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Stories of service

A regular reader of Perspectives magazine recently asked if Ohio University is working on research, scholarship, or creative projects that strive to understand or solve issues facing military veterans and their families.

Perspectives already had featured the partnership between AMVETs and Distinguished Professor John Kopchick that provides funding for students with military connections to conduct research on diabetes. In this issue, we take a look at several more projects, such as the development of a new device that can help millions of Americans—including veterans, a highly impacted population—improve their hearing and well-being; a sociologist seeking to understand how Veterans Treatment Courts are serving former military personnel in need; a documentary film producer and a physician who have joined forces to study how to educate civilian clinicians on the medical needs of veterans; and a team of recreation experts who have designed and studied the effectiveness of outdoor adventure camps for teens of military families.

We are pleased to present these stories, which illustrate Ohio University’s commitment to supporting programs and services for military personnel and veterans. In April, Ohio University hosted a grand re-opening of its Veterans and Military Student Service Center, which was renamed in honor of two alumni, the late Brigadier General James Abraham and the late Colonel Arlene Greenfield. Ohio University also has been named a 2015 Military Friendly School® by Victory Media, a veteran-owned company. For four consecutive years, the company has bestowed this national recognition on Ohio University for its services, policies, and programs that promote the success of veterans, military service personnel, and their families in higher education.
A new flash memory technology is emerging in the marketplace that is three times faster and more energy efficient than current devices. The technology is based on a material called a solid electrolyte glass that has several advantages over the silicon materials used in electronics to date, according to Ohio University physicists Gang Chen and David Drabold.

“It’s incredibly stable and incredibly fast—that’s why it’s also very useful,” Drabold says.

The material holds one mystery, however, which is exactly how it conducts its electric charge. Scientists have discovered that if they place positive and negative electrodes on either side of a sample of the glass, it appears that a pathway of silver atoms creates a conductive channel for electricity.

But Chen and Drabold aren’t convinced that this model is correct. The physicists have secured a $500,000 grant from the National Science Foundation to characterize the structure and properties of the conducting pathway in solid electrolyte glasses in order to better understand these promising materials.

“People already have made devices out of this material, but how does the technology work and how can basic scientists make improvements on it?” Drabold asks.

Chen and Drabold have worked together for almost a decade to explore similar questions about phase-change materials, a competitor to the solid electrolyte glasses in the technology materials field. One of their strengths is their ability to move back and forth between Drabold’s modeling of the material structure and Chen’s lab experiments on the materials to advance discoveries.

The pair will experiment on a device they will make out of the material, which they will characterize further using microscopes at Ohio University and the X-ray nanobeam at Argonne National Laboratory, Chen says.

Conducting research at a national laboratory will be an educational opportunity for the graduate and undergraduate students involved with the project, the scientists say. The grant also will fund two new undergraduate summer research internships to support the work.

In addition, starting in 2016 the award will fund a workshop for youth with special needs attending the Summer Fun for Special Kids Camp, organized by the Athens County Board of Developmental Disabilities, Athens City Schools, Athens-Meigs Educational Service Center, HAVAR, Inc., and Appalachian Family CADRE. The workshop will encourage kids with autism to explore and pursue information technology careers.

story by :: ANDREA GIBSON

(Above) Physicists Gang Chen, left, and David Drabold, right, are using this 3D model (pictured at left) to illustrate the characteristics of a new material that could be used in the next generation of electronic devices.
A tale of two books: Writer takes a journey from international reporting to memoir

Journalist Maggie Messitt moved to a South African village in 2003 to write, but she soon found herself running a women’s writing school and publishing a community newspaper, a pilot program to train rural reporters. After immersing herself in the lives of rural post-apartheid citizens, she realized she had something significant to share with readers far outside of the newly democratized nation’s borders.

“I want people to see the complexity of living in rural South Africa,” she says about her debut book of narrative nonfiction. “Most of what tourists experience—in person or in literature—takes place inside urban townships. The rural communities have their own unique stories to tell.”

Messitt’s new book, *The Rainy Season: Three Lives in the New South Africa*, follows the stories of three people in the rural northeastern community of Rooiboklaagte—an elderly tapestry weaver, a traditional healer and illegal bar owner, and a high school student. Their personal stories offer a window through which we can look at the bigger issues citizens are navigating post-apartheid, such as unemployment, welfare, the widening gap between the rich and the poor, differences in rural and urban life, and gender and racial issues, Messitt says.

Maggie Messitt’s new book looks at South Africa post-apartheid; her next will make a more personal exploration of family matters.
“These are universal stories even if they are set inside a community on the other side of the world,” she notes.

After living in South Africa for eight years, Messitt returned to the United States and enrolled in Ohio University’s doctoral program in creative nonfiction in 2012. As she shepherded her tales of life abroad toward publication, her graduate school courses pushed her on a creative path that would merge her investigative journalism tools with the first-person storytelling techniques of memoir.

Messitt grew up with an aunt who was a lot like her: interested in the creative arts, independent, and passionate about travel, she notes. But after her beloved relative went missing in 2009, Messitt’s journalistic drive to investigate the story kicked in. She launched into public records searches, traveled to track down her aunt’s friends, and combed through more than 200 family letters. After so much reporting, however, Messitt realized she actually had a memoir in the making.

The idea gave her pause, as she’d previously never chosen to write in the first person. She embarked on an independent study with Eric LeMay, an assistant professor of English, to examine how other writers—from James Ellroy and Jon Krakauer to Maggie Nelson and Anne Carson—have creatively tackled this unique genre, an author’s personal journey to uncover and tell the story of a missing or deceased person with whom they feel deeply connected. As a doctoral student, Messitt has leveraged several university resources to advance her research: access to special collections at the University Libraries, a travel grant from the Graduate Student Senate, and the John Cady Fellowship, which will allow her to focus exclusively on writing the book, titled Art(i)fact: An Atlas of My Search, over the next year.

Although the memoir-in-progress is very different from The Rainy Season, Messitt says some techniques from the first book will serve her well, such as her system of taking notes and writing drafts, a new sense of patience for letting the story unfold, and a renewed confidence in her fieldwork skills.

As for the story she’s unspooling about her missing aunt, Messitt says she’s most interested in exploring her aunt’s creative pursuits and geographic journeys, two passions that not everyone understood about her.

“It’s a story about the family member—and we all have one—that feels far too different from everyone else,” she says. “So different, that they’re long misunderstood, left alone to live their life, and often called crazy or different or a loner. These are the family members that we know but don’t really know. For me, this book is about understanding that and her.”

Fossil hunters now have a mobile app to help them identify specimens in the field.

The Digital Atlas of Ancient Life is a free iOS app for iPhone and iPad that allows users to search for photos and information about fossils from three geological periods. It’s a completely packaged app that can be downloaded to a device and doesn’t require cell service for use—which can be handy in rural and remote locations, says Ohio University geologist Alycia Stigall.

Stigall and a team of Ohio University students contributed to the National Science Foundation-funded project by digitizing data on 30,000 specimens found in Ohio, Kentucky, and Indiana from the Ordovician Period, 443-453 million years ago. Colleagues at San Jose State University and University of Kansas, which produced the app, provided data from the Pennsylvanian Period (300-323 million years ago) and the Neogene Period (23-2 million years ago). The app features data on about 800 species.

Many fossil specimens collected and described by scientists are housed in natural history museums or in laboratory drawers and are not accessible to the public, Stigall notes. But new software tools and apps now make it possible to digitize that information and put it in the hands of teachers, students, and backyard fossil enthusiasts, as well as the scientific community, she says.

GET THE APP
The app is available at www.digitalatlasofancientlife.org

(Above) Isorophus cincinnatensis of Hamilton County, Ohio, is one of hundreds of species identified in the app. The specimen is a type of echinoderm (a cousin of a starfish) that was relatively common in the Late Ordovician seas in the Cincinnati area.

story by :: ANDREA GIBSON

PHOTO: ALYCIA STIGALL
Ohio University ranks first among Ohio higher education institutions for research licensing revenue, with faculty inventions generating $10.6 million during fiscal year 2014, according to a report from the Association of University Technology Managers (AUTM). Most of the Ohio University revenue stems from a license to the Pfizer corporation for a growth hormone receptor antagonist discovered by Edison Biotechnology Institute scientist John Kopchick and former graduate student Wen Chen in 1987. The technology has been developed into a drug marketed by the pharmaceutical company as SOMAVERT® (pegvisomant for injection). SOMAVERT® is a therapeutic for patients with acromegaly, a form of gigantism that leads to medical complications and premature death in adults. Ohio University has reinvested the licensing revenue in faculty research programs and technology commercialization efforts.

Two Ohio University alumni who have distinguished themselves in the fields of product development and cancer therapy innovations are the 2015 recipients of the university’s Konneker Medal for Commercialization and Entrepreneurship. Winston Breeden III (BSC ’93) and Joseph Jachinowski (BSEE ’79) were recognized for their outstanding achievements at an awards ceremony in February.
Unplugging in nature
Recreation expert explores how nature restores us—and what happens when mobile devices intersect with the great outdoors

At the end of their outdoor recreational skills class, Andrew Szolosi’s students used to gather around the glow of the campfire. Today he’s more likely to find their faces illuminated by their smartphones.

Szolosi, an assistant professor of recreation and sports pedagogy at Ohio University, understands that in today’s world, it’s hard to get people to part with their mobile devices. Scientific studies have found that we’ve literally become addicted to them, the ping of a text or Facebook message triggering the reward centers in our brains.

But as an advocate for spending time in natural settings to refresh and restore our minds, Szolosi is studying whether all this technology use outdoors is diminishing the benefits we attempt to gain by walking through the woods or escaping to the mountains.

The researcher is exploring several aspects of the intersection between electronic devices and our outdoor pursuits. A recent study by Szolosi and University of Utah colleagues published in the journal *Frontiers in Psychology* examined the notion that not all natural settings are created equally when it comes to acting as a mental balm for our overworked modern psyches.

The team found that subjects who viewed an outdoor image with “high mystery”—a winding path through the woods with an unclear ending—did better on memory recognition recall tests than those who gazed at a “low mystery” image of a straight road lined with trees. The “high mystery” image places less demand on a person’s attention, Szolosi explains, as these settings naturally engage the viewers’ interest.

Szolosi says that outdoor settings can be cognitively restorative because they require a level of attention from us that is “not completely effortless or effortful.” While plenty of people try to decompress by watching television at night, Szolosi notes that this “effortless” activity doesn’t necessarily make us feel refreshed. Outdoor environments, on the other hand, trigger what is known as a “soft fascination”—they engage us while allowing us to think and meditate.

What happens when you insert electronics into those outdoor experiences? To find out, Szolosi studied the effect that mobile device use in nature had on the creative reasoning skills of undergraduate students in three different settings: immersed for 12 hours in nature with no electronics, outdoors with smartphones in hand, and in a typical classroom setting with mobiles.

Szolosi and a graduate student tested the students on how well they could complete a series of easy, medium, and difficult word association problems. The researchers found that the students performed significantly better after a day unplugged in nature. Students’ reasoning skills after a day with smartphones—whether in the classroom or in the woods—were about the same, according to the study.

The findings are relevant at a time when outdoor recreation experts watch more and more Americans retreat to state parks and other natural settings with mobile phones firmly in hand—but with the notion that they can still get away from it all.

“If you’re looking for an escape from everyday demands, you need an environment that supports that intention,” Szolosi says.

The researcher notes that technology can be good in moderation, though, and there’s a way to strike a happy medium between our devices and nature. Using your smartphone to access apps that help identify trees, constellations, or birds, for example, might satisfy the need to stay connected while enjoying the benefits of the outdoors, he says.

“We might look for ways to make technology more compatible with our outdoor experience so that we stand a better chance of reaping the psychological benefits those environments may offer,” he says.

*story by :: ANDREA GIBSON*
A game for the pain: Virtual reality could help back aches

Physical therapists advise patients with back pain to stay active. Many of those patients, though, are afraid of making their pain worse.

“In all levels of back pain, if people have a high amount of fear, they move the lumbar spine less,” says James Thomas, an Ohio University physical therapy professor who’s conducted research on the phenomenon. That sets them up for further pain and disability.

How can therapists motivate reluctant individuals to get up and go? Thomas thinks the answer might be immersive video games—especially those that use cutting-edge technology such as virtual reality head-mounted displays that place the patient right on the playing field.

Thomas and Christopher France, Distinguished Professor of psychology, received a $470,000 grant from the National Institutes of Health to study the impact of the novel gaming system on back pain patients. The research team is in the process of recruiting subjects to test the system’s effectiveness.

Users play virtual dodgeball by either wearing the Oculus Rift, a head-mounted display offering a totally immersive experience, or by wearing 3D glasses and controlling an animated avatar in the game, Thomas says.

Building the game itself was no small task. Thomas and France developed the original game concept—the high-activity dodgeball game paired with a monetary mechanism that encourages game interaction—and worked with three technology companies to integrate the motion tracking hardware with the gaming software. Thomas spent a year rebuilding his Motor Control Lab in Grover Center, outfitting it with better motion capture cameras that could detect the smallest joint movement, investing in new Oculus Rift headsets, and adapting Python computer code to make the system work.

“Our team generated a massive amount of code to modify a variety of aspects of the game,” he says, which allows the research team to customize the program for each participant.

Study subjects are tested, then get three days of training on the game, and then are re-tested. Researchers can view in real time an animated model of how patients are moving their bodies during game play, calculating the degree of movement at the spine and other joints, Thomas says.

The game has shown enough potential in these early lab tests that Thomas and colleagues have developed new versions. As an alternative to dodgeball, the team has created a virtual dojo in which patient coordination is assessed through a series of rapid reaching movements to targets located in the virtual world. And Thomas is planning to add tactile feedback to the dodgeball game—if players get hit by virtual ball, they would feel it as a small vibration on the limb.

The end game? Thomas envisions a home version that could be played on a television set or a tablet computer so that back pain patients have the convenience of improving spine motion right in their own living rooms.

story by :: ANDREA GIBSON

(Left) Software tracks the skeletal and muscle movements of the study volunteers so that the researchers can understand the impact of the virtual game play on the body.
(Above) Users play virtual dodgeball by either wearing the Oculus Rift, a head-mounted display offering a totally immersive experience, or by wearing 3D glasses and controlling an animated avatar in the game.
A QUEST TO FIND A BETTER WAY TO DETECT HEARING PROBLEMS IN NEWBORNS TAKES RESEARCHERS ACROSS THE GLOBE

by ANDREA GIBSON

PITCH PERFECT

PHOTO ILLUSTRATION: ALIX NORTHRUP
In many states, it’s mandatory to conduct hearing screenings on newborns. If hearing problems aren’t diagnosed early, parents might not notice them until the child is a toddler.

“By the time they discover the child needs help, it may be too late,” says Fuh-Cherng Jeng. “The time for language development starts early.”

Jeng, an associate professor of communication sciences and disorders at Ohio University, argues that those early tests could be more rigorous to detect hearing deficiencies. The scientist and a team of graduate students recently discovered one way to bolster the screenings. Their research has shown that clinicians can look at brain wave scans to gauge whether newborns can respond to changes in speech intonation.

To conduct the study, Jeng proposed examining two populations of newborns. The first was easily accessible, as Jeng and his students already work with OhioHealth O’Bleness Hospital in Athens to offer hearing screenings for babies.

Working with the second population of newborns required a much more elaborate research endeavor. To gauge newborns’ responses to inflections in languages other than English, Jeng reached out to the China Medical University in Taichung, Taiwan, where he previously worked as a physician. To conduct the research there, Jeng and his students would need to transport the research equipment by air and train colleagues who spoke no English.

The National Science Foundation awarded Jeng funding for the project to both advance the research and provide his graduate students with a unique international educational experience.

Grant Hollister journeyed to Asia twice for the project. The Ohio University graduate student and Dayton native says he didn't have much travel experience before he took the 36-hour trip. The students didn't have cell phones or much access to Wi-Fi, he recalls. The destination city of Taichung is modern but doesn't attract many American tourists; few locals spoke English.

“We didn’t know any Mandarin Chinese words or phrases—we would take photos of food to restaurants so we could show the cooks what we wanted to order,” Hollister says.

Teaching non-English-speaking nurses how to administer the hearing test to the newborns was a bigger challenge, Hollister notes. The Taiwanese staff watched the students carefully, and both groups used hand gestures and facial expressions to communicate whether they grasped the process or were confused, the student recalls.

The nurses mastered the equipment and ran the hearing tests on the Taiwanese newborns on their own after the American research team departed. Skype meetings allowed the Ohio University team to watch their progress from afar.

“It was a good feeling to be able to come into a country where we were so different, establish who we were and what our goals were, and have people trust us enough to help us advance the research, advance the science.”

GRANT HOLLISTER

The team not only fulfilled the educational goals of the project, but also came away from it with positive study findings. To perform the experiments, nurses attached small sensors to the newborns’ heads. They played a recording of an adult speaking a sound with a variety of intonations. For the Taiwanese test, this was an “e” sound that, with four different Mandarin intonations, could either mean “clothing” (flat pitch), “aunt” (rising pitch), “chair” (dipping pitch), or “easy” (falling pitch), Jeng explains.

Research equipment tracked the babies’ brain waves. Their reaction to the changes in intonation was small but significant, Jeng says, as the nurses had to play between 2,000 and 8,000 sounds to get one visible reaction.

“We were looking to tease out a teeny, tiny response,” Jeng says. But after weeding out electronic noise, the research team saw it. And they found the pattern consistent across the American and Taiwanese children.

“It confirms that we are born equal,” Jeng says, no matter the native language of our birth environment.

After testing 55 babies in each of the two research sites, Jeng is seeking additional grant funding to continue to improve the research equipment to advance the work. In fall 2014, Ohio University awarded Jeng and colleague Brandie Nance a Baker Award for the project.

As for Hollister, the international research experience made a lasting impact. Soon after his second trip to Taiwan, he had the opportunity to work at the Veterans Affairs Medical Center in San Francisco for four months. Although he says he previously would have written off the California job as too far from home, his Asian experience gave him new confidence.

“It did give me a different outlook on my life,” he says. “It taught me to take myself out of my comfort zone and to embrace challenges.”
IN THE SPOTLIGHT

IN THIS SPECIAL SECTION, WE HIGHLIGHT OHIO UNIVERSITY RESEARCH AIMED AT HELPING MILITARY VETERANS AND THEIR FAMILIES
“I tried to erase the past,” he told Castellano. “It didn’t work. I wind up coming back [to Ohio], wind up going to jail.”

This veteran volunteered to participate in Castellano’s research project, which explores how former military personnel who have been charged with minor crimes that stem from substance abuse or mental health issues are being served by Veterans Treatment Courts. These courts have emerged in the last decade to provide services and support to veterans and to help them stay out of jail, explains Castellano, an associate professor of sociology at Ohio University. The number of veterans’ courts has grown from a handful to 15 in the state of Ohio in just a few years.

The sociologist, who has conducted field research on other judicial issues such as the impact of nonprofit caseworkers on pre-trial decisions and the operations of mental health courts, decided to use a different method to gather information for her Veterans Treatment Courts project. She asked veterans who have received services to document their lives and experiences with the criminal justice system through photography.

“I thought photography would be a good way to understand this population,” she says.

Castellano hoped that the cameras would help the veterans offer background on their personal stories and military careers and explain issues such as how the courts were helping them—or not—to integrate back into society.

The sociologist and her research assistant, Al Nelis, worked with a Veterans Treatment Court in northeastern Ohio to identify potential subjects for the study, distribute cameras, and provide how-to instructions on what to document. She then developed the photos and gave the veterans an opportunity to review the images privately before sharing the pictures and their meanings with her.

“At the time they took the photo, they might not have a conscious idea of why they took it, but it’s revealed through the conversation,” she says.
The photos sometimes featured visual references to the criminal justice system—the courthouse steps, an ankle bracelet used to monitor an offender's whereabouts—but also told the stories of the veterans' hometowns and personal milestones. Some images showed empty lots, drug houses, cemetery plots, and POW flags.

Although troubled veterans often are portrayed as suffering from post-traumatic stress disorder incurred from warfare, Castellano found that most of the individuals she met in the veterans' courts had never been in overseas combat. However, many spoke of bleak childhoods, hometowns riddled with drug activity and violence, and battles with substance abuse. Some called themselves “POWs of the streets,” she notes, as they recounted the trauma growing up in violent neighborhoods long before entering the military. For these individuals, the military was a path to a new and better future.

“They certainly spoke about aspects of their lives that I wouldn’t have been able to get at through a regular interview,” Castellano says of the photography approach.

As a court mentor, Nelis was familiar with the veterans who used the Veterans Treatment Court, as his role was to connect them to community services that could provide basic needs such as food, shelter, clothing, and medicine. He observed that asking the veterans to shoot photos of their lives was an effective way to engage them in a dialogue about their experiences and think about the journey they’re taking. He also learned more about the people he was helping in the courts.

“No two veterans are the same—they all have unique situations and all wound up in Veterans Court for different reasons,” Nelis says. “They do have needs, and they are not being met. They don’t know where to go and what to do. The Veterans Courts provide a stable situation where they can get the help that they need.”

One veteran who participated in the Veterans Treatment Court and the Castellano project is Chris Derr. He notes that “you have to go back to a military mentality and live a regimented lifestyle” in order to fulfill the expectations of the court program, which calls for regular probation, counseling, and other types of meetings over the course of about one year. “The judge isn't one for excuses,” he adds.

Although the program can be challenging, Derr says that it gave him a sense of purpose. “Through the Veterans Treatment Court I did what was required, and for me, it changed who I was,” he says. “It made me be someone I wanted to be.”

He chose to participate in Castellano’s project in order to help illustrate the stories of the veterans.
who go through the program. Derr says that taking photos and writing about the significance of the images helped him study his past and understand how it led him to where he is today.

“It strengthened me and it made me want to help other people,” he says.

Castellano notes that while the courts have been helpful in providing treatment services to the former service personnel, there is some room for improvement, as too much bureaucracy can get in the way of easy access. The sociologist also has recommended creating peer-to-peer support groups in which veterans could interact in a structured environment. In addition, the veterans reported that they’d like to see the courts recognize and celebrate all types of service personnel—from those who faced combat overseas to those who served domestically—in these facilities.

The veterans did note that their military training helped them in a court setting. For example, they were respectful of judges’ orders, viewing them as military commanders. But they also acknowledged that they have a hard time asking for help, Castellano says.

In addition to having veterans take photos and discuss their experiences with the court system, Castellano is working with videographer Dan Trout of Fishmonger Media to compile the images and life story of one veteran graduate of the program into a short promotional video for Veterans Treatment Courts. Trout suggested using video as a medium, which he thinks has been effective for capturing what he calls “incredibly deep and visceral” stories that the veterans have shared with the team.

“I think that no matter what you do as a video producer or graphic designer, your work is going to have a bit of a self-portrait quality, and I’ve tried to keep my own preferences and aesthetic sensibilities out of this, really trying to let the voices and experiences of the vets dictate the aesthetic of the video,” Trout says.

Derr volunteered to participate in the video because he wanted to speak publicly to other veterans about the ability of the Veterans Treatment Court program to change their lives, he says.

“If you complete the program, it can be a jumpstart into what is hopefully a normal life and get you back into society,” he says. “It gives you a chance to clean yourself up and re-evaluate yourself.”

The video will be used to encourage more eligible veterans to choose the services of the Veterans Treatment Courts over traditional criminal prosecution, Castellano says, as well as educate other audiences about what these courts can do for justice-involved veterans. A panel of Ohio judges is serving as external reviewers of the video, she notes. The nine-minute video also will be shown to a focus group of Veterans Treatment Court participants.

Castellano and colleagues hope that the project raises the profile of Veterans Treatment Courts and the impact they can make.

“My hope is that through their involvement in this photography project—revisiting and photographing locations from their past and telling their stories in an artistic and hopefully transformative way—that the veterans involved can gain some sense of closure and can use this experience as part of their healing process,” Trout says. “Hopefully, Dr. Castellano’s work on this can be used as a pilot program for other such photography projects.”

The project has been supported by the Ohio University Baker Fund, College of Arts and Sciences Faculty Development Award, and the C. Wright Mills Award.
Care connection

A physician and a documentary filmmaker seek to raise awareness of how the civilian health care system can better meet the needs of military veterans.

(Right) Todd Fredricks, a physician with Ohio University’s Heritage College of Osteopathic Medicine, recently published study findings that confirmed that civilian doctors don’t fully understand the physical and emotional trauma of combat or know what common issues to watch for in these patients.

“Having the opportunity to do the film from a medical research position is very intriguing to me.”

(Right) Todd Fredricks
Those words, spoken by a military veteran asked about how physicians can better serve the health care needs of men and women returning from combat, close the trailer to a forthcoming Ohio University documentary created to educate medical students and doctors about the unique issues experienced by service professionals.

American physicians know that they need to do a better job of helping this population, says Todd Fredricks, himself a physician with Ohio University's Heritage College of Osteopathic Medicine. Fredricks recently published study findings that confirmed that civilian doctors don't fully understand the physical and emotional trauma of combat or know what common issues to watch for in these patients. But they're eager to improve their ability to work with veterans, he found.

After Fredricks, an assistant professor of family medicine, compiled his survey data, he did what any other academic would do next. He presented the findings at professional conferences and published in a medical journal. But he knew that he could reach only a certain audience of colleagues using these methods. He wanted to spread the message more broadly, connecting with medical students and physicians who needed to hear it most.

When the physician met videographer Brian Plow, he knew he'd found his answer. A documentary film—even a short one—could offer a compelling visual tool for telling the veterans' stories to health care professionals.

"If we teach people to ask the right questions, maybe we will get better care as an outcome," Fredricks says.

CURATING STORIES

Plow, an associate professor of media arts and studies, is attracted to stories about "smaller, hidden topics that are not getting attention," he says. There's a strong opportunity, he notes, to make an impact.

The filmmaker, whose previous work focused on social justice issues, wasn't familiar with the two communities—medical practitioners and veterans—that he and Fredricks would need to work with for the project, which gave him some pause. But Fredricks is both a physician and a 24-year military professional, having done three tours of the Middle East as a U.S. Army Colonel and medical officer. This helped the duo gain access to documentary subjects.

Fredricks was eager to become an expert on the technical and creative side of the project as well, Plow notes. During the first six months of the partnership, the physician learned how to operate the camera and other equipment. That's been an important asset, Plow says, as Fredricks is sometimes able to travel to interview documentary subjects when Plow can't.

Fredricks relished the chance to learn the technical side of filmmaking, he says, as he appreciates its effectiveness as a storytelling format.

"I love the power of film when it's done beautifully," Fredricks says. "Having the opportunity to do the film from a medical research position is very intriguing to me."

Fredricks and Plow agreed early on in the project that the veterans' interviews would serve a dual purpose: as documentary sources and as subjects of a qualitative research project designed to document and analyze service personnel experiences with combat and health care. As a result, the documentary interviews are conducted in a systematic, consistent manner so the team can collect viable research data as well as compelling stories for the film, Plow explains.

Both the filmmakers and veterans spend time vetting each other before agreeing to participate,
The documentary includes footage of how U.S. Army flight paramedics treat wounded soldiers. Fredricks notes that the military paramedics are some of the best trained in the world; their expertise is life-saving.

Plow and Fredricks interview a female veteran who was injured during a tour of Afghanistan.

A wounded Special Forces medic who lost limbs to an IED attack has found a new career as a hunting and fishing guide; the story is featured in the documentary.
Fredricks and Plow note. Veterans might initially be wary of intentions and the chance of being exploited, whereas the creative team needs to verify that the subjects really did serve — there are veteran imposters out there, Fredricks says, a concept called “stolen valor.”

“Once they see that we have a clear and unique intention, the reception is very good and they are very generous with their stories and time,” Plow says about the veterans.

Fredricks and Plow have a standard set of questions for each participant, which are offered in advance of the shoot. The veteran is filmed against a black backdrop with simple lighting.

“The subjects tend to launch into an eloquent and moving recounting of their experiences,” Plow says.

Though the interviews are standardized for the sake of research integrity, Plow and Fredricks also seek opportunities to shoot additional footage of the veterans’ lives in order to paint a fuller, honest picture of them in the documentary. The subjects have been fairly amenable, allowing the filmmakers to capture family dinners or birthday parties. Plow notes that the main constraint is time, especially as some of the subjects live outside of Ohio.

As for the veterans’ interactions with the healthcare system, Fredricks says that “probably the most common theme we see is false assumptions on the part of clinicians.” For example, a veteran recounted how his local physician assumed he was seeking heavy painkillers for a fractured spine problem, when the patient wanted only to refill an ibuprofen prescription. Fredricks has found — in the interviews and research — that clinicians also don’t understand Veterans Affairs services, including how veterans can easily access them.

**THE FINAL EDIT**

Fredricks and Plow, who have a grant from the Ohio University Research Committee, released a teaser trailer of the documentary during spring 2015 to support their efforts to recruit subjects and to raise additional funds. The nearly four-minute video shows interviews with male and female veterans of various ages, combat footage of flight medics caring for wounded soldiers, and scenes from domestic life.

Although the goal is to produce an hour-long documentary, Fredricks notes that he and Plow will create multiple versions of the film in different lengths for teaching and outreach purposes. Several medical schools already have expressed interest in showing the documentary to their students.

The Ohio University team has gathered enough compelling material to potentially produce documentaries on additional, related topics as well, Plow says. For example, the flight medics have unique experience treating soldiers in combat. The duo has received permission to use existing and new footage shot by the medics in future films, he adds.

As the documentary project moves forward, Fredricks notes that other researchers have expressed interest in expanding on his study of physicians’ awareness of and comfort level with veterans populations, such as by surveying larger or different groups of doctors or examining issues such as emotional trauma or chemical exposure.

By Veterans Day 2016, the Ohio University team hopes to release the full documentary. Although there are more interviews and footage to capture, Fredricks and Plow understand that their project is timely, with interest in veterans’ issues high.

“We want it to be as relevant as possible as soon as possible,” Plow says.

The duo also sees potential in teaching their research and documentary process to others, so that medical schools could use it for outreach and education on a wide variety of medical matters.

“You can do legitimate research in a beautiful way,” Fredricks says. “The elegance of the format can help build knowledge.”
The medical condition affects some 20 million Americans, and it's the top service-related disability reported by military veterans. The U.S. Department of Veterans Affairs spends $1.5 billion annually on treating the condition, which impacts about 1 million service personnel. The causes of the condition are diverse: head trauma, the side effects of certain drugs, a companion to age-related hearing loss, and the exposure to a sudden or prolonged loud noise. There is no cure for tinnitus, which scientists have found to be rooted in the brain.

“It's a difficult problem because it involves the whole neural pathway from the ear to the cortex,” says Jeff DiGiovanni, an Ohio University associate professor of communication sciences and disorders. “The focus is on therapies instead of cures, as it will take many decades to develop a cure.”

But DiGiovanni thinks that current therapies don't completely meet the needs of patients with tinnitus. That's why the professor decided to become an inventor and an entrepreneur to offer a better solution.

That solution—a 1-oz. medical device called Quietude—has received U.S. Food and Drug Administration (FDA) approval and is moving toward the marketplace this year.

SEEDS OF INNOVATION

During his 13 years on Ohio University's faculty, DiGiovanni has studied how people hear and process speech in order to develop better algorithms for hearing aid technologies. He's the author of *The Hearing Aid Handbook*, a reference to devices and manufacturers in the audiology field.

DiGiovanni noticed a gap in the market for devices that treat both hearing loss and tinnitus, as well as the lack of a product that could provide a more customized sound therapy for patients with the latter condition. The two most common treatments are tinnitus retraining therapy, which builds on the concept of brain elasticity—in other words, the idea that the brain can be coached to focus on other sounds—and tinnitus masking, which uses white noise to mask out the problem ringing.

Conventional products either mask tinnitus with white noise or are stand-alone MP3 sound players that don't work with hearing aids, he explains. That's a problem, as 85 percent of tinnitus sufferers have hearing loss as well, and don't need a product that dilutes the effect of their hearing aids, he says.

DiGiovanni and Stephen Rizzo, who served as chief of the audiology section of the Chillicothe VA Medical Center, worked together to propose a solution: an all-in-one hearing aid and MP3 customized sound system that could be manufactured at a low cost.
Tinnitus is the top service-related disability, impacting approximately 1 million service personnel.

Jeff DiGiovanni has developed a medical device called Quietude to help meet the needs of patients who suffer with tinnitus.
To take the invention to the marketplace, DiGiovanni turned to TechGROWTH Ohio, an economic development program administered by Ohio University's Voinovich School of Leadership and Public Affairs. The program assigned an executive-in-residence, Jeff Wiseman, to connect the professor to the manufacturing industry.

Wiseman recalls that the inventors had a strong idea, a good sense of the therapeutic needs, and a business advisor, but that “manufacturing was the big stumbling block,” given that this was the first time the scientist and clinician had tried to develop a product for the marketplace.

Wiseman, who has experience with biomedical start-ups, helped DiGiovanni navigate relationships with potential manufacturers. The audiologist formed a start-up company, Sanuthera, around the technology and established a headquarters at the Innovation Center, Ohio University's small business incubator. TechGROWTH Ohio awarded the company a growth grant of $337,000 to develop a prototype and pursue testing of the new device in the hopes of attracting a manufacturer.

SERENE SOLUTION

The product, Quietude, is designed to train people with tinnitus to focus attention on other sounds in their environment to mitigate the persistent ringing noise. It plugs into and works with existing hearing aid devices and also uses natural sounds to provide users with a pleasant aural landscape.

“(The natural sound) helps your brain not attend to that tinnitus sound anymore. It gives you something to attach to,” DiGiovanni says.

The 1-oz. device fits on the bottom of a streamer, a small plastic power unit that hearing aid users wear around their necks. Quietude communicates with the streamer through a wireless connection, which means that it doesn’t need special hardware to work with existing medical devices, he explains. In addition, Sanuthera has developed an app that includes all of the assessments, customization, and therapeutic sounds with an incredibly intuitive interface, he says.

DiGiovanni also designed the device to automatically match the right pitch of the natural sounds to the patient’s tinnitus, which saves the audiologist time and effort during evaluations and fittings.

“The audiologist is the customer,” he explains. “If they don’t want to sell something, they won’t mention it to the patient.”

MOVING TO THE MARKETPLACE

By 2013, Sanuthera was ready to test the Quietude product on a sample pool of tinnitus patients. The company contracted with researchers at the Cleveland Clinic, which recruited about three dozen subjects to use the device for at least two hours per day in an effort to retrain their brains to focus on the soothing sounds generated. Each patient was tracked for six months.

“They found a very strong treatment effect with the device,” DiGiovanni says.

Study subjects reported a 36 percent average improvement in tinnitus symptoms, with some experiencing even higher benefits, according to a press release issued by Sanuthera in 2015. The interim research results were presented at the American Academy of Audiology’s annual conference.

In July, Quietude received a FDA 510(k) clearance, a process of federal approval for lower-risk medical devices, DiGiovanni says. This clearance didn’t require a clinical trial with human subjects, but the Cleveland Clinic study will help the company show how effective the product is to prospective manufacturers, he explains.

The findings also bode well for individuals with tinnitus, which DiGiovanni notes can be a frustrating medical condition. Patients often are told by physicians to “live with it,” or endure years of trying to determine triggers or experiment with solutions with little to no improvement. That can be a greater problem for military veterans, as they tend to acquire tinnitus at a younger age than the rest of the population.

Now that the FDA has approved clearance of the device, Sanuthera can license the technology to a manufacturer for production and marketing. DiGiovanni’s goal is to find a company in Ohio so that Quietude can remain a Buckeye State product.

“We’re well poised to hit the market,” he says.
It may be hard to be a teenager, but for kids in military families, the stressors can be even greater. Frequent moves to new towns and schools, as well as the anxiety over a parent’s deployment and absence from the household, can take an emotional toll on teens.
To provide support for these youth, the Department of Defense and the U.S. Department of Agriculture (USDA) sponsor a national series of outdoor adventure camps in locations ranging from Alabama and Colorado to New Hampshire and Ohio.

The camps were designed to give teens from military families a chance to interact with peers who have experienced similar challenges, but also provide some respite from them, explains Andrew Szolosi, an Ohio University assistant professor of recreation and sport pedagogy.

“Being around other military teens who understand those stressors is beneficial,” he says.

Szolosi and Ohio University colleagues Bruce Martin and Danny Twilley have managed several of these summer military teen adventure camps for the last five years. Their excursions include a week of whitewater paddling in Pennsylvania, sailing Lake Erie, and climbing, rafting, and mountain biking in West Virginia.

Through Purdue University, the Department of Defense and the USDA have awarded $1.5 million in funding to Ohio University and Ohio State University to design and manage the camps, which have served about 600 military teens since the program’s inception, Szolosi reports. The Ohio University program has offered opportunities to undergraduate and graduate students and alumni to serve in leadership roles.

In addition to running the programs, the team has critically evaluated how to effectively plan the camps to help develop the teens’ social skills and resiliency. For example, the team scuttled an early version of the program that asked teens to backpack several miles daily and set up a new camp nightly. That first-year version was too physically demanding, unfamiliar, and stressful for the teens, Szolosi explains. In year two, leaders found that they could better interact with the teens with a varied agenda of hiking, biking, rock climbing, and kayaking day trips taken from a base camp.

This version offered “military teens with some of the comforts of home, but still offered enough novelty and variety to keep them engaged,” Szolosi says, noting that feedback from the teens was positive.

In year three of the program, Szolosi, Martin, and Twilley conducted interviews with the youth to learn what they perceive to be the benefits of participating in the outdoor adventures. Preliminary data from interviews show that the teens relish the opportunity to spend time with peers from military families, Szolosi reports. The camps help bolster a sense of citizenship, leadership skills, and national pride, he adds.

The programs also provide an opportunity for these teens to escape from thinking about stressors such as a parent’s deployment or not fitting in at a new school, Szolosi says. In addition, the natural outdoor setting offers a chance for cognitive and emotional restoration.

“It’s easier to achieve a sense of being away when surrounded by a number of inherently fascinating stimuli in nature,” he notes.

Szolosi and colleagues have presented their study findings at several national conferences, have published a chapter about the experience in a recent book, and are publishing additional data. They hope that the research can help organizations plan outdoor adventure experiences that have positive outcomes for military teens.
The teen camps have received $1.5 million in funding from the Department of Defense and the USDA. 600 military teens served since the program's inception.

To find out more about the camps, visit www.facebook.com/ohiomtac.
VERONICA

...the belief that the

impossible is possible, while her mind still

wondered at the success that went with it. And Miss

Minver began to have very acute sensations that Miss Minver never stated an argu-

ment that was never embarrassed by a sense

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Ann Veronica critical and

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society and science. The brain tires of

the same ideas that it

repeated and dissected and buried, it

is energetic to repeat the operation

thing, one feels, in ideas that achieve

...successful resurrection. What Miss M

...or the Higher Truth supervenes

...grows and disclosed: and more disposed

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phrases something eluded it had

...assive and defective; but it was still de

somewhat. It did seem germane

...in the van...
Literature scholar Carey Snyder revives a famous author’s 1909 novel about feminism
Although the plot might not ignite the same public reaction today, it might surprise some to learn that the author of this book about feminism and romance was H.G. Wells, better known for his science fiction novels such as *The War of the Worlds* and *The Island of Doctor Moreau*.

“He was a celebrity author at the time,” Snyder says. “Even though he was hugely popular during the period, he is not really studied as part of the modernist canon.”

Readers now have a new opportunity to read *Ann Veronica*—which has been in and out of print over the last century—with the publication of a new edition of the work. Snyder, an Ohio University associate professor of English, worked with the Broadview Press series to create an introduction, explanatory notes, and eight appendices that offer biographical, historical, and cultural contexts for the novel.

**THE “NEW WOMAN”**

Wells didn’t have to look far for source material for the novel. In the 1890s, someone who rejected the domestic sphere to pursue a career, attend college, or join the suffragette movement was
changes happening in modern society. Ann Veronica's dilemmas still feel like dilemmas; her issues feel contemporary.”

Despite the enduring legacy of his science fiction, the author's more topical novels on social issues didn't have a long shelf life in the 20th or 21st century. Until now.

“There's a renewed interest in Edwardian literature, so Wells is back on the map,” Snyder notes.

Ann Veronica is cited as the favorite book of many students who take Snyder's Ohio University course on new woman novels (several of which are out of print). The class offers a guide to the books that may have gripped the masses in earlier eras, but didn't survive the litmus test for the literary canon.

But like Ann Veronica, the novels may have played an important role in stimulating public debate and changing lives at the time of their publication, Snyder notes. More readers in the Edwardian era were reading the works of Wells than those of his experimental contemporaries.

“Wells' work was influential,” she says. “He received letters from working class readers and women who felt that he was showing them new worlds. That can be eye-opening for students now.”

CAREY SNYDER

AN AUTHOR REVISITED

Wells, who was 43 years old at the time of Ann Veronica's publication, declared in his autobiography that the novel “has made me a friend of youth and tomorrow” through its discussion of changing social mores. Though the author may have been eager to be viewed as a cultural voice of a generation, Snyder notes that some of his female contemporaries saw him as out of step. Katherine Mansfield and Beatrice Hastings penned a parody of Wells' work, and Virginia Woolf dismissed him as a “traditional and anachronistic figure; she felt him to be passé,” Snyder says.

English literature scholars traditionally have focused on authors such as Woolf, James Joyce, or T.S. Eliot—prized for their innovative stylistic techniques—in the research and teaching of the modern period.

“On the one hand, Wells is an outlier because he didn't believe in the art novel and wasn't stylistically experimental,” says Snyder, who is also author of the 2008 book British Fiction and Cross-Cultural Encounters: Ethnographic Modernism from Wells to Woolf. “But he did have his finger on the pulse of changes happening in modern society. Ann Veronica's dilemmas still feel like dilemmas; her issues feel contemporary.”

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“The world beneath our feet is as unexplored as space or the deep sea.”

DAN HEMBREE
ONE OF THE LARGEST WHIP SCORPIONS  

A cast of a burrow of a giant vinegaroon, which can be found in South America, Cuba, the Antilles, Mexico, and the southern United States. Using its large claws to excavate and transport sediment from the burrow, it can produce a burrow large enough for its entire body in approximately one hour.

STORY BY 
SARA LAJEUNESSE

BENEATH THE SURFACE

GEOLOGIST DAN HEMBREE INVESTIGATES THE UNIQUE WORLD OF BURROWING ANIMALS AND WHAT THEY CAN TELL US ABOUT THE PAST AND FUTURE OF OUR ECOSYSTEM

PHOTOGRAPHY BY BEN SIEGEL
line the laboratory’s walls as if part of a strange petting zoo. Yet these animals are not to be touched. • “We try not to handle the animals, especially the vertebrates, like salamanders, which can become almost dog-like in their behavior,” says Dan Hembree, an Ohio University associate professor of geological sciences. • Hembree wants the animals to act as they would in the wild so he can investigate their mysterious underground lives. • “The world beneath our feet is as unexplored as space or the deep sea,” he explains. “Our goal is to learn more about the animals that are living in the subsurface.”

Hembree is particularly interested in studying the burrowing behaviors of these creatures, both the modern-day ones as well as the animals’ ancient ancestors. These burrowers, he says, play an important role in soil processes, without which there may be no advanced life on the continents. That’s because healthy soil filters water, serves as the foundation for food webs, and offers habitat for billions of organisms, among other duties.

“We often think about plants as being important for soil production,” Hembree adds, “but it’s actually more complex. Everything in the soil, including the animals, plays an important role in making sure soils are productive.”

SHAPE SHIFTERS
Add burrowing animals to a solid block of soil and you get a metamorphosis; pits, tunnels, tubes, and chambers appear. One of Hembree’s goals is to characterize these shapes, sorting them into categories with names like subvertical ramps, U-shaped burrows, helical burrows, and maze works. He is documenting the forms in a new online database called the Continental Neoichnology Database.

Neoichnology, says Hembree, is the study of the traces that modern animals leave behind in order to better understand the animals that produced ichnofossils found in the fossil record. The new database provides students, educators, and researchers with comprehensive access to neoichnological information for use in the study of both the past and the present.

To acquire this information, Hembree creates plaster casts of the animals’ burrows. First, he removes the critters. Then he pours liquid plaster into the burrows, waits for the plaster to harden, and digs out the casts. Finally, he describes the casts based on their shape and also looks for unique features such as the marks that certain kinds of animals make on burrow walls when they are digging.

“Those are usually diagnostic of a particular type of burrowing technique or a particular appendage; a leg or claws make distinctive scratch marks on the walls,” he says. He also makes detailed quantitative descriptions of the burrows—for example, length, width, and circumference.

“I’m using those measurements to do statistical analyses that rank their level of
“In the past, we have categorized and studied burrows based on expert opinion. For example, this looks like a scorpion burrow and that looks like a spider burrow. I’m creating a more quantitative means of doing this.”

Lauren Johnson, an undergraduate student working in Hembree’s lab, is using this process to study spadefoot toads.

“I have been observing the burrowing behaviors and techniques of the modern-day Eastern spadefoot toad, and qualitatively and quantitatively describing the burrow morphology constructed by these toads,” she says. “So far, I’ve learned that the Eastern spadefoot toad constructs three qualitatively distinct burrow architectures.”

Johnson notes that one of her goals is to use her modern-day toads to examine prehistoric toads.

“The fossil record of amphibians is incomplete,” she says. “Being able to identify toad burrow fossils in the fossil record allows them to serve as proxies for the animal.”
Beneath the tangled maze of fresh-made tunnels, an ancient network of burrows lies etched in rock. These traces were created by prehistoric creatures some 310 to 270 million years ago during the Pennsylvanian and Permian periods. “Throughout the history of life, organisms have left their mark on the world,” Hembree says. “Tracks, trails, burrows, and other environmental modifications are left behind in the fossil record long after the animal that created it has died. These fossil traces can tell us about the lives of the creatures that lived long ago and about the environments in which they lived.”

According to Hembree, modern-day animals, such as spiders, centipedes, salamanders, and scorpions, like their prehistoric analogues, spend more of their time underground than above. “They can spend several months below the surface just sitting in a small chamber, not eating, not doing anything, just sitting,” he explains. “They burrow for protection from predators and also to find refuge from environmental extremes. When they come to the surface, they mate, eat, and go back below the surface.”

Hembree has learned much about the behaviors of prehistoric organisms by investigating trace fossils in the Pennsylvanian and Permian paleosols—or ancient soils—of southeast Ohio and West Virginia. “By studying the traces of these animals and comparing them to modern animals we have learned that Pennsylvanian and Permian arthropod detritivores (animals that feed on dead
organic material) probably engaged in feeding and dwelling behaviors in the soil,” he says. “We also learned that flying insects likely had temporary interaction with the soil through the production of such reproductive structures as nests or brood burrows. In addition, we learned that amphibians and early reptiles—such as microsaurs, temnospondyls, and cotylosaurs—may have constructed burrows for use as dwellings, temporary nests, and possibly prolonged dormancy.”

**DESTINATION DESERT**

During summer 2015, Hembree branched out from his typical work in Ohio and West Virginia by conducting research in the Sonoran Desert of Arizona, a project for which he recently received a grant from the National Geographic Society. His goal was to examine the interactions between live organisms in the desert soil. These interactions, he says, may change the types and patterns of burrows that are created.

“In my work, I have been most surprised and troubled by the sheer number of potential burrow forms a single organism can produce,” Hembree says.

For example, he notes that the whip scorpion produces a wide variety of different burrows, anything from a simple vertical tube to complex maze works of interconnected tunnels.

“Trying to characterize a single burrow type with a single organism is extraordinarily difficult,” he says. “Trying to characterize burrows when a multitude of species is present is even harder.”

But investing in the acquisition of this type of information is useful in understanding how burrowing animals affect soils.

“We can learn about the role of these animals in the production and maintenance of ancient soils and their productivity,” Hembree says. “Did they improve soil productivity or were they detrimental to soils? What were the effects of environmental change on these various kinds of organisms? If it’s warmer, wetter, drier, or colder, how did that affect their burrowing behaviors and the morphologies of their burrows?”

After all, he adds, without these animals there would likely be no soil. And without soil there would not be much life on land.

“(Animals) burrow for protection from predators and also to find refuge from environmental extremes. When they come to the surface, they mate, eat, and go back below the surface.”

**DAN HEMBREE**

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**SIMPLE BURROWS**

Mexican blond tarantulas are ground spiders that inhabit deserts of Arizona and northern Mexico. These tarantulas construct burrows in sandy soil that they rarely travel far from except to mate. The burrows are sealed during the winter while the spider hibernates.

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**FIND OUT MORE**

**VISIT THE CONTINENTAL NEOICHNOLOGY DATABASE ONLINE AT**

www.continentalneoichnology.org

The database features photos, videos, and other information on the behaviors and biogenic structures produced by modern continental organisms studied by the Ohio University Continental Ichnology Research Laboratory (CIRL).

**EDITOR’S NOTE:** Student researcher Lauren Johnson has now graduated from Ohio University and intends to further her education in graduate school.
HOW ONE PROGRAM IS PLACING 3D PRINTERS, CAMERAS, DRONES, AND AUDIO EQUIPMENT IN THE HANDS OF STUDENTS TO HELP THEM TAKE THEIR CREATIVE WORKS—AND CAREERS—TO THE NEXT LEVEL

At CREATE_space, Ohio University students have an opportunity to dream, build, and experiment. Supported by the College of Fine Arts and located in Putnam Hall, this interdisciplinary research facility helps students, faculty, and staff collaborate on creative endeavors among artists, designers, musicians, filmmakers, and entrepreneurs.

“CREATE_space is here to help people make and do really compelling things, whether that be 3D prints of animal jaws, supporting a student start-up, making a film, creating new letterpress tiles, helping faculty with research projects, supporting community arts initiatives, or whatever else may come,” says Operations Coordinator Nathaniel Berger.

More than 300 students visit CREATE_space each year through classes or independent projects. In high demand are the Makerbot Replicator 3D printers and replicators, 3D and flatbed scanners, Canon 5D Mark II SLR cameras, and Zoom H4N audio recorders. The list also includes unique and highly specialized items such as a Phantom II Quadcopter drone, Vacuum Former (for molding plastic), SOLOSHOT (an automatic tracking video device), and a Fingerboard (a specialized keyboard for use with synthesizers), to name a few.

BY JEAN ANDREWS

On the following pages, six Ohio University students showcase their CREATE_space work and describe their process in their own words.

SEE MORE EXAMPLES AT WWW.OHIO.EDU/CREATESPACE
This project was based on the so-called “Sea Serpent” of Gloucester: a large, unidentified animal sighted off Cape Ann, Massachusetts, in 1817. I traveled to Gloucester to conduct research and seek out alleged Serpent-sighting locations. In the basement of the Cape Ann Museum, I pored over the eyewitness accounts transcribed in crumbling yellow documents. Then, at the sites of these Serpent encounters, I made a series of images using a 19th century photographic process called wet-plate collodion. I exhibited these photographs alongside historical texts, audio recordings, maps, drawings, and found objects for my MFA thesis exhibition at Trisolini Gallery.

The CREATE_space provided me with a DSLR camera to photograph historical texts at the Cape Ann Museum. I was also able to use this camera to document my final exhibition. My show also included several museum-style audio kiosks where visitors could listen to tracks that I made using recording equipment and editing software at the CREATE_space. Having access to such professional-level photo and audio tools was vital to the creation of Dark Water.

(Left) Campbell used a 19th century photographic process called wet-plate collodion to create images such as “Piper’s Rocks.”

(Above) Campbell’s exhibition at the Ohio University Trisolini Gallery invited visitors to listen to audio recordings as well as to view his images.

IMAGES: COURTESY OF IAN CAMPBELL
This installation is a two-part examination of both light and motion. Transcribing Motion researches how people move through space, forming codes of action (both physical and psychological) unique to their personalities. Transcribing Light records the formation of organic and inorganic objects and repeats these past events in projection. In using quantum light waves of the projection, I question how and why the subatomic particles of our world formed, and how this formation affects us on a macro level.

I used CREATE_space to make 3D topographical models of parts of my body. These provided codes that I then recorded in 2D form in an effort to translate how I move through space and to examine my own repeated actions. I also used a projector from the CREATE_space for my light projection. My thanks go to Nathan Berger (of the CREATE_space) and Professor Stephen Bergmeier (chair of the Chemistry and Biochemistry Department), who assisted me in my research.

(Right) Nikki Volpenhein consulted with CREATE_space and an Ohio University scientist to develop her installation “Transcribing Light & Motion.”

(Left) Sarah Dahlinger’s installation included a sculptural pile of lit arrows.

IMAGE: COURTESY OF SARAH DAHLINGER
This body of work embraces the theatrical cues of flashy venues and their tools of trickery while simultaneously admitting their fantastic fallacy. The video works document various embodiments of temporary pleasure, intrigue, and thrill. Bars, strip clubs, theme parks, arcades and other fabricated environments begin to represent a greater relationship between moments of extraordinary circumstance and the inevitable return to daily routine. The sculptural pile of lit arrows attempts to put the universal icon of direction at risk of becoming futile.

Hope Here was my first piece in which I stopped thinking of myself as a musician and tried to instead consider myself an artist of any medium. It is the latest in a series of pieces I have written that make extensive use of computer processing. This piece was made up entirely of synthesized sounds that I designed; these sounds also controlled 3D computer graphics that I programmed.

Since Hope Here is made of synthesized sounds, I needed a versatile and unique controller for those sounds in order to keep a human element in the performance. I did not want to use a standard midi keyboard, as that leaves much to be desired in terms of expressiveness. I learned of the Continuum Fingerboard through my composition professor Mark Phillips. I was told it was a difficult piece of technology to grasp, and not many students had made the attempt before. But it turned out to be exactly what I was looking for. The Fingerboard is a midi controller designed by Lippold Haken that embraces expressiveness through midi. The fingerboard is a three axis keyboard: it can detect pressure (Z-axis) in addition to X and Y axis movement. This was perfect to control the synthesizers I had programmed.
eMotion is a multipart experiment in color, light, and motion. It explores visual therapy as a means to combat the overwhelming amount of digital and social stimulation that exists in the world today. I wanted to create a tranquil environment that viewers could escape to, ignoring their phones and computers for a time, even while the project lived within the same digital realm as these problems. The triangle pattern is dynamically generated with computer code, and constantly shifts in color and value. It is designed so that every frame of time is unique and no moment will ever be repeated, giving the viewers a new and different experience every time they interact with it.

CREATE_space helped out significantly with this project. I was able to rent all of my equipment—projectors, computer, cables, etc.—for experimentation and installation from them, as well as engage in consultation when I got stuck with technical details or changed my mind. I never would have been able to afford everything I used, and Nathan was a great resource.

Kyle Hannon

eMOTION

2015
College of Fine Arts
BFA Graphic Design

(Left and above) Hannon’s project culminates in a projected installation, in which he creates a tranquil environment with light and color.

IMAGES: COURTESY OF KYLE HANNON
This body of work examines the fluid relationship of our bodies with the built environment. The strategy I have chosen is to claim spaces in the built environment that seem to exist as non-places as they usually stay undisturbed or underutilized. Here I employ temporary constructions possessing international forms (i.e. the curvature of a curb rounding a corner) adaptable to local conditions. The hidden motif behind the work is the issue of displacement and creation of strategies to transform space into place. In placing my body in a piece of foam with my 3D scanned body carved into it using a mechanical process, (CNC, or computer numerical control), and, then, placing both into a curvature that almost perfectly fits the 5’ x 6’ dimension of the foam, I am looking into infusing my body into the urban landscape where a constantly displaced human being actually belongs. The MFA thesis show included photographs, video projections, and objects in the form of an installation.

The CREATE_space at Ohio University and Nathaniel Berger had an instrumental role in the realization of this project, both in providing technical support and necessary multimedia equipment. Nathan, as one of the most resourceful people in the College of Fine Arts, has been a “go to” person for me to find solutions on how to do things, as I know he either has an answer or will find one for me promptly.
AT A Glance

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:: Aching back?

Visiting virtual reality for therapy

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PHOTOS: (TOP LEFT) BEN SIEGEL; (BOTTOM LEFT) MEGAN APPLEGATE AND THE MOTOR CONTROL LAB; (TOP RIGHT) COURTESY OF NIKKI VOLPENHEIN