all these facets of social media. Our recent grants from ARO and the ONR support our efforts to study deviant behaviors on social media, such as terrorist groups' use of social media to radicalize and recruit youth from the West, as well as some state and non-state actors' use of social media to disseminate anti-NATO and anti-West propaganda.

Why do you think deviant groups' use of social media has been so effective?

I believe there are a couple of reasons. First, there is a lack of systematic research in behavioral studies and communication to help us understand the use of social media by deviant groups, which prevents us from detecting and deterring their malicious acts; this calls for rigorous studies on sociotechnical behavioral modeling. This is a significant focus of COSMOS.

Second, the social media domain is very young. We are seeing participatory media, technology, and policy merge for the first time, creating a lawless "Wild West" of social media. It is time for rigorous



debates on censorship in social media, cyber-threat assessment, cyber-human systems, and cyber diplomacy in general.

You frequently bring students in on your projects. What is the importance of student involvement for you, the students, and the project itself?

As a Ph.D.—granting research institution, UALR highly values mentoring our undergraduate and graduate students. Additionally, I always try to bring undergraduate and graduate students on my research projects because of the energy and ‘never give up’ attitude of my students. I work with undergraduate students coming from EIT’s Summer Undergraduate Program of Entrepreneurship and Research (SUPER), the Louis Stokes Alliance for Minority Participation program, and NSF’s Research Experiences for Undergraduates program. I am also working with graduate students from various departments within EIT, and many students from other colleges on campus have expressed interest in working on our research projects.

Currently at COSMOS, we have 10 students at the master’s and doctoral levels working on different projects. Each one of them brings a unique skillset to the group and, most importantly, a desire to improve society with their research. It is always a pleasure to work with such dynamic, motivated, hardworking, and sincere students. They keep me and the projects going.

Your social media research has ranged from terrorism to autism. How do you choose your focus?

It is very difficult to prefer one aspect of research to the other, nor do we want to. Different aspects exhibit different communication strategies, different coordination behaviors, and different network structures. At COSMOS, our focus is always to advance the basic science and make scientific discoveries, regardless of the application. Whether it is terrorism or autism, the driving force for COSMOS is to develop models for the fundamental behavioral patterns online.

How do you think social media will evolve in the next five to 10 years? What kind of role do you see it taking on in our society and our individual lives?

I envision social media becoming a more integral part of our lives. First, with the Internet of Things [a world in which the majority of everyday items are connected to the Internet] around the corner and smart and connected devices woven into the fiber of our lives, we will soon see an explosion in the applications and reach of social media. These applications will potentially have a profound impact on education, health behaviors, security, and society in general.

Second, participatory social media will usher us into the new era of crowd computing (yes, it is different from cloud computing!), where the wisdom of the crowd will be conveniently accessible to help improve anything from the most basic to the most sophisticated tasks. I believe crowd computing may have profound implications on scientific discoveries.

How would you like your research to impact social media users?

Our research at COSMOS tries to emphasize that while social media is a great communication platform, users need to be more aware of the dangers of over sharing and need to exercise discretion while sharing things on social media. Also, whatever you see on social media is not guaranteed to be the full picture. Facts can be easily twisted. Misinformation is rampant.

What’s next for you?

I would like to continue expanding our research on digital and online behaviors, contribute to the discipline of computational sociology, advocate for debates and studies on cyber diplomacy, and explore the areas of digital ethnography and cyber anthropology.

More information about Dr. Agarwal’s research can be found on his webpage, ualr.edu/nxagarwal/Homepage/Projects.html. Portions of the aforementioned work are sponsored by the Department of the Navy, Office of Naval Research and the Office of Naval Research’s Defense University Research Instrumentation Program (DURIP).

Portions of the aforementioned work are also sponsored by the Department of the Army, U.S. Army Research Office. Disclaimer: Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Office of Naval Research, the U.S. Army Research Office, or any other funder.



Minute Materials, Major Solutions

Seed grant winners investigate the use of nanocarbons to address global issues.

It's often said that good things come in small packages. One team of UALR researchers will put this statement to the test as they explore the power of nanocarbons—tiny, incredibly strong materials—to change the world. Supported by a \$50,000 ORSP seed grant, the team will research the ability of modified nanocarbons to purify water, generate and store energy, and attack bacteria. Professor of Chemistry Tito Viswanathan will lead the project. Associate Professor Brian Berry and Drs. Nawab Ali of the Department of Biology and Allan Thomas of the Department of Physics and Astronomy join him as co-principal investigators.

How will it work?

The team will convert lignin and tannin, which are plant-based, abundant, renewable resources, into “doped” nanocarbon, using an innovative, cost-effective process that Dr. Viswanathan designed himself. When carbon nanomaterials are doped, chemical elements replace some of the carbon atoms, changing the material's structure and giving it unusual traits. These changes “are actually defects in the carbon structure,” Dr. Viswanathan said. “And these defects lead to some exciting properties, including high electrical conductivity.”

With these microscopic modified materials, the researchers hope to alleviate some of our world's most critical problems. The need for safe, sustainable, and affordable food, energy, and water is both urgent and globally recognized. Indeed, the National Science Foundation is investing millions of dollars in research projects that offer innovative approaches to addressing it.

The UALR project has the potential to meet all these global needs at once—without draining the earth's resources. “Most of the [current] resources that we rely on for our existence are nonrenewable resource-based. So, if you're dependent on those nonrenewable resources, you cannot have a sustainable civilization,” Viswanathan said. “The project theoretically involves all aspects of sustainability.”

A revolutionary proposal

While nanocarbon research is relatively common today, this project stands out. According to Viswanathan, other researchers working with doped nanocarbons tend to use



Dr. Allan Thomas, Dr. Brian Berry, Dr. Nawab Ali, and Dr. Tito Viswanathan gather in one of UALR's nano labs.

nonrenewable resources and expensive, time-consuming methods. In contrast, the UALR team's process is efficient and sustainable at every step—from the source of the nanocarbons to the method used to prepare them to their practical applications once they're doped.

In addition, doped nanocarbons with multi-functional, real-world applications in food, water, and energy are rare. Viswanathan and his team are some of the only researchers exploring this blended area, and they know just how unique—and exciting—the project is. “We're using renewable resources, very little investment, producing these nanocarbons with amazing properties, which can solve a whole lot of problems.”

Engaging future scientists

Not only does the research have the potential to improve the world, but the researchers are making sure that the next generation has this potential as well. Each participating scientist will supervise a UALR undergraduate student, training him or her in research practices and lab work. The researchers will intentionally seek out students from underrepresented groups, giving them hands-on preparation for a career in science that they might not otherwise have.

The team knows firsthand the importance of giving students practical research experience. Over a decade ago, Berry worked under Viswanathan as a graduate student. Today, the two have authored multiple publications together, and Berry is the coordinator for the Applied Science graduate program.

Berry's expertise in chemistry, as well as Dr. Ali's in biology and Dr. Thomas's in physics, is essential to the research plan. Viswanathan asserts that the project couldn't exist without the co-PIs' involvement. “This is a project that one person cannot do alone, because it's so branched out, and we need everybody's expertise and input to make it a success.”

To the researchers, “success” would mean patentable, highly useful products that benefit humanity. And with grant funding, compelling preliminary data, and brilliant student and faculty researchers on their side, meeting this ambitious goal could be just a few years away.

Training Up Teachers

The UALR STEM Center addresses the needs of current and future teachers with new initiatives.



“Technology” might be the world’s favorite topic right now, but classrooms across America struggle to find people to teach it. They face a national teacher shortage in STEM (science, technology, engineering, and math), which could impact students’ success in this growing career field. But, with the help of an over \$1 million-grant, two UALR professors hope to reverse this trend for Arkansas schools. Dr. Tony Hall, associate professor of physics and astronomy, and Dr. Gail Hughes, professor of educational leadership, received the \$1,193,677 grant from the National Science Foundation in the fall of 2015. With it, they’ve established the UALR Teach Noyce Scholarship Program, which provides substantial scholarships, internships, and professional development activities for STEM student teachers. The program plans to award 20 scholarships a year, as well as a number of paid internships, as incentives for pursuing careers as STEM educators.

A different kind of scholarship program

Each Noyce scholarship recipient will be paired with a teacher mentor in a high-need school, presenting enhanced STEM lessons in their classroom throughout the semester. The students will also meet with UALR teacher mentors every other week to further develop these enhanced lessons and teaching skills. As a result, participants will receive up to a year and a half of teaching and mentoring exposure that other STEM student teachers will not, along with significant financial support.

In addition, the program offers internships each summer. As part of the month-long program, students work at UALR

Children International, the Museum of Discovery, or the Innovation Hub. “The internships are fun, [and] they are a great line on a resume,” Hughes says. Not only that, but interns also receive a \$2,000 stipend for their participation. The requirements for the scholarships and internships are minimal, but Drs. Hall and Hughes assert that this open door is strategic. Their aim, and the aim of NSF, is simply to create well-qualified, passionate STEM teachers, not make it more difficult to become one. “The federal government looks at the goal of this program as ‘get us teachers.’ They’re placing the preparation of science and math teachers as a high priority,” Hall explains.

A passion for education

As co-directors for UALR Teach—a program at UALR that promotes STEM teacher education—the professors share a passion for equipping future STEM teachers, though they have disparate backgrounds. Hall has spent the last 15 years as a physicist, but he originally hoped to be a teacher. His early professors convinced him to pursue a career in the sciences instead, but the desire to teach never left him. This personal investment in education inspired him to help launch the UALR Noyce program.

In contrast, Hughes is a current education professor and a former math teacher. In both these endeavors, she’s seen firsthand the importance of good STEM education in schools. “My heart is in teaching math, and another way to do that is preparing the next generation of math teachers,” she asserts.

Hall and Hughes are joined in their efforts by two UALR Teach Master Teachers, Kelly Chaney and Sandra Leiterman. Both Chaney, a National Board Certified Teacher,



The first Noyce Scholarship recipients with UALR Teach leaders. Back row left to right: Rachel Smith, Mrs. Kelly Chaney, Mrs. Sandra Leiterman, Dr. Gail Hughes, Dr. Tony Hall, and Rebecca Breeding. Front row left to right: Gary Meyers and Amanda Maher

and Leiterman, are highly skilled educators with master's degrees and years of innovative teaching experience. As master teachers, they help student teachers prepare hands-on, engaging science and mathematics lessons. The classroom model that these lessons—and UALR Teach as a whole—promotes is unique: rather than “teaching through telling,” student teachers practice “teaching through asking,” using guided questions to move their classes beyond basic facts to more advanced levels of learning.

A partnership with local teachers

Not only will the Noyce program equip future educators, but it will also address the needs of current Central Arkansas STEM teachers through professional development (PD) days. The UALR Teach alumni—all of whom are now teachers—as well as the current UALR Teach and Noyce program participants will be invited. Additionally, the program will invite the teacher mentors that partner with UALR student teachers. “As part of our thank-you for being part of this program, the mentor teachers will be allowed to attend those PD days and be paid a stipend from the grant,” Hughes explains.

The PD days will give these current and future STEM teachers the opportunity to compare notes with each other, learn from UALR's master teachers, and discover new STEM education tools and resources. Many of these tools and resources can be found in the UALR STEM Center, a space filled with learning aids that any Central Arkansas STEM teacher can use. Though Hall quips that they're just “science toys,” these instructional materials are actually cutting-edge curriculum tools, project kits, technological devices, and more—all designed to enhance STEM lessons for students at a variety of learning levels.

Even better, the majority are free to teachers.

To increase widespread interest in and understanding of these tools, the Noyce scholarship recipients will integrate them into their enhanced lessons—then leave them with their mentor teacher to use for the next two weeks. “When our kids are there, they're modeling the lesson, what to do, how to do it, how to use the equipment. And then they leave it, and the teacher can use that in their classrooms, show other teachers how to use it,” Hall explains.

The next chapter

Four students were already awarded Noyce scholarships for the spring 2016 semester; Gary Meyers and Amanda Maher received scholarships for science education, and Rebecca Breeding and Rachael Smith were awarded math education scholarships. These students are just the beginning—the five-year program has the potential to produce dozens more new STEM teachers and impact countless students throughout the country. With the enhanced training, professional and personal incentives, and abundant resources provided by the UALR Noyce program, Hall and Hughes hope to expand and enhance the national STEM workforce.

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Disclaimer: Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.”

It Takes a Village

UALR Children International partners with parents, schools, and organizations to raise Little Rock children out of poverty.



CI director Ryan Davis cooks with participating kids during one of Arkansas Hunger Relief Alliance's Cooking Matters classes.

For the over 180,000 Arkansas children living in poverty, starting elementary school means dealing with more than just playground drama. Food insecurity, familial instability, and social stigma all contribute to their daily worries, and experts say that these factors have tangible effects. According to Child Trends, the leading national researcher on child wellbeing, economic hardship is linked to behavioral issues and learning struggles in children.

It's both these immediate problems and the potential for success in the future that UALR's Children International (CI) has sought to address for over two decades. CI offers health, education, and extracurricular resources for children in elementary, middle, and high schools in Little Rock. UALR CI is part of the international nonprofit organization Children International, which provides support for children, youth, and families in communities around the world.

A tradition of tenacious support

The only branch of CI housed on a university campus in the United States, UALR CI is situated in the heart of a state where nearly one in three children live under the poverty line (Annie E. Casey Foundation) - VERIFY. Since 1994, CI has sponsored tens of thousands of Arkansas children, seeking not simply to meet their current, physical needs but also to equip them to excel later in life. From elementary entrepreneurship camps to college prep groups, the programs at CI help prepare underserved children to be successful adults.

Eligible children attending one of five partner schools are invited to participate in the CI

program starting in pre-K. Once a child is enrolled, he or she can continue to participate in events and receive support until age 24. CI views participants' lives holistically, designing programming that, in large and small ways, helps lift kids out of poverty. "There are gaps in opportunity and exposure that we want to fill," UALR CI Director Ryan Davis explains.

To accomplish this goal, UALR CI gives students continual access to health education, skill-building, and recreational programs that are tailored to their age group and needs. These programs range from a kids' choir to emergency food assistance to cooking classes. One of UALR CI's most successful programs is the Future Smiles Dental Clinic, which is located in a participating elementary school and offers free care to CI students.

"We serve over 3,000 children and youth," Davis reports, "so we try to offer a wide variety of programs."

A team effort

CI routinely partners with individuals, corporate sponsors, and the university to provide resources and facilitate programs. In fact, Benson Chu, former deputy director of UALR CI, attributes CI's continued success in Little Rock to its collaboration with UALR.

"A lot of it is working space, operations, HR and IT support," Chu says of UALR's contributions to CI. But this administrative assistance isn't UALR's most valuable offering. "Having direct connections to university departments, access to student volunteers, and curriculums and projects that departments have or individual professors have...greatly impacts the community and what we're trying to do," Chu explains.



CI children receive a free dental check-up as part of the Future Smiles Dental program.

The partnership with UALR has offered CI fresh programs, ideas, and leaders for years, but the fast-changing nature of the nonprofit world has made stable, long-running programs difficult to establish. Adding to this instability is participants' tendency to leave the program after elementary school.

As the organization looks to the future, it has established a new strategic framework to guide and improve its programming. The framework, introduced by the overarching CI organization, focuses on teaching healthy behaviors, providing access to health services, and promoting education, employment, and empowerment.

A new strategy for success

According to Davis, the new strategic objectives are "the springboard from which all of our programs are planned." To orient their resources around the new objectives, the staff has worked hard to identify the predominant needs of the community they serve. Now, UALR CI is partnering with other nonprofits and organizations in the area to provide innovative, high-quality programs for their children, youth, and parents.

This results-based initiative, just released in early 2016, will also include a concerted effort to support CI participants after they graduate from high school. Many UALR CI children don't attend college, so practical job skills and career readiness trainings are a major advantage in the fight to move out of poverty. Though UALR CI starts highlighting these concepts as early as elementary school, the new post-graduate programs will target the needs of both the 18 to 24-year-old population and their parents. From financial literacy training to general English literacy classes, the programs will help remove barriers in

participants' paths to independent growth.

"For this age group, we're trying to establish the right partnerships and programs that lead to jobs, whether it's internship programs or entrepreneurship programs—the end result [should be] a job that allows youth to be self-sufficient and gives them the skills and knowledge to break the cycle of poverty," Chu asserts.

He stresses that CI's work isn't for those looking for immediate results. The organization doesn't offer a universal, fast-acting solution to the problem of poverty, and the impact of a program depends heavily on the individual child, family, and situation. But the importance of CI's work, Davis believes, isn't in how it makes staff and volunteers feel. It's in the seeds they plant.

"Our vision [is for] every child graduating from UALR CI [to be] healthy, educated, employable, and empowered to break the cycle of poverty," Davis states. "We want our students to leave our program with a sense of their own agency to change their circumstances. We want them to leave with the tools to do it."



Not Your Father's Summer Camp

The College of Engineering and Information Technology offers kids a slew of engaging summer programs—no arts and crafts required.



EIT's Assistant Dean, Vernard Henley, Jr.

Ask almost any adult, and they'll tell you about their time at summer camp as a child—rustic cabins, arts and crafts, and too many outdoor activities to count. While these experiences provide kids with fun distractions, they offer little in the way of practical application. Inspired by his own childhood, UALR's Vernard Henley, Jr., is working to give today's children a more enriching alternative—and a glimpse into their own potential.

For the last 10 years, the George W. Donaghey College of Engineering and Information Technology (EIT) has been running free camps that immerse high school and middle school students in the world of science, technology, engineering, and mathematics (STEM). Backed by industry partners and supported primarily by external funding, Henley, EIT's Assistant Dean, and his collaborators want science-minded children to see that their unique skillsets can be used in exciting and innovative ways.

Putting a new spin on STEM

"There are lots of kids out there who have done engineering, but it just wasn't explained well," Henley asserts. The myriad misconceptions about engineering and other STEM careers taint young students' understanding of the opportunities available to them. In fact, Henley says he was one of those kids. He enjoyed math and building projects, but because he had never seen engineering in action, he avoided it as a career path. It wasn't until he took engineering courses in college that Henley got excited about the field.



Students take notes on various stages of the water treatment process at Central Arkansas Water's facility. The scenario given to students required them to propose potential solutions to a treatment issues at a fictitious water treatment facility.

"When I'm taking classes, the light comes on that [I've] been doing engineering all my life...but no one could explain it to me," he says. Henley recalls building model race tracks with his brother, calculating curve radii and lane sizes to optimize their toy cars' performances—and he loved it. But he didn't think of these projects as engineering; he was simply problem solving. Today, Henley wants to impress on his summer camp attendees that most STEM jobs boil down to just that—strategic problem solving.

To do so, Henley and his staff partner with local and national organizations to give kids hands-on practice with real-world STEM challenges. Additionally, he intentionally seeks out leaders and employers who break STEM stereotypes, from engineers at a peanut butter factory to racially diverse researchers.

For example, the 36 middle schoolers that attended EIT's 2016 ExxonMobil Bernard Harris Summer Science Camp (EMBHSSC) visited the Dickey Stephens ballpark to learn about sinkhole issues. The teachers leading that camp's classes designed their curricula around sinkholes and engineers' roles in addressing them. Funded by a \$50,000 grant from the Harris Foundation in partnership with ExxonMobil, the 2016 camp marked the eighth consecutive year that UALR has been selected as a host university for the EMBHSSC.

Rugenal Anderson-Lindsey, a veteran middle school educator, served as UALR's Camp Director while Henley served as the Executive Camp Director. The highly competitive grant program funded only nine other science camps in the United States in 2016. UALR's camp provided traditionally underrepresented groups access to STEM knowledge and opportunities that they may otherwise not have exposure to. For two weeks, the youth lived in UALR dorms, attended classes in EIT's state-of-the-art facilities, and visited culturally and scientifically significant sites in Little Rock that directly related to their camp projects.

The application requirements vary by program, but Henley is always intentional about accepting a few students who may otherwise be overlooked. "There's a program for each different type of student that's interested in STEM or engineering or computer science, and so we try to make sure that there's a good mix of those students," he states.

A place to belong

Henley has seen firsthand what happens when a struggling student is surrounded by successful peers



A student literally stands by her answers during a test in the nutrition class.



Students work together to learn about the different areas of the brain during a dissection lab.

Camps for diverse curiosities

The ExxonMobil Bernard Harris Summer Science Camp is one of five summer programs—all free, all residential—that EIT offers to middle and high school students, many of whom are from disadvantaged and underrepresented populations. Students have come from as far as Puerto Rico to learn from the university and high school educators, undergraduate and graduate students, and industry professionals that Henley recruits to lead the camps.

For each camp, Henley strives to design experiences that show kids the practical, engaging side of STEM careers. "It's always something relevant that a lot of people don't think [of as] STEM stuff—this everyday stuff," he says.

The five programs offer a diverse range of specializations and formats. The High School Research Program invites a select number of high school students to do advanced research with a UALR faculty member, usually one-on-one. The Engineering Scholars program is a general "exploration in engineering" program that has taken place every summer since 2008. In 2013, EIT began hosting the National Summer Transportation Institute, sponsored by the Federal Highway Administration, which highlights careers in transportation with an emphasis on civil and mechanical engineering. Henley's newest camp endeavor is a coding camp for girls—a historically underrepresented group in STEM.

and treated as their equal in an academic environment. Nearly every time, the struggling student rises to the task, producing impressive research and project results. Similarly, Henley enjoys seeing academically successful students receive the social acceptance they may lack during the school year.

The camp environment challenges all participants, forcing them to work together, play together, and live together. As a result, despite differences in their GPAs, school districts, and socioeconomic statuses, students form meaningful friendships. This emotional impact is just as important as the professional impact of the camps, Henley implies. "We hear it a lot on the [post-attendance] survey from the students: ...I don't want anyone to know I'm smart...But here I am and everyone's reading books, everybody's geeky, and I feel like there's a reason to belong again."

And many of these students later find another place to belong—UALR. According to Henley, about 14 to 16 percent of camp attendees return to pursue degrees at the same university that helped them see their own potential years earlier.



Spotlight on Student Researchers: Jeffrey Jones

Jeffrey Jones, an undergraduate systems engineering student from Kansas City, Missouri, is doing innovative, cutting-edge research at the UALR Center for Integrative Nanotechnology Sciences. In spring 2016, he received the 2016 outstanding undergraduate research award from the Department of Systems Engineering.

How did you choose your field?

I was encouraged by my wonderful family to look into UALR's System Engineering Program. My focus is mechanical engineering. I have always wanted to be recognized as an innovator, and I have a broad range of interests. I felt that a mechanical engineering degree would provide me with a comprehensive working knowledge of how to develop and implement a wide range of ideas.

Tell me about your work at the Center for Integrative Nanotechnology Sciences.

While at the center, I have been involved in a number of projects. Some of my focus has been renewable energy systems. I have constructed and am investigating a small-scale renewable energy power plant in an effort to improve its efficiency. I am also provided assistance with a materials engineering project in which I am responsible for investigating the mechanical properties of certain materials.

What interests you about this work?

I feel that engineers and researchers seek to develop solutions to problems. The depletion of resources from which we generate energy is a commonly recognized problem. Some, myself included, feel that these resources can be replaced with resources which are continually replenished on a human timescale. I enjoy the challenge of improving the efficiency of renewable energy systems. I am also interested in improving my understanding of new and improved materials in hopes that they may provide simple solutions to complicated problems.

How do you think this research will benefit you professionally? Through my research experience at UALR, I have learned how to prepare a good proposal, conduct a proper investigation, and present results coherently—which are beneficial in any professional setting. This research has established a good foundation for my

post-baccalaureate endeavors, and I hope to continue this research in graduate school. I believe that, in the near future, renewable energy and material science technologies will be of paramount importance.

Have any faculty members been especially influential during your time at UALR?

I have been associated with some good people, programs, and departments at UALR. Dr. Alexandru Biris, Dr. Shawn Bourdo, and the entire Center for Integrative Nanotechnology Sciences have been very instrumental in my research endeavors. The insight provided has helped to steer my academic career down a good path, shaping my future in the most positive way. The good people at the McNair Scholars Program and the Louis Stokes Alliance for Minority Participation have also helped to prepare me for graduate school. Both of these programs have informed me of available opportunities. The faculty and staff in the Department of Systems Engineering have been helpful inside and outside of the classroom.

The Office of Research and Sponsored Programs has been very knowledgeable and helpful with all of the research proposals that I have been involved in. Ultimately, through this cohesive effort, I feel that not only have I gained a good skillset, but also the confidence to believe that I can be successful in all of my post-baccalaureate endeavors.



LATINO AMERICANS

500 YEARS OF HISTORY

Students attend a workshop led by Esmeralda Baltazar and Aquil Charlton.



The UALR Center for Arkansas History and Culture launches major programming that focuses on the state's second largest minority.

Latino Americans play major roles in Arkansas's social, economic, and political success. However, their experiences, history, and struggles still receive little mainstream attention. Over the last year, The UALR Center for Arkansas History and Culture (CAHC) has fought against this inequality through strategic education, entertainment, and community engagement.



Funded by a \$3,000 grant from the National Endowment for the Humanities (NEH) and the American Library Association (NEH), CAHC joined 203 other recipients around the country to bring NEH's Latino Americans: 500 Years of History initiative to life. Each recipient customized the program to their audience and mission, hosting speakers, screening films, and conducting events for the public.

CAHC Director Dr. Deborah Baldwin and Dr. Erin Finzer, Chair of the Department of International and Second Languages, led the programming. The UALR Office of Campus Life, the Clinton School of Public Service, and the Arkansas Arts Center partnered with them throughout the year. Both Finzer and Baldwin cite the need for representation as the driving force behind the project. "We were inspired to pursue this program because we have an interest in increasing the diversity of the archival collections held at the university and are working to include more underrepresented groups who have a role in the history of the state," Baldwin explains. "The Latino population is growing in Arkansas and we want to include those experiences in our collections."

CAHC highlighted these stories through screenings of the PBS Latino Americans: 500 Years of History documentary, as well as lectures and discussions. The events, which were free and open to the public, included well-attended talks by Latino professors, researchers, and artists from all over the country. At one such event, Esmeralda Baltazar of the Highlander Research and Education Center and Chicago teaching artist Aquil Charlton met with a crowd over 100 to discuss the importance of strong neighborhood schools for the preservation of diverse communities, as well as the concept of African American and Latino coalition building. The program organizers were pleased to see individuals from all over the state attend the various events.

Bringing attention to the stories, issues, and accomplishments of Latino Americans did more than draw a crowd, though—according to Finzer, it impacted students' lives. For example, after one talk, Finzer says "a student made an appointment with me to declare Spanish as her major because she wanted to pursue a career in migrant human rights." Other students who attended the lectures said they left feeling empowered, validated, and less alone.

"Arkansas has one of the fastest growing Latino populations in the United States," Finzer states. "Telling the stories of Latino Americans in Arkansas allows all Arkansans to embrace the roots that Latinos have in our state and to continue to cultivate the growth of this community."

Latino Americans: 500 Years of History, a public programming initiative produced by the National Endowment for the Humanities (NEH) and the American Library Association (ALA), is part of an NEH initiative, *The Common Good: The Humanities in the Public Square*.

A Reputation for Restoration

One UALR Center has been honoring the creative works of Native American cultures for over three decades.



When the Sequoyah National Research Center began over 30 years ago, it was little more

than an idea—just a small research project between two friends. Dr. Daniel Littlefield and Dr. Jim Parins, both UALR professors of English at the time, started collecting Native American works in 1983 while doing research for their two-volume bibliography of Native American writers. This accidental side project officially became the Sequoyah National Research Center in 1999, having already archived thousands of materials, launched a popular website, and garnered major public attention.

But in 1983, the two professors were simply trying to create a much-needed resource for students and researchers interested in Native works. They didn't want to just talk about Native works and writers—they wanted to create a space in which Native works and writers could speak for themselves.

This determination led Littlefield and Parins to research, collect, and begin archiving native newspapers. As the project continued, the archives grew, and the need for the work became even more apparent; the men, despite their full-time teaching positions, resolved to commit to it. "We decided we would continue to do what we were doing until someone higher than the dean told us to stop. And nobody higher than the dean told us to stop," says Littlefield.

A tenacious commitment

Littlefield and Parins accrued and archived materials for the next 22 years without official university recognition as a stand-alone unit, working for over two decades without a budget. Today, the Center offers the largest collection of Native newspapers and other forms of Native expression in the world. Littlefield estimates that around 5,000 writers are represented in one special collection alone. Well-known and well-respected in Native communities, particularly among Native journalists, the SNRC now houses official archives of the Native American Journalists Association, the American Indian Library Association, and the National Trail of Tears Association.

The Center's website, launched in 1997, resulted from a collaboration with the Ottenheimer Library and housed Parins' and Littlefield's two-volume bibliography as a database. The international need for such a resource was immediately clear—despite the relative newness of the internet at the time, the site received as many as 30,000 hits a month. "We were just staggered," Littlefield says.

In truth, the success of the website made sense—nothing close to a searchable, comprehensive archive of Native works or writers existed then. Because the SNRC was one of the first establishments of its kind, as word got out about its work, everyone from librarians to academics to individuals began sending them materials. Much of the collection is the result of the generosity and investment

of strangers. Littlefield can list countless instances of individuals simply walking into the center, arms filled with records, writings, or artifacts, and offering to donate them to the collection.

Indeed, a currently in-progress collection, whose archiving is being supported by a grant from the Arkansas Natural and Cultural Resources Council (ANCRC), came about by a similar measure of happenstance. The Garrard Ardeneum Collection was donated by Francine Locke Bray, a member of the Choctaw Nation who, while doing unrelated research at the SNRC, simply asked Littlefield if he would be interested in it. The casual conversation resulted in two trips to Oklahoma, 100 cubic feet of materials, and a \$56,000 grant. With the ANCRC funds, the SNRC recently hired an archivist to process the Garrard Ardeneum Collection, and work on the project began in August.

Prioritizing crucial preservation

Littlefield's grant-seeking philosophy for both the Garrard Ardeneum Collection and much of the center's other work is the same—identify a project that can't be done without outside support, then make your case to ears that care about your mission. The resulting grants are invaluable to the SNRC's work, supporting the intense labor, extensive expertise, and new materials required for the archiving and cataloging process. In addition, grant funding enables the SNRC to engage in special projects, such as the Trail of Tears park creation, completed in 2011, and historical films in Native languages, completed in 2005 by then-intern Roy Boney, a member of the Cherokee Nation of Oklahoma.

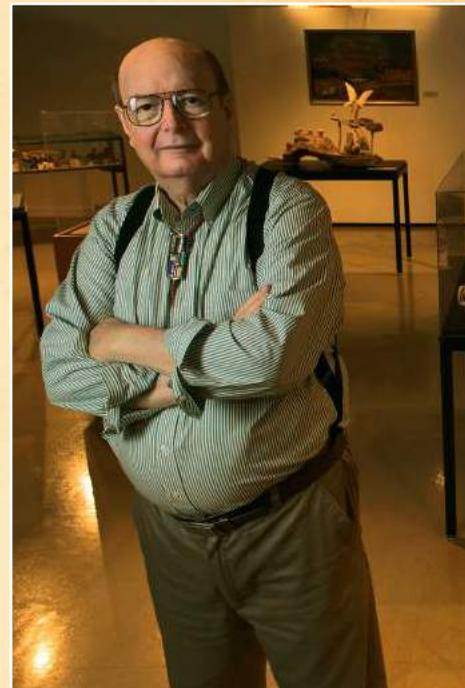
Visiting students and professors from all over the world can frequently be found immersed in the collections, undertaking their own research. The attention of both academics and organizations is well merited—the mission of the SNRC fills a major void in both research and culture. In addition to the newspaper archives, the SNRC retains a myriad of Native historical and contemporary documents and other information sources. According to Littlefield, the Center “collect[s] and archive[s] and make[s] available to the public native expression in all its forms. If it's the printed word, we collect that; if it's film, we collect that, if it's music, we collect that, [as well as] visual art expressions.” Not only are these works archived, but the SNRC's J.W. Wiggins Native American Art Gallery features a steady rotation of curated exhibits.

The SNRC's focus on contemporary works sets it even farther apart from other collections in the country, Littlefield notes. “One of the things that we've found as we traveled around the country working on various research projects was that nobody was really collecting information about Indian communities in the 20th century then. If you went to museums or archival collections, all of them stopped with about World War I. And I think that's generally true with any contemporary society—it's hard to see what's important.”

A legacy of honor

With every collection and art installation, the SNRC is making sure that the world sees the undeniable importance of Native culture. When Littlefield and Parins began researching in 1983, they couldn't have predicted that their efforts would lead the international conversation on Native American expressions. They worked together to build the center until 2013, when Parins passed away; now, Littlefield and a small team of interns, volunteers, graduate assistants, and permanent staff continue the SNRC's mission. The SNRC has steadily earned the trust and respect of scholars, journalists, and educators both within and outside of the Native community, and their ever-growing programs, grants, and collections promise that even more vital work is still to come.

The Sequoyah National Research Center, located at 500 University Plaza, is open for visitors from 8 a.m. to 5 p.m., Monday through Friday. To browse a selection of their archives and collections online, visit ualr.edu/Sequoyah.



The Complexity of Caring

A team of UALR researchers investigates the power of compassion for professional caregivers.

Can compassion be taught, like good grammar or basic geometry? If so, could this classroom compassion work in the real world?

Researchers at Stanford University have been asking these questions for over a decade, approaching compassion from a hybrid spiritual-neurological standpoint. From this research, they've developed Compassion Cultivation Training™ (CCT), an eight-week course that emphasizes the importance of meditation and mindfulness to shape a healthy, considerate worldview. It's been taught around the world, reaching academics, students, and individuals from all walks of life. Now, thanks to one UALR professor's passion, this globally respected program is breaking new ground in Little Rock.

Measuring the power of compassion

Dr. Dent Gitchel Jr., an associate professor of Rehabilitation Counseling, was one of the first in the nation certified to conduct CCT outside of Stanford. With extensive experience in mental and community health, Gitchel has seen firsthand the value of mindful compassion for preventing emotional burnout.

"I'm particularly interested in the context of persons who...are working in a position where compassion is sort of implicitly part of the job, and a job where exposure to suffering is daily, frequent," Gitchel explains. "I know for a fact [CCT has] helped people. I don't know the extent of who and how much."

So, supported by a \$50,000 ORSP seed grant, Gitchel and UALR assistant professors Amar Kanekar (School of Counseling, Human Performance, and Rehabilitation) and Elizabeth Lee (Department of Nursing) have launched a hands-on study to measure the physiological effects of compassion training on caregiving professionals.



Researchers Dr. Amar Kanekar, Dr. Dent Gitchel, Jr., and Dr. Elizabeth Lee

Keeping caregivers healthy

For caregivers, sound emotional health is essential—and increasing it would vastly improve their lives. Stanford's research has shown that CCT's guided, group, and individual meditations, exercises, and thought experiments alter the way the brain processes certain events and relationships. Gitchel, Kanekar, and Lee postulate that these changes extend beyond thought

processes and have the potential to improve a person's physiological resiliency.

To test their theory, the team is tracking a number of different stress indicators, including heart rate variability, in CCT participants. Gitchel is leading two compassion courses, one of which he's adapted for a primarily online audience. The courses will be attended by UAMS and St. Vincent's employees of varying positions.

While high heart rate variability might sound like a bad medical condition, Gitchel asserts that it is actually a marker of healthy stability. "It has been correlated with resiliency and an ability to stay positive in the midst of distress or stressful situations."

This tenacious positivity is central to the mission of CCT and Gitchel's adaptation of it. The training works to change relationships from the inside out, shifting the way individuals approach interactions with friends, family, and even strangers. In fact, Gitchel has named a decrease in personal bias as a major outcome of his compassion study—something very few other CCT studies have done.

The team does hope to make scientific contributions with their research, but Gitchel asserts that this is only part of his motivation for the project. "It's a way for me to professionally do something meaningful to me. I think ultimately I would want to feel like it somehow benefited the community. In my mind, at least, that's the benefit of this type of research, is that it is research...but at the same time potentially it can provide real world effects."



Spotlight on Student Researchers: Joseph Alley



Photo courtesy of Arkansas Department of Parks and Tourism

Joseph Alley is a second-year graduate student in the Public History program. He came to UALR from Dyersburg, Tennessee, and works as a graduate assistant at the Clinton Presidential Library.

What brought you to UALR?

It was Little Rock's close geographic proximity to Dyersburg that made UALR so appealing, plus the first meeting with Dr. (Charles) Romney. He was very clear in telling me what the program was and what I would need to do to finish it.

Why did you choose the public history field?

I chose this field because I like history, but after growing up with a grandmother for a teacher, I thought that the classroom was not the best for me. I actually found out about this field without meaning to; I was at a meeting for my undergraduate thesis, and the professor asked me what I want to do. I gave him a vague answer, but he said that what I was describing was very close to Public History, which, as it just so happened, another person in the class was looking to go into. She gave me pointers on where to look, which led me to UALR.

What kind of work do you do at the Clinton Library?

I work primarily in the Collections Department under Christine Mouw, the Library's head curator. The biggest project is the inventory. There are almost 100,000 objects in the collection storage, and every 10 years there has to be a full inventory. This includes not only physically going out and finding the object in the storage room, but also updating the information in the computer. It is a very involved process. I assist with changing out the general public gifts that are on display and with cleaning and maintaining the exhibit cases. I also help with setting up and taking down the temporary exhibits in the Library. My favorite so far was helping to hang

up paintings by Norman Rockwell for the Coca-Cola exhibit. Finally, I help with rehousing Foreign Head of State Gifts that have yet to be fully unpacked. The collection is so large that some items are still in their original (but safe) packaging from when President Clinton left office.

What interests you about this work?

The variety of this work is what interests me the most. When rehousing Foreign Head of State gifts I have seen everything from gold plated plaques to parts off an ICBM [intercontinental ballistic missile]. And the rest of the collection is just so vast—a toy trolley from Mr. Rogers, a guitar signed by Jonny Lang, and Lance Armstrong's bike are all one room over from my desk. And I get to help share this history with the public—I get to take what is essentially a giant cross section of the 90s and help to put it on display.

How do you think this research will benefit you professionally?

All of this practical experience is going to make me a better museum professional in the long run. Even after a year of working there, every day I am learning something new. This is thanks to the many professionals who take their time to work with me and help me to become better.

Have any faculty members been especially influential during your time at UALR?

Influential faculty would be Dr. Romney. He has advised me through just about everything in the program, and I am eternally grateful for every single bit of help that he has given me.

UALR's public radio station honors local voices.

Listening in on the South



Sarah Whites-Koditschek, KUAR reporter, and Ben Fry posed for a picture following the Natural State News announcement.

Whoever said radio's dead has never tuned in to KUAR, UALR's public radio station. The channel boasts nearly 20 locally produced programs, in addition to National Public Radio (NPR) programming. With topics ranging from cooking to civil rights to local music, KUAR promotes creative explorations of culture, the arts, and our world to a wide audience.

Now in its 30th year of broadcasting, KUAR continues to produce new shows that fill important gaps in current media offerings. These efforts were steered by Ben Fry, general manager, for over 20 years, before he passed away in early 2016. Under Fry's leadership, the station flourished, hosting internationally known NPR guests, garnering significant grant funding, and even being named Best Radio Station in the Arkansas Times Readers Poll.

Known for his humility and easygoing attitude, Fry was anything but lax when it came to the quality of KUAR's programs. The station's diverse body of shows is not just entertaining; it's well-researched, intellectually engaging, and widely relevant as well.



Arts & Letters creator Dr. J. Bradley Minnick.

Designing radio for the 21st century

A recent addition to KUAR's lineup fits all these categories. Arts & Letters, created by UALR Associate Professor of English Dr. J. Bradley Minnick, celebrates the humanities in the South. KUAR's Chris Hickey serves as the show's sound engineer and associate producer; Shannon Lausch of the UALR Center for Arkansas

History and Culture provides archival materials for various shows. Now on its third year, this innovative 30-minute show recently received a \$9,000 grant from the Arkansas Humanities Council (AHC) to fund its 2016-2017 season.

Each episode of Arts & Letters features original music—much of it recorded in the KUAR studio—interview segments, and dramatizations. With Minnick and his team's painstaking attention to detail and dedication to the episode's unique theme, a single show can take up to a year to write, record, and edit. Though this investment may seem extreme, it is essential to create what Minnick refers to as a "kaleidoscopic" listening experience, in which a variety of aural elements are woven together to create a cohesive scene. As a result, the listener is immersed in the story to an extent unmatched by other popular entertainment genres.

Minnick is passionate about the exceptional power of radio to engage the imagination. "Radio, if you really spend some time with it, allows your imagination to run wild in ways that television doesn't. It's a real mediated form between the written word, which is the only thing that kind of allows us into somebody's brain, and television, in which they kind of do everything for you," he explains.

Paying attention to local voices

Arts & Letters is just one of the ways KUAR is bringing new life to the airwaves. In fact, one of Fry's last major initiatives resulted in a \$278,300 grant from the Corporation for Public Broadcasting (CPB)—and national media buzz. In October 2015, CPB awarded the grant to KUAR and three other Arkansas radio stations to support the establishment of a statewide journalism collaboration. KUAR, the lead station for the project,

is joined by Fayetteville's KUAF, Jonesboro's KASU, and Texarkana's KTXK. Together, these stations have formed Arkansas Public Media (APM), which produces multimedia content relevant to the interests and needs of Arkansans, particularly those in rural areas.

Led by managing editor Bobby Ampezzan, APM reports stories centered on three themes: education, health, and energy. This content will include breaking news as well as special interest stories. APM plans to reach extensively into rural parts of the state to tell unfolding stories about wealth, poverty, race, and decision making. The stories from these regions, which have been historically underreported, will offer an invaluable perspective on these large-scale national issues.

On Arts & Letters, Minnick shares APM's mission to highlight local voices, issues, and stories. The program meets a major need on the current podcast scene—few other shows pay adequate attention to the arts in the South. "If you look at a lot of the podcasts that are on now, they often highlight the intellectual work in the Northeast—New York, Boston," Minnick explains. "And I really wanted to highlight the intellectual and cultural work that was being done in the South."

Collaborating with the community

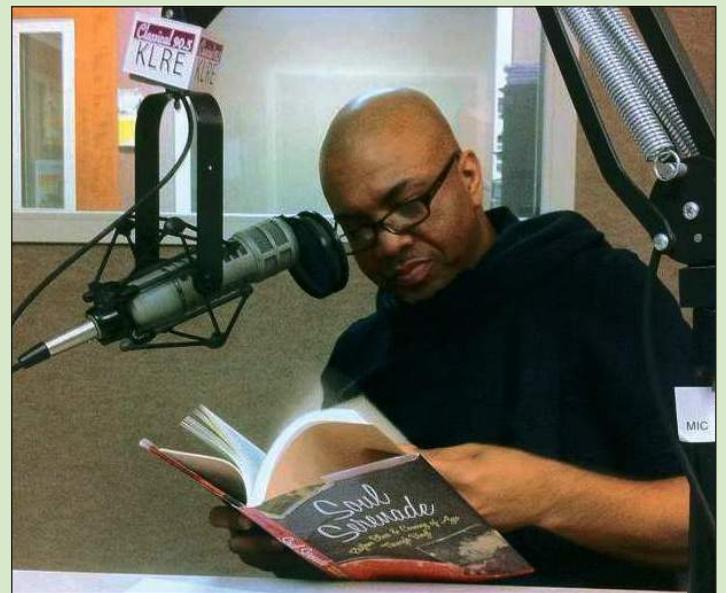
While they certainly feature UALR scholars and projects, Minnick and his team are intentional about seeking out stories from both within and outside the UALR community. "I think it's really important that the folks in Little Rock have a sense of the neat stuff that's happening not only at this university but regionally and at other universities in the area," Minnick asserts.

Each episode is tailored to a unique theme, ranging from civil rights battles to the Arkansas alligator gar to the combined power of music and memory. The producers use sound bites, interview clips, acting, music, and more to immerse the listener in a certain moment, whether it be thirteenth century Italy or a 1980s living room. Local actors, musicians, and authors lend their talents to the show, and Minnick is always on the lookout for new stories and individuals from the South to feature.

Similarly, the nuanced content of APM isn't happening in a vacuum. APM partners with the UALR Institute on Race and Ethnicity, the Butler Center for Arkansas Studies, Arkansas Educational Television Network (AETN), and the print publication *El Latino* to curate, produce, and promote its diverse features. Thanks to community partners, all stories will also be available in both Spanish and English.

More than just a story

Both Arts & Letters and Arkansas Public Media feature real stories of individuals, many of whom could be listening to—or even participating in—the broadcast. For instance,



Author Rashod Ollison visits Arts & Letters for an interview.

an upcoming Arts & Letters show will feature the letters a man wrote to his fiancé while in a German prison camp in World War II. The letters will be read on the show—by the writer's own family members. Such personal elements adds pressure to the producers, and they take this responsibility seriously.

"My biggest concern is always treating [the stories] with love and care for the [people involved]," Minnick asserts. This focus ensures that each episode prioritizes universal respect and ethical storytelling. Throughout KUAR's programming, you'll hear this sentiment echoed. It's the legacy that Ben Fry left, and it's the motto that will lead the station into its next 30 years.

Listeners can access episodes of Arts & Letters and leave feedback about them on the show's website.

APM's programming will be published online and be heard on local and national public radio programs such as NPR's Morning Edition, All Things Considered, and Here and Now.



Arts & Letters is supported in part by a grant from the Arkansas Humanities Council and the National Endowment for the Humanities.

About the Corporation for Public Broadcasting

The Corporation for Public Broadcasting (CPB), a private, nonprofit corporation created by Congress in 1967, is the steward of the federal government's investment in public broadcasting. It helps support the operations of more than 1,400 locally owned and operated public television and radio stations nationwide, and is the largest single source of funding for research, technology, and program development for public radio, television and related online services.



So You Want to Be an Archivist?

An insider's guide to an often misunderstood field.

When you hear “archivist,” you’re probably more likely to think of musty museums than Indiana Jones. But with their universal mission to protect, preserve, provide access to, and honor the stories of humanity, archivists just might deserve hero status.

UALR employs seven archivists who devote their skills to making the collections at the Sequoyah National Research Center (SNRC) and the Center for Arkansas History and Culture (CAHC) useful, structured, and strategic. Though the duties of individual archivists vary, all systematically process historically or organizationally significant materials, with the aim of highlighting the important items and weeding out the inconsequential ones.

Rule 1: Don't be a (topic) snob

One of the SNRC's archivists, Zack Whitaker, describes his fellow archivists as “content agnostics,” meaning that their work necessarily transcends genres and fields. For example, when Whitaker arrived at the SNRC, he had never worked in Native American studies; in fact, most of his archival experience was in photographs and corporate records. But since beginning his position in August 2015, the North Carolina native has devoted himself to processing the Garrard Ardeneum Collection, which documents the remarkable lives of a Native American woman, Allece Garrard, and her husband, Tom Garrard. Together, Allece and Tom donated to countless charities, made major political contributions, and supported

▲ *Archivist Zack Whitaker in the SNRC stacks.*

▶ *Allece Garrard, taken during her time as Director of the U.S. Army Service Clubs, circa 1944-1947. Courtesy of the Sequoyah National Research Center.*



Native American arts and culture. Their prolific lives left a stockpile of noteworthy materials to be archived, and Whitaker is investing a year of his life to do so.

As the collection's primary archivist, Whitaker had to become something of an expert on all aspects of the Garrards' lives in a matter of days. Whitaker's process, and that of all other archivists, begins with a thorough assessment of the collection. “I went into each box and noted themes, organization, and formats, along with other kinds of processing notes, in a notebook. I made separate listings for each box, rather than a more general overview of the entire collection,” Whitaker describes. This assessment took Whitaker over two days—and that was just the preliminary work. Over the next six months, Whitaker sorted, cataloged, and reorganized nearly 100 boxes of materials, including over 40 boxes of personal correspondence.

Rule 2: Be (strategically) picky

While preserving that many letters and cards may seem a bit excessive, particularly in our digital age, Whitaker defends this archival decision from the perspective of future researchers and historians. "You have to understand what the value of this collection is going to be, what people are likely to use it for. [In] other collections, the genealogical side of things may not be as important, so you wouldn't go to the trouble, whereas, [with] this collection, a lot of the nature of research that goes on here is genealogical. So I had to make the decision to go at it at an item level."

The Garrards may spark a genealogist's interest for a number of reasons. Allece, who died in 1999, hailed from highly influential Choctaw and Seminole families, while Tom, who died in 1984, and his family wielded significant power in early twentieth century Dallas business and culture. Both individuals made lasting, varied impacts throughout their lives, but Allece's cultural and social contributions are particularly impressive. Born in 1909, Allece graduated from the University of Oklahoma, helped found an arts and crafts school in Tennessee that still runs today, established three U.S. Army Service clubs during World War II, and, at the age of 80, opened the Garrard Ardeneum, a combination garden-museum for local history in McAlester, Oklahoma. Before, during, and after her marriage to Tom, Allece used her social position and natural knack for leadership to improve the lives of those around her. "She was very much a go-getter, Type A personality, very organized," Whitaker says. "She seems like an amazing woman, really."

Rule 3: Show up with your (mental) boots on

By the time his position ends in August 2016, Whitaker will have processed, organized, and documented all 100 cubic feet of the Garrard Ardeneum Collection—his first major independent archiving project. According to Whitaker, this process requires nearly constant intellectual vigilance and critical thinking. "You really do have to tread a fine line, because you are influencing the historical record with every decision you make. What you throw out says as much about you and your values and where you're coming from as it does about the material itself. You try to really examine every decision you make and try to see it from as many different angles as you can."

The physical collection will be housed at the SNRC, with an online finding aid, created by Whitaker, listed on the SNRC's website. After seeing the Garrard Ardeneum Collection to completion, Whitaker hopes to undertake more archival projects that contribute to historical research. "It's a way to kind of put your stamp on the historical record—something that you do now can possibly resonate in perpetuity. And some historian or some researcher is going to come and interpret what you've done—they're going to interpret the materials, and you have had a hand in helping make those materials accessible and provide context. That's a pretty neat thing, I think."

The archiving of the Garrard Ardeneum Collection, including Zack Whitaker's position, is funded by a \$56,000 grant from the Arkansas Natural and Cultural Resources Council.

And the Survey Says...

The UALR Survey Research Center has been taking the state's pulse for over 30 years.



On the fourth floor of Ross Hall, at nearly any given time on any given day of the week, one room buzzes with conversation, dozens of mouths moving and phones busy. This steady hum is the trademark of the UALR Survey Research Center (SRC), characterizing over 30 years of institutional, local, and national research projects.

The SRC designs, conducts, and analyzes digital and telephone surveys for state, non-profit, and university organizations. SRC Director Cindy Bennett has been with the center since its early days, when it was just a minor office doing a couple studies a year. Today, the SRC

continuously manages multiple large-scale projects for clients that range from on-campus departments to the Centers for Disease Control.

The SRC is a full-service survey machine—depending on the client, staff can facilitate every step of the process, from writing questions to analyzing the resulting data to creating reports. As the only general academic survey research center in Arkansas, the SRC's work is in high demand. In 2015 alone, the center facilitated seven major projects for four different clients, with anywhere from 500 to over 5,000 interviews conducted for each project.

Teamwork makes the [data] dream work

While call centers are known to be high-stress, high-turnover environments, the SRC breaks this stereotype with its intellectually engaged staff that functions as a professional support system for each other. One member of this team is Reveille Isgrig, call center manager, UALR graduate, and 10-year veteran of the SRC. Isgrig began working at the SRC as an undergraduate student and, with hard work, a natural knack for the field, and an investment in the subject matter, steadily rose through the ranks to become part of the center's leadership.



Data Quality Manager Forrest Goss works on the latest numbers.

Isgrig attributes her dedication to the SRC to a variety of factors. "To begin with, it was a great opportunity for me to be able to go to school as well as have a full-time job. The work is really interesting, and more than that, it is a place where I can actually gain professional experience. It's a really great resume builder and provides a lot of real-world experience that I can take other places as well."

The staff, the majority of whom are students, recognize and are fueled by the importance of the work they do. Forrest Goss, SRC data quality manager, asserts, "I take the surveys very personally. The great callers really do take a personal interest in getting it right, and if they get a bad answer, they reflect that as the [survey not being] complete. It's just engaging work."

The interviewers' personal characteristics even impact response rates. While every caller receives extensive training, some are predisposed to excel in the field. According to Isgrig, the best survey interviewers are "people who are in that kind of grey area—they're not necessarily introverts, but they're not necessarily extroverts—and people who are very, very inquisitive."

Putting clients first

Before any calls are placed, the staff spends extensive time and effort ensuring that the client's goals are fully

understood and that the survey is designed to meet them well. One of the SRC's primary clients is the Arkansas Department of Health (ADH), who employs the SRC to conduct its Arkansas Adult Tobacco Survey. According to Bennett, the SRC is the ADH's first choice for survey research and data analysis. Both have worked closely and continually with each other since the early nineties, when the Centers for Disease Control partnered with the center to conduct the Behavioral Risk Factor Surveillance System, a national annual survey project, for the first time in Arkansas.

Annually, the center also conducts the Racial Attitudes Survey for the UALR Institute on Race and Ethnicity. Now in its 13th year, this survey continues to provide crucial information, perspectives, and context for Arkansas policies, research, and progress. The data it generates, each year focused on a different theme, is used not only by the university but also by scholars and leaders in various communities to define problems and strategize solutions.

While the SRC still regularly conducts telephone interviews, they also incorporate web-based and mailed surveys into many projects as well. The success of a survey method greatly depends on the audience demographics. For example, when conducting surveys of the UALR student body, web-based surveys are often more effective than phone calls. In contrast, when conducting surveys of rural Arkansas populations, calls to cellphones and landlines may be the only feasible means of reaching people.

Strong surveys build strong results

The SRC welcomes researchers on campus who think they may need survey data for an upcoming project. Bennett encourages faculty to contact the SRC early in their projects to discuss the potential benefits and cost of doing a survey. Reaching out to the SRC at the beginning of a project can even strengthen applications for funding. If a researcher has met with the SRC and established a potential survey plan with them, "we'll write a letter of support for their grant proposals, telling [the funding agency] how we'd like to partner with them and giving a cost estimate for the survey," Bennett says.

The SRC has spent the past three decades perfecting the art of the survey, and it shows. Their response rates are around 40 to 50 percent for general public surveys, and their cooperation rate is double that, placing them significantly higher than rates in other states. Some of that success is due to the polite culture of the South, but the value of the SRC's rigorous training and invested staff can't be denied.

"I feel like what we're doing is meaningful," Bennett asserts. "It's interesting."

To find out more about the SRC's current and past surveys, visit ualr.edu/iog/surveyresearch.



Spotlight on Student Researchers: Danielle Butler

Danielle Butler is currently finishing her master of arts degree in public history. As a graduate assistant at the Center for Arkansas History and Culture, she works on a variety of archival projects, many of them funded by major grants.

What brought you to UALR?

I am originally from Austin, Texas. I attended Ouachita Baptist University (OBU) for my undergraduate degree, where I developed an interest in archival studies. While at OBU, I worked under their archivist in the Special Collections department of the library. After she received her undergraduate degree, she had entered the Public History program at UALR. She taught in the program later in her career and persuaded me to consider a degree in Public History. I applied and entered the program in fall of 2014.

Why did you choose this field?

I have always had an interest in history and received a bachelor's degree in history. I knew that education was not a field I was directly interested in and discovered that archival studies greatly interested me. I love working with historic documents, photographs, and memorabilia. There is so much to learn from these priceless pieces of history, and I am glad to have the opportunity to make them more accessible to researchers.

Tell me about your position at the Center for Arkansas History and Culture (CAHC).

I am a graduate assistant at UALR's Center for Arkansas History and Culture (CAHC), which is located downtown in the Arkansas Studies Institute. I have been given the opportunity to work on many grant projects, digital projects, and individual processing projects. My most recent work has been with Shannon Lausch on a grant to digitize a selection of our architectural drawings collection. My role has been to research materials we had digitized from the collection, primarily of commercial buildings constructed prior to 1940. My aim was to determine their original location, construction date, and if they are still standing today.

What drew you to this research?

I have developed an interest in the built history of Little Rock since moving here in the summer of 2014. I completed an internship at the Quapaw



Quarter Association, a nonprofit committed to preserving Little Rock's historic structures, as well as completed a course on Historic Preservation. Because of this foreknowledge, CAHC thought I would be a good fit for the project.

How do you think this research will benefit you professionally?

I will also use these research skills to help complete my project thesis on the transformation of the kitchen in the Arkansas home. This project has helped me develop marketable research skills as well as generate a large body of archival research. Every staff member at CAHC has made sure that I have been assigned projects that fit within the realm of my personal and professional interests, so every project I have worked on has helped shape me professionally as well as proved to be enjoyable to complete. I am very grateful to have been hired at a place that is so committed to providing good professional experiences to graduate assistants.



The Second Strike

Researchers investigate how environments influence repeat criminal behavior.

The environment in which people live can impact them in significant, long-lasting ways, from mental state to criminal behavior. Fueled by a \$50,000 grant, one team of UALR researchers is seeking a deeper understanding of these effects. For the next two years, Dr. Tusty ten Bensel, an assistant professor in the Department of Criminal Justice and Dr. Michael Crow, an assistant professor of public administration, will pursue their project “The Impact of Neighborhood Context on Recidivism among Offenders in Arkansas,” supported by one of ORSP’s fall 2015 Research Cluster Seed Grants.

The researchers are investigating the role environmental factors play in recidivism—repeat offending—in Pulaski County. The grant will enable them to analyze data about both the former inmates and the communities that house them. The project will examine a myriad of statistical factors for the neighborhoods, as well as the basic demographics, prison behavior, and past charges, of released offenders. This information will be gathered from preexisting data, obtained by the Arkansas Department of Corrections and the 2008-14 American Community Survey, on individuals released over the last ten years in Pulaski County.

Connecting the dots

While the connection between environmental factors and initial offending has been established by research, as has the likelihood for offenders to offend again, little research has been done to draw a direct line between environmental factors and recidivism. Ten Bensel and Crow’s work aims to fill this knowledge gap. After analyzing the data, they will develop theories on any connections between recidivism and living environments.

The researchers explained the potential negative impact of a neighborhood on its residents in their grant proposal: “socially isolated and economically impoverished neighborhoods have high rates of crime and disorder, unemployment, poor health care access among residents, heightened levels of mortality, sporadic to non-existent access to social services, [and] high rates of drug

addiction and incarceration.” Perhaps most importantly, these disadvantaged neighborhoods often lack social capital—the positive, productive relationship and support networks that bind and grow communities.

“for these individuals, it is a matter of being close to family and friends, finding employment, housing, and simply living affordability.”

—Dr. Tusty ten Bensel

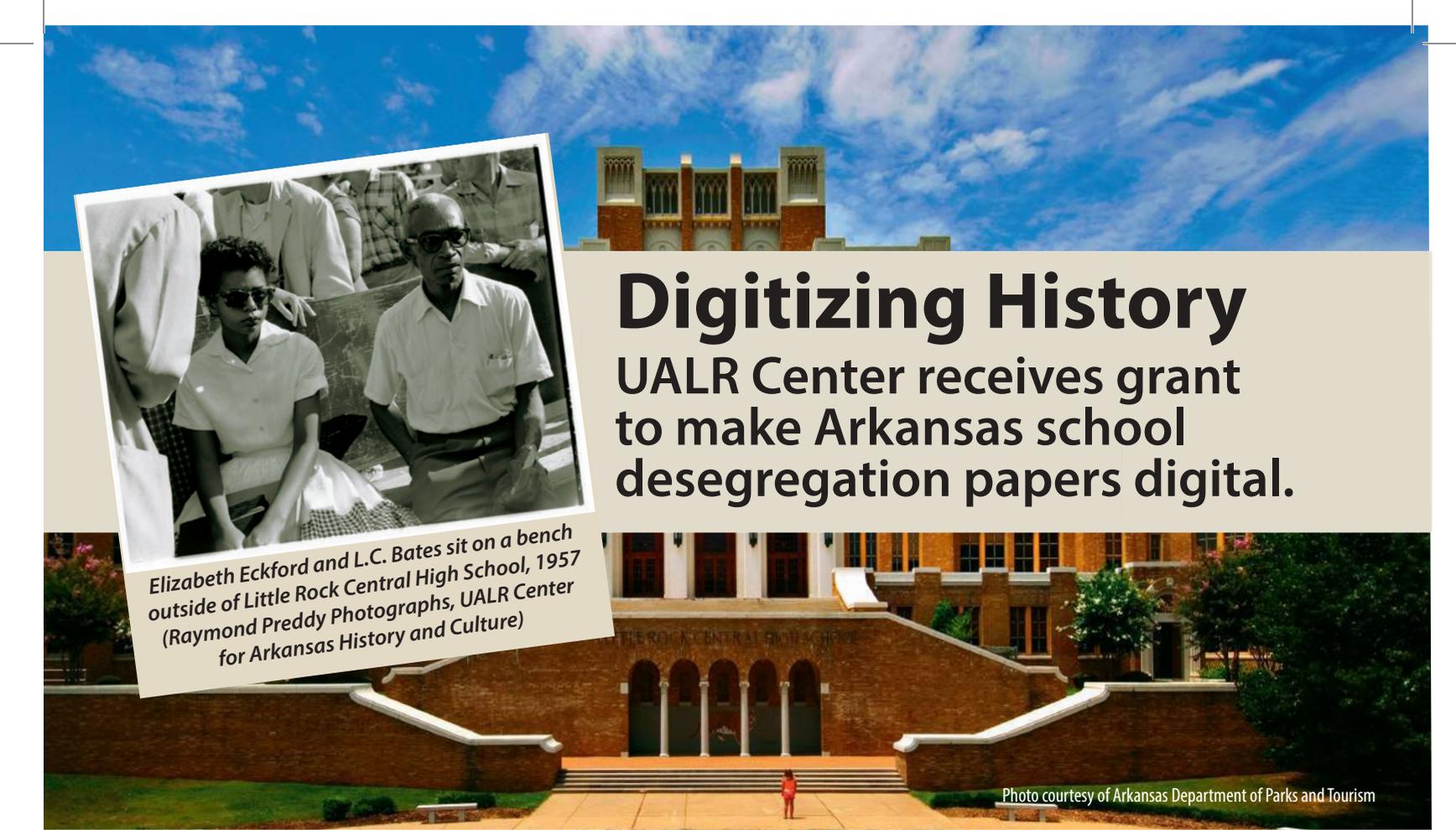
Not only do these environments tend to produce offenders, but many ex-offenders return there upon release, giving them ample opportunities to offend again. The reasons for returning are multifold: according to ten Bensel, “for these individuals, it is a matter of being close to family and friends, finding employment, housing, and simply living affordability.”

Unfortunately, the researchers assert, returning to toxic neighborhoods “limits educational, vocational, and social support services” for released offenders. Additionally, ten Bensel explains that “when individuals return to the same environment in which they initially committed their crimes, it is likely they will be confronted with similar criminal opportunities and peer networks.” It’s not surprising, then, that around half of all released Arkansas inmates will eventually end up back in prison.

Proposing solutions

In the face of these statistics, ten Bensel is optimistic about the potential of the project. “If we find that neighborhood characteristics and lack of resources are one of the reasons why individuals return to prison in Pulaski County, then I hope this project can begin conversations about investing resources and revitalizing our disadvantaged communities.”

The results will produce both academic and practical benefits for the criminal justice field. Ten Bensel and Crow hope to publish concrete recommendations for building communities that foster offender rehabilitation rather than perpetuate criminality. Promoting growth in disadvantaged neighborhoods would be transformative for both released offenders and non-criminals alike, ten Bensel asserts. “This may not only increase public safety and reduce recidivism rates and disorder, but also reduce fear of crime in those neighborhoods, which can lead to informal social control and social capital.”



Digitizing History

UALR Center receives grant to make Arkansas school desegregation papers digital.

Elizabeth Eckford and L.C. Bates sit on a bench outside of Little Rock Central High School, 1957 (Raymond Preddy Photographs, UALR Center for Arkansas History and Culture)

Photo courtesy of Arkansas Department of Parks and Tourism

With each program, exhibit, and collection it curates, the UALR Center for Arkansas History and Culture (CAHC) strives to shine light on nationally significant events, figures, and issues. The Center's passionate archivists, led by Director Deborah Baldwin, are doing just that with a new program called "The Road from Hell Is Paved with Little Rocks: Digitizing the History of Segregation and Integration of Arkansas's Educational System."

Funded by a \$106,908 *Digitizing Hidden Special Collections and Archives* grant from the Council on Library and Information Resources, the project will archive and digitize over 180 feet of manuscripts from figures on both sides of Arkansas's civil rights battles, as well as hundreds of related artifacts, audio and audiovisual recordings, maps, and photographs. These items, originating from 1880 to 2012, will be available and preserved together in digital formats for the first time.

CAHC's Chad Garrett is providing technical oversight on the project; Sarah Bost is serving as the lead archivist. Digitizing this unique group of archival collections will provide scholars of civil rights, race, education, and law an opportunity to study the evolution of education in central Arkansas through the lens of religion, the judicial system, and contemporary students and educators.

The project will also invite non-academics to learn about this fraught chapter in the state's history. Through a virtual exhibit, a blog, and a curriculum guide, students, teachers, and visitors from around the world will be able to engage with the voices that fought both for and against desegregation. These new resources will give users a nuanced snapshot of the Civil Rights era in Arkansas.

"Both the crisis and the lawsuits are incredibly difficult to understand without having multiple perspectives," the project leaders explained in their proposal. "This is the strength of digitizing the collections associated with the crisis. They cover religion (Bishop Brown), education (Huckaby, Vice Principal), the law (FBI School Crisis Report), and a pivotal court case, *Aaron v. Cooper*, which resulted in closing the high schools for 1958-1959 (Judge Lemley)."

CAHC is collaborating with the Central Arkansas Library System's Butler Center for Arkansas Studies and the Little Rock Central High School National Historic Site to guide the project. Materials will be gathered from The National Dunbar Historical Collections, FBI reports, The Office of Desegregation Monitoring, the Little Rock Central High School National Historic Site, and personal correspondence and mementos.

The Council on Library and Information Resources (CLIR) is funded by the Andrew W. Mellon Foundation.



Raising the Bar for Legal Education

Law professor workshop attendees at Prince Sultan University, Saudi Arabia.

Nearly every lawyer will tell you that the first few years of learning and practicing are the hardest. From the academic intensity to the grueling post-grad grunt work, young law professionals experience constant pressure to compete and excel. Supervisors and mentors can often make this season worse by imposing impossible standards and a lack of respect on new lawyers. But the William H. Bowen School of Law takes a different, vastly more successful approach—one they're hoping to spread throughout the world.

It all started when Dean Michael Hunter Schwartz realized that the legal profession's tradition of "tough love" might need an overhaul. "There's sort of a mythology among law professors that we'll release new lawyers to the law firms, and the firm lawyers will treat them badly, so law professors have to toughen them up," Schwartz explains. "That myth ran counter to my experience of the lawyers and other professionals whom people describe as great supervisors or great mentors." Led by Schwartz, the faculty are now on a mission to discover and promote the best practices of great law professors, successful new lawyers, and effective lawyer supervisors.

Writing the book on legal education

Schwartz has assembled teams of Bowen faculty to research and write two new books: *What the Best Law Mentors Do* and *What the Best New Lawyers Do*. Theresa Beiner, Kelly Browe Olson, and Kelly Terry will join Schwartz on the first book; Anastasia Boles, Lindsey Gustafson, and Amy Pritchard will join him on the latter. To be published by Harvard University Press in 2019, both books will analyze the common effective factors in their subjects' practices and dig deeply into why they

are effective. Specifically, *What the Best Law Mentors Do* seeks to demonstrate that mutual respect lays the best foundation for professional law relationships. "Relational skills are so critical," Schwartz says. "When people feel cared about by their bosses, when they feel respected and encouraged, they're willing to work much harder for them."

Schwartz previously explored this principle in *What the Best Law Teachers Do*, a book he wrote with Gerald Hess and Sophie Sparrow. Published by Harvard University Press in 2013, *What the Best Law Teachers Do* dissected the successful methods of over two dozen law professors from around the country, examining their practices, meeting with their students, and interviewing the professors themselves. The process took around four years, but it resulted in a highly practical resource that many law schools now use to improve their classrooms.

The research for the upcoming books will follow the same pattern as *What the Best Law Teachers Do*, with the teams visiting and interviewing nominated lawyers and mentors around the country. Schwartz and his teams hope they can turn this research into concrete tools for young lawyers and the professionals that invest in them. By using the books as guides, Schwartz asserts, "employers can train their new lawyers to do this, not that, and law schools can better prepare their graduates for success in the profession."

Raising lawyers

While partnerships between lawyers-in-training and established professionals may seem intuitive, they're actually relatively rare. Recognizing the need for better mentorship in the legal world, Schwartz launched an intensive, mandatory mentoring program at Bowen in

2013. The program pairs every entering Bowen student with a mentor in his or her area of interest. Beginning in their first year of law school, students meet with their mentors regularly, discussing career goals, shadowing them, and receiving vital feedback on their performance. Bowen is one of only a handful of law schools in the country that requires its students to participate in a mentoring program, but Schwartz wants to change that.

With the publication of *What the Best Law Mentors Do* and *What the Best New Lawyers Do*, more legal employers and schools may realize the impact positive mentorship can have on new lawyers. As a result of the book, "I would hope that we would develop mentor training programs for legal employers," Schwartz states.

"We would use our expertise to develop programs where we help legal employers find, train, and create encourage effective mentors."

Though this may sound like an ambitious goal, Schwartz is no stranger to launching major training endeavors. As an internationally respected legal educator, he has given workshops at law schools all around the world, from Taiwan to the Republic of Georgia. In January 2016,

Schwartz visited Saudi Arabia to conduct training for Prince Sultan University, the country's first all-women law school. Joined by Sophie Sparrow, a law professor at the University of New Hampshire and co-author on *What the Best Law Teachers Do*, Schwartz led the faculty in a multi-day workshop, introducing them to innovative teaching methods and philosophies for legal education. Organized by the American Bar Association as part of its Rule of Law Initiative, the training was a hit, and there are talks of Schwartz returning to Saudi Arabia to conduct future training programs. These highly successful professional development events take place at home, too—Schwartz hosts a workshop at Bowen once a semester for both local and visiting faculty.

From these training and mentorship programs to numerous hands-on legal clinics, Bowen provides its students and faculty with the opportunities and empowerment they need to excel. And, with multiple books and learning experiences on the horizon, Schwartz is helping making sure students and faculty around the world have the same.



Law Professor Sophie Sparrow and Bowen School of Law Dean Michael Hunter Schwartz lead a workshop at Prince Sultan University, Saudi Arabia.



A Day to Remember, a Disease to Defeat

For the past 28 years, Dec. 1 has been a day of commemoration and education all over the world. The first global health day in existence, World AIDS Day is marked in countless countries and cities, from London to right here in Little Rock. Mindful of the myriad health vulnerabilities that college populations face, the Arkansas Department of Health (ADH) and UALR's Office of Health Services recognized World AIDS Day 2015 with free programs for faculty, staff, and students.

The \$5,517 grant, awarded through the ADH's HIV Prevention Program, supported UALR's efforts to inform, protect, and start conversations on campus about HIV/AIDS. Throughout the day, all members of the campus community could participate in educational opportunities, free HIV testing, presentations, and commemorative events. Though UALR has been marking World AIDS Day for years, the 2015 event stands out. According to Health Services Director Marie Sandusky, who led the planning committee, "the grant made it possible for us to plan a more expanded event on this day, and we are very pleased with the results."

For the UALR community, the event is more than just another public health holiday. Many faculty, students, and staff have been affected by HIV/AIDS, whether they've lost a loved one or battled the disease itself. World AIDS Day gives the community an opportunity to celebrate the lives of family and friends, honor their unique stories, and talk frankly about an often taboo subject.



Educating the campus

Throughout the day, over 100 individuals received HIV testing. Health Services showed an educational film on HIV transmission and prevention to those who showed up for testing, and many demonstrated increased understanding of these topics after viewing it. Sandusky was both surprised and pleased with the number of students who volunteered for testing; according to the Centers for Disease Control, nearly one in eight HIV cases in the U.S. remain undiagnosed. Though Health Services provides HIV testing year-round, December's event highlighted how quick, easy, and nonjudgmental the process is.

Health Services expanded their reach by inviting Dr. Joycelyn Elders, renowned pediatrician, advocate for sex education, and former surgeon general of the United States, to speak. The 82-year-old Arkansas native has spoken at UALR World AIDS Day events before, but this time, her visit touched Sandusky personally. For her, Dr. Elders' visit was more than a programming success. "Dr. Joycelyn Elders is my public health hero!" she exclaimed. "When I was in graduate school, I heard and was very moved by her straight-talking, passionate approach to these very real issues in today's world." And UALR was more than happy to have her—over 300 faculty, students, and staff attended the event, engaging with Elders' zeal and her vital message.

Connecting through compassion

To further encourage understanding on campus, Sandusky's team organized a panel discussion featuring HIV-positive or at-risk individuals and an HIV expert.



Dr. Gary Wheeler, chief medical officer at the Arkansas Department of Health, shared about the status of HIV in 2015. Afterward, 25 attendees heard from four individuals living with or at risk of contracting HIV. The smaller crowd and informal setting allowed participants to ask questions and connect with the panelists' stories.

The day's events also honored the stories of those who have lost their lives to AIDS. Health Services displayed two large panels of the AIDS Memorial Quilt in the Donaghey Student Center; in its entirety, the quilt features the names of over 94,000 AIDS victims from around the world. Started in the 1980s, the quilt now weighs over 50 tons—the panels displayed at UALR were just two of 48,000 that make up the memorial. (aidsquilt.org)

In addition, throughout the day, screens in Ledbetter Hall scrolled through the names of the UALR community's loved ones who have been lost to HIV/AIDS—58 names total. Sandusky was struck by the response to the project—and the sheer number of UALR community members affected by the epidemic. "There are a lot of people who work here who remember when AIDS was more rampant and who lost friends and loved ones to this devastating disease," she said.

Reversing the trend

"HIV continues to be a real problem on college campuses," Sandusky asserted. "There seems to be a generalized lack of concern about this disease, in part because the treatments that are available now are so effective." She hopes that UALR can buck this trend through

prevention education and frank conversations. Health Services regularly provides testing for students, and those tested receive one-on-one prevention counseling sessions. Additionally, Vanessa Lewis, the student wellness coordinator for the office of Health Promotions, Programs, and Education, supports Trojan Talk, a peer-led student organization that gives students a safe space to talk about responsible, healthy relationship choices. The group

meets weekly in one of the residence halls, providing participants with an informal setting to share struggles and gather resources.

World AIDS Day combines this kind of proactive programming with somber reflection, reminding the community of the past and present realities of HIV/AIDS. These reminders, Sandusky believes, are crucial to driving the importance of prevention home for students. "I think the developmental stage that young adults are in makes them feel invincible with a sort of 'it won't happen to me' attitude. This is why I wanted to expand UALR's focus on World AIDS Day and hope to continue this in the future."

The Kids (Aren't) Alright: An Analysis of UALR's Childcare Needs



The UALR community is one of the most diverse in the state, with students, faculty, and staff coming from all walks and stages of life. Each individual makes invaluable contributions to the campus, and each has unique needs that must be met in order for him or her to succeed. When these needs become barriers to personal, professional, or academic success, not only does the individual suffer, but so does the university. Recognizing this danger, a group of UALR faculty is on a mission to identify and alleviate a common unmet need of the campus community.

Led by Dr. Belinda Blevins-Knabe, professor of psychology, the 2015 ORSP Seed Grant-winning team is analyzing childcare as an obstacle in the campus community's path to success. The researchers believe that a lack of access to reliable childcare plays a major role in keeping students and staff

from meeting their potential. Because UALR doesn't offer childcare facilities, making it to every class and every work shift can be impossible, particularly for single parents.

"Our student-parent population, for both males and females, seems to be the most underserved and isolated," Blevins-Knabe observes. Fueled by the \$50,000 seed grant, her team is taking a multistep approach to address this disparity.

Assessing obstacles

The interdisciplinary team consists of Dr. Barb Leplattenier, professor of rhetoric and writing; Dr. Jamie Jones, assistant professor of Nursing; Dr. Chris Lloyd, associate professor of social work; and Dr. Johanna Thomas, associate professor of social work at the University of Arkansas at Fayetteville. They began by looking at the childcare facilities of other universities—who funds them and how they're run.

With this preliminary data in hand, the team then hosted numerous small focus groups for UALR students, faculty, and staff, giving them a platform to share their childcare needs and barriers, as well as their thoughts on the possibility of childcare services at UALR. After analyzing the feedback from the focus groups, the researchers designed an electronic survey that was distributed to the entire campus community in the fall of 2015. The survey requested information about the recipients' past, present, and future childcare needs, as well their opinions on

after-school care, inclement weather childcare, and other on-campus solutions.

"The majority of people who came to the focus groups and who answered the survey (even those without children) think that childcare is a barrier to success for faculty, staff and students alike," Blevins-Knabe reports. These results gave the team the data they needed to begin devising concrete solutions for the campus.

They turned to the community for those answers as well—the survey had invited respondents to submit their suggestions, and a great many did so. According to Blevins-Knabe, the team was "genuinely surprised and excited by the ideas and thoughtfulness of the people who participated." These ideas included

a separate children's area in the Ottenheimer Library, a playground on campus, and improved family leave policies.

Immediate fixes, long-term solutions

As their overarching goal, though, the researchers hope to see a full childcare center come to UALR. Based on examples at other universities, the proposed daycare center would not only meet UALR parents' needs, but utilize the skills of UALR faculty, staff, and students, as well. In addition to typical childcare services, the center could offer hearing and vision screenings, wellness checks, and more through partnerships with different departments on campus.

However, this kind of major center will take extensive planning and funding, and the research team intends to put other solutions into action in the immediate future. "We must begin with smaller, supportive changes for our students and faculty as we work toward opening a daycare center," Blevins-Knabe explains. From email lists specifically for UALR parents to family restrooms to resource guides, these changes would help unify and provide valuable services for the parents in our community. The team will work with campus administration and faculty senate to turn the results of their study into action. They hope that by pursuing these attainable steps now, UALR could more feasibly launch a full childcare center in the future.

"We must begin with smaller, supportive changes for our students and faculty as we work toward opening a daycare center"

—Dr. Belinda Blevins-Knabe

UALR Students Make RESEARCH WAVES



From left to right: Kalan Horton, Kevin Gardner, and Connor RØset.

Thanks to hard work, scholarly dedication, and faculty support, three UALR students were awarded highly competitive research grants from the Arkansas Department of Higher Education (ADHE) in 2016. Kevin Gardner, Kalan Horton, and Connor RØset each received 2015-2016 Student Undergraduate Research Fellowships (SURF), resulting in \$2,750 of support for their individual research projects.

Each student will complete a research project that he designed himself. UALR faculty mentors will give the students guidance, support, and assistance.

According to Jonathan Coleman, ADHE program specialist, the three UALR students were chosen from 194 applicants and only 46 Arkansas students received fellowships this year. In addition, 2016 marks the fifth straight year UALR undergraduate scholars have earned recognition for their work through the SURF program.

UALR SURF projects

Kevin Gardner, a junior geology major, will conduct "A Petrographic and Chemical Study of the Bennett Pegmatite, Oxford County, Maine." Dr. Michael DeAngelis, an assistant professor in the Department of Earth Sciences, will mentor him. According to Gardner, a pegmatite sample from Maine will be examined through petrographic, electron microscope, and chemical microprobe analysis to identify the exact minerals present, as well as each mineral's exact chemical concentrations. Additionally, rare earth elements present within the sample will be identified and knowledge about the pegmatite's relationship with its parental granitic intrusion may be revealed. Gardner, a nontraditional student from Maumelle, hopes to pursue a master's degree in geology or applied science after he completes his bachelor's degree. According to DeAngelis, Gardner's ambition shines through in all his work. "Kevin has a true

passion for learning and an incredible work ethic. He is already proving to be an excellent geoscientist, and I am excited to be working with him on this research."

Kalan Horton, a Pine Bluff native pursuing a Bachelor of Science degree in Construction Management, will undertake "Identifying the Key Social Infrastructural Factors in School Building." Dr. Amin Akhnoukh, an assistant professor in the Department of Construction Management and Civil and Construction Engineering, will mentor the junior McNair Scholar. Horton said the project seeks to identify the prominent factors of a high school's built environment and how they relate to ACT scores of seniors in the Pulaski County Special School District, the Little Rock School District, and the North Little Rock School District. Dr. Akhnoukh states that "Kalan is working hard with identifying these factors through interviews with educators and searching the literature. I am confident this research will improve the understanding of how current conditions affect student performance, hence impacting their academic careers."

Connor RØset, a junior from Little Rock, is pursuing his Bachelor of Science degree in Computer Science. Dr. Chia-Chu Chiang, a professor in the Computer Science Department, will mentor him as he undertakes "Enhanced Database Security Using Homomorphic Encryption." They will be researching and developing an encryption scheme that allows encrypted data to be manipulated in an arbitrary number of operations without decrypting sensitive data. The focus is on designing the database so a typical user could use standard SQL commands to manipulate the data without any information about the encrypted database. A Donaghey Scholar, RØset has proven himself to be an impressive researcher already. Dr. Chiang asserts that "Connor is a great student in his academic performance and is very excited about the research experience."



The Genome Genius

To the average person, “bioinformatics” sounds like just another scientific buzzword, bearing little relevance to our daily lives. But to Dr. Mary Yang, the term represents over a decade of research, millions of dollars in funding, improved human health, and—just maybe—a cure for cancer.

Yang is the director of the UALR-UAMS Joint Bioinformatics Program, where she, her fellow faculty members, and undergraduate and graduate students pursue solutions to real, human problems using computer and information technology. The bioinformatics field combines biology and computer science, resulting in enhanced research tools and methods that have a variety of applications in the life sciences fields, such as Precision Medicine.

At UALR, Yang is applying her bioinformatics prowess to integrative genomics and cancer research. In the past year, she has received major funding from the National Institutes of Health and the Arkansas Research Alliance to support her investigation into the connections between genomes and cancer formation, detection, and treatment. She is frequently joined by UALR-UAMS students and faculty on her research projects, and she regularly teaches classes as well.

Recently, Yang took a break from the lab to answer a few of our questions about what it means to be a bioinformaticist.



Tell us about your background. What brought you to UALR?

I received my masters' and Ph.D. degrees from Purdue University. I then completed a postdoctoral fellowship and research specialist training with the National Human Genome Research Institute (HHS/NIH/NHGRI). I have known about the NIH-supported UALR-UAMS Joint Bioinformatics Program since I joined the NIH in 2005. This program, which partners with national funding agencies like the Department of Health and Human Services, the Food and Drug Administration, and the National Center for Toxicological Research, has been a major pioneer in bioinformatics education and research for over a dozen years. During my research at HHS/NIH in the Washington, D.C. area, I established collaborations with HHS/FDA/NCTR in Arkansas, which familiarized me with the Joint Bioinformatics Program. When I became the director of the UALR-UAMS Joint Bioinformatics program in 2013, it was with the goal of helping to build the Arkansas bioinformatics teaching and research programs into higher national competitiveness. For the past three years, we have accomplished quite a lot toward that goal.

What led you to pursue a career in science and bioinformatics specifically?

From my earliest memories, engineering has provided me with endless fascination. Since I was in elementary school, I have been taking objects apart to see how they work. When I graduated from university, I worked in industry as a professional engineer in electrical and computer engineering. There, I became proficient in software engineering and solid state devices. When I was engaged in my Ph.D. research as an Interdisciplinary Bilsland Dissertation Fellow at Purdue University, I found that I could use my software development skills to do groundbreaking work in bioinformatics. I also realized the power and importance of bioinformatics and computational biology. After that, my research fellowship at the National Human Genome Research Institute gave me the opportunity to conduct various large-scale projects using combined computer science and systems biology approaches.

Could you describe your area of expertise and your research focus in basic, general terms?

I develop

intelligent big data analytics methods to address challenges in analyzing big data, especially in making discoveries in massive genomic big data. My research findings can help improve medical practice, agriculture production, drug discoveries, and life sciences-related demands, to mention just a few applications.

My research has a collaborative approach; I engage with the methods and data from a variety of fields to create a broad view of genetic interactions and global gene networks to identify new molecular mechanisms underlying broad biological phenomena, including how malignant transformations occur in cells and, ultimately, find a cure for cancer.

What inspired you to devote your time to cancer research?

I have a dream, like everyone else, to improve the world—in particular, to rid the world of cancer. However, fighting against cancer is challenging because it is not only complex, in that many genetic variations contribute to malignant transformation, but also wildly heterogeneous, in that genetic mechanisms can vary significantly between patients. Therefore, the effectiveness of treatment varies significantly between patients. To rid the world of cancer, we need to identify what genetic alterations cause it.

What keeps you motivated to pursue new discoveries?

I am driven by the demands of the general population. I am motivated to use my knowledge and skills to address the challenges that exist at the intersection of computer engineering and biomedical sciences, and I think my unique background in both enables me to bridge some of the difficult gaps between these two fields.

In particular, I have been involved in human genome research ever since the finishing of the first draft of human genome sequencing. I have actively advocated for research in synergistic computer engineering and bioinformatics at international conferences and academic events for the past decade in an effort to bring public awareness to the use of multi-layer genomic sequencing data for improving human health research. Being in front of large audiences and seeing them respond to my ideas and strategies has motivated me to develop new initiatives to transform basic research into practical applications.

Additionally, keeping up with technology developments and learning new things has

always been a goal of my daily teaching and research. Whether at a university or national research laboratory, I have always been able to apply fresh knowledge and skills in teaching and research. This growth also enables me to find innovative ways to solve difficult research problems.

What do you enjoy the most about your work? As a researcher, I enjoy trying new ideas to make new discoveries and exploring new research frontiers. As a professor, I really enjoy mentoring my students and helping create a strong next-generation workforce for the bioinformatics field.

What are you working on right now? Developing new computational methods and statistical models to analyze large-scale biomedical data for the identification of biomarkers and causal genomic alterations in disease, as well as novel drug targets.

How did you get involved in this project? I have been interested in genomes since my time as a doctoral student, when I joined the research at the National Human Genome Research Institute and contributed to several large-scale projects related to genomics and systems biology. My research there helped improve my understanding of disease mechanisms at the higher systems level and led to new discoveries for effective drug target identifications.

The development of complex diseases such as cancer often stems from abnormal genomic variations. Traditional approaches from a single discipline often limit our ability to solve the problems. My research experience and successes have enabled me to initiate a new interdisciplinary approach to identify the causal genomic alterations in diseases.

What excites you about this research? What challenges you?

Developing novel engineering and computer science approaches to make biological discoveries and solve difficult biomedical research problems, as well as creating the future workforce.

Making new discoveries to benefit humanity and society has always been a pleasure for me. Presently, a tremendous amount of biomedical data has been generated, providing unprecedented opportunities for biological and medical researchers to decode the genetics of diseases and life. Meanwhile, the sheer volume of big data pose new challenges in data storage, transferring, and analysis. My research addresses the challenges of

big data analytics and applications in solving real world human health problems.

What do you think is the greatest obstacle to success in research, both yours and in general?

Lack of feasible ideas and being outpaced in the research world is a concern for successful research. Also, a research project often “bottlenecks” for a variety of reasons, which threatens to slow or stop progress. Making a choice to move forward requires courage, creative thinking, sufficient research experience, and, most importantly, confidence. It’s very easy to get discouraged by difficulties in your initial attempts.

I believe that the difficulties I went through in the past helped me develop new skills and strategies to solve problems. If you have faith in yourself and the science, you will have success in whatever you are confronting.

What’s next in your research? In addition to using publicly available data, I will collaborate with groups who are currently doing experiments and clinical trials. I believe working closely with experimental biologists and medical scientists will help facilitate biomedical research in Arkansas. We can validate our discoveries and transfer them into medical practice. Our research can be further extended into broad computer science and life sciences fields, including agriculture and drug design, more efficiently.

If you weren’t a scientist, what would you be doing?

I think I would be a medical doctor. When I was a little kid, I admired people in uniform, including doctors. When I chose my undergraduate major, I would have attended a medical school if my parents had not opposed it. My father was a top physicist and engineer in ion beam implantation engineering and insisted that I study engineering. However, my current research could help improve human health and medical practice, so, in a way, my dream is being fulfilled.

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Disclaimer: The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health, the Arkansas Research Alliance, or any other sponsoring organization.

