

SPRING/SUMMER 2022

IMAGINE

University Libraries at Virginia Tech Magazine

**SHOCK WAVES AND
THE MILKY WAY**

A pioneer's collection

True cost of
data sharing

Technology lending
powers learning



OVER
750 items
MORE THAN
24,000 checkouts

Since March of 2018, the Studios Technology Lending Desk has powered experiential learning through lending equipment to students, staff, and faculty for projects and play.

See more on page 16.

Photo by Jack Micallef `24

Imagine

Spring/Summer 2022 Vol. 3, No. 1

Dear friends of the University Libraries,



As the academic year comes to an end, we reflect on the successes and achievements we enjoyed throughout the fall and spring semesters. These accomplishments are possible through the hard work and expertise of our library employees.

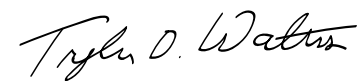
Throughout these pages you will find stories of unique resources for research and learning such as a series of freely downloadable medical textbooks, emerging technology for lending in our studios, and a digital timeline that documents 100 years of women at Virginia Tech. These accomplishments are certainly worth celebrating — our people behind this hard work even more so.

In addition to our library employees, friends of the University Libraries are making a difference for Virginia Tech students and contribute to their success. With help from more than 60 volunteers across campus and Hokie parents, the University Libraries staged its bi-annual Cheesy Nights outside in order to safely serve grilled cheese sandwiches to our students during finals week in December. Did you know it takes more than 170 pounds of cheese to make enough grilled cheese sandwiches for hungry Hokies during finals?

Several pages in the magazine are a result of your feedback from the last issue. Many of you took the time to provide your thoughts through our feedback form. You'll see several pages with the tab "readers request" that give you a then and now view of Newman Library through the decades and a snapshot of some of the projects being created in our prototyping studio.

We encourage you to keep the conversation going! What would you like to learn more about in the University Libraries? Join us on social media @ VTLibraries and stay connected.

All the best,



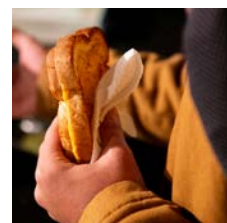
Tyler Walters, Ph.D.
Dean, University Libraries
Virginia Tech

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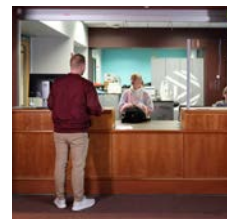
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Features photos: Cheesy Nights by Jack Micallef (top right), Studios Technology Lending Desk by Jack Micallef (middle right), Medical textbooks by Trevor Finney (bottom right).

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HOW WE
MADE IT
HAPPEN



NIGHTS GOES OUTDOORS

By Ann Brown



407 loaves of bread



170 pounds of cheese
105 pounds of butter



400 ounces of marshmallows



More than **60** volunteers

THE AROMA of grilled bread, butter, and gooey cheese wafted through the plaza in front of Newman Library's café during University Libraries' Cheesy Nights. In December 2021, more than 60 volunteers, including parents, members of the Virginia Tech Police Department, and Hokies near and far used creativity, hard work, and a whole lot of love to make sure this finals week tradition continued after a pandemic-caused hiatus.

Cheesy Nights was back, but looked a bit different.

When organizers and parents proposed the idea of bringing it back but staging it outside instead of on the second floor of Newman Library, the police department offered its mobile Command Center. The Virginia Tech Police Department has been a staunch Cheesy Nights supporter for almost a decade and didn't hesitate to jump in to help make it happen. The department's 33-foot heated RV has lights, electricity, and storage areas for holding hundreds of loaves of bread and bags of marshmallows.

Volunteers brought backyard grill-sized griddles and made sure there was enough supplies to cook up thousands of crispy sandwiches and serve hundreds of snack bags and pounds of fruit. This time, the menu expanded to include vegan and gluten free options; and the number of sandwiches served increased as well.

Therese Walters, Cheesy Nights founder, co-organizer, and wife of University Libraries Dean Tyler Walters, said this was the biggest Cheesy Nights yet. "We knew if we did this really close to the building in front of

the café, it would work," said Walters. "We are cooking and serving a lot more sandwiches because we're outside."

Co-organizer Phil Scott was thrilled they could take Cheesy Nights outside and offer both students who pass by the library and those who are studying inside a chance for a break. "They find out that Cheesy Nights is happening and they have food to eat," said Scott. "At this point in the semester, they might not have food to eat."



238 pounds of bananas



135 pounds of apples



51 pounds of oranges

Justin Shelton, a fourth-year finance major, was glad to see the warm, buttery sandwiches and hot chocolate waiting for him. "I spent the last five days and a total of 50 hours in the library working on final projects," said Shelton. "It was a relief to walk by and see this. It relieves some of the stress of finals."

Students expressed their gratitude to the volunteers. Heidi Elgaili, a third-year management major, said she remembers when Cheesy Nights was held indoors during her freshman year and how nice it was. Now, she's thankful Cheesy Nights is back and held outside.

"Everyone who talked to us was so nice and so great," said Elgaili. "It's good that it's outside because you get a chance for some fresh air and to exchange kindness." ■

"Cheesy" bread letters created by Juliette Good '23, photo by Trevor Finney. Event photos by Jack Micallef '24.



WATCH THE VIDEO
bit.ly/s22cheesy



A nuclear pioneer's collection

stars the Milky Way, nuclear explosions, and shock waves



By Elise Monsour Puckett

ONE OF THE MOST SIGNIFICANT collections of physics and science documents has its home behind the Hokie Stone exterior of Newman Library in Special Collections and University Archives. Atomic bomb, white dwarf stars, shock waves, nuclear explosion, and Albert Einstein are frequent references that archivist Bess Pittman saw while processing the collection of Robert E. Marshak. Thanks to a grant from the American Institute of Physics, this collection is now more accessible for researchers and science enthusiasts alike.

The Robert E. Marshak Papers document the professional life and commitment to scientific discovery of this internationally recognized and highly imaginative physicist, Virginia Tech professor, and promoter of shared science. This trove of materials documents his involvement in global science across many decades.

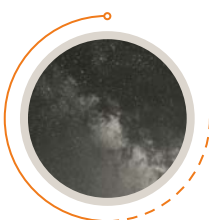
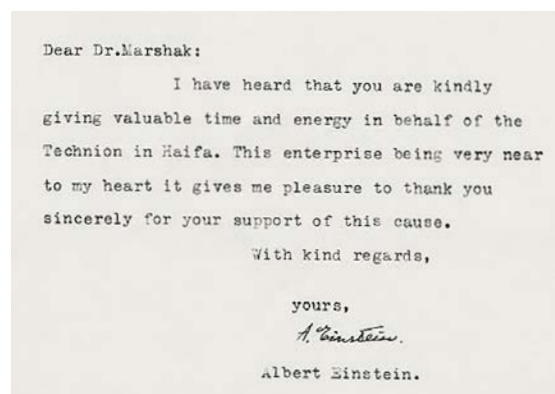
Highlights in the Marshak collection include correspondence, publications, photographs, subject files, scientific notes, conference proceedings, reports, and other professional and personal materials.

Marshak's correspondence is quite extensive and includes a number of notable figures of that time. "On the first day we started processing the collection, I found some correspondence that Marshak had with Albert Einstein," said Pittman. "It was a fairly tight-knit group of people who were working on the same scientific problems back in the day, so it's wonderful to see how they all knew each other and worked together, or diverged."

From 1984 to 1994, the Marshak family donated the Marshak Papers to Virginia Tech, but due to limited resources, only a small portion of the collection was processed. Thanks to the American

Institute of Physics' Grants to Archives program, 27 years later, Pittman had the resources to process the remaining items.

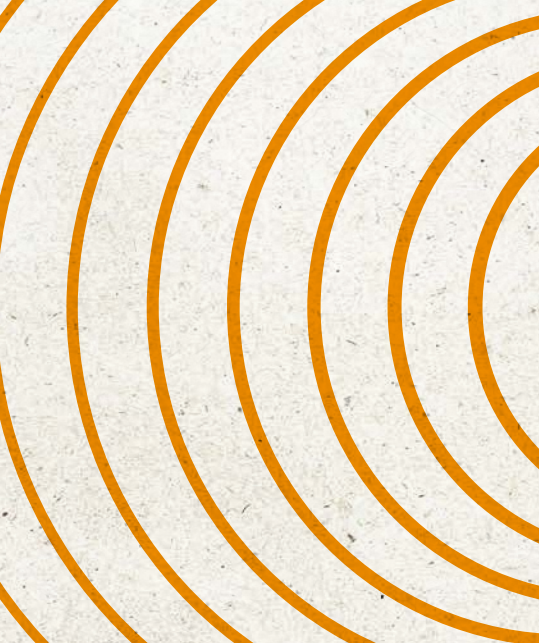
"This is my first opportunity to dive into a collection with such a heavy science focus, and it's absolutely fascinating," said Pittman. "Marshak's grasp of the complexities of the world we live in and the respect he garnered from his peers in the field are obvious."



Born in 1916 in the Bronx, New York, Marshak graduated from James Monroe High School at the age of 15. In college, Marshak majored in physics at Columbia University and attended graduate school at Cornell University, studying under the Nobel Prize-winning physicist, Hans Bethe, who studied energy production in stars or thermonuclear sources of stellar energy.

Marshak's work with Bethe prompted his 1939 Ph.D. dissertation at age 22 on energy production in the Milky Way Galaxy's white dwarf stars. His hypothesis was confirmed 40





Photographs courtesy of Special Collections and University Archives.

years later when the white dwarf orbiting Sirius came into view, making him instrumental in explaining the actions of fusion in star formation.

After college, Marshak accepted a teaching position at the University of Rochester, but in 1942 during World War II, he began working for the federal government. There he developed radar in Boston and collaborated on the British atomic bomb project at the Montreal Laboratory in Quebec, Canada. This became part of the top secret Manhattan Project. Marshak was part of the scientific team that developed the first atomic bomb in Los Alamos, New Mexico.

Marshak served as deputy group leader in theoretical physics for the atomic bomb project. He discovered energy waves, later named Marshak waves, and contributed the reasoning behind how shock waves work under the immensely hot temperatures during a nuclear explosion. Marshak waves are also used to describe the ramifications of a supernova explosion.

A born leader, dreamer, and innovator, Marshak worked among the most elite physicists in the world. He collaborated with the great minds of Robert Oppenheimer, Enrico Fermi, Neils Bohr, and Richard Feynman. Together they witnessed the explosion of the first atomic bomb.

After the fall of Hiroshima and Nagasaki in Japan during World War II, Marshak helped start the Federation of Atomic Scientists with the goal to limit nuclear proliferation, and in 1947 became the chairman of the federation.

Later, in the 1950s, Marshak created the International Rochester Conference, where international scientists gathered to share knowledge on High Energy Physics. It was at one of these conferences that Marshak, along with his graduate student George Sudarshan, proposed the V-A theory of weak interactions, paving the way for the electroweak theory.

In 1970, Marshak became president of the City College of New York (CCNY) where he helped establish the International Foundation for Science. Marshak's presidency was transformative for the school, but he longed to return to his passion, physics research, and his unquenchable desire for social justice.

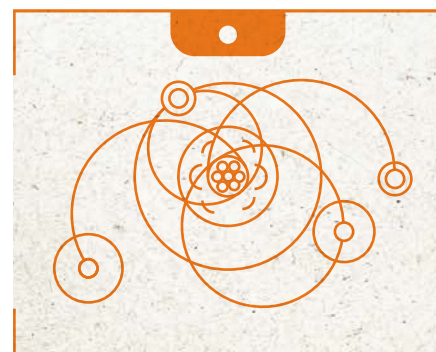
In 1979, he joined Virginia Tech as University Distinguished Professor of physics and became president of the American Physical Society. During his time at Virginia Tech, Marshak established scientific links with China and Brazil and became involved with human rights issues in the Soviet Union. These issues focused primarily on Andrei Sakharov, the father of the Soviet H-bomb, who was imprisoned as a dissident.

Marshak retired from Virginia Tech in 1991 at age 75. He wrote several books, including the robust book on development of particle physics, *Conceptual Foundations of Modern Particle Physics*, written during his retirement. He finished the book in late December 1992 and died the next day, drowning while on vacation in Cancun, Mexico.

"The collection is unique because it documents the workings of an extraordinary mind who came to make his home at Virginia Tech," said Pittman. "While Marshak was a brilliant scientist advancing our knowledge of the universe, he was also a devoted teacher. The collection reflects his

desire to support and promote students of the discipline that he loved, as well as his own accomplishments in the field."

Aaron Purcell, co-principal investigator of the grant and director of Special Collections and University Archives, said that increased research interest in Marshak indicated a need to fully process the collection and the grant program from the American Institute of Physics was a perfect fit. "Now that the collection is fully organized, it is easier for scientists and historians to locate material. Also, faculty and students at Virginia Tech may decide to use the Marshak collection as part of their courses or research."



Instruction archivists in the University Libraries work closely with faculty to integrate primary sources into courses, especially those in the STEM fields. The University Libraries' Special Collections and University Archives also houses the related collections of the Michael Collins Papers and the Christopher Kraft Papers. Together, these form a core collecting area for the study of modern science and technology.

Pittman said she wants people to know that even the most esoteric subjects have a deep vein of relatable humanity when you get right down to it. "The papers of a physicist who is most well known for his work in the 1940s might seem obscure and irrelevant to most people now, but they contain all the joy, uncertainty, interpersonal strife, and triumph that one could hope to find." ■



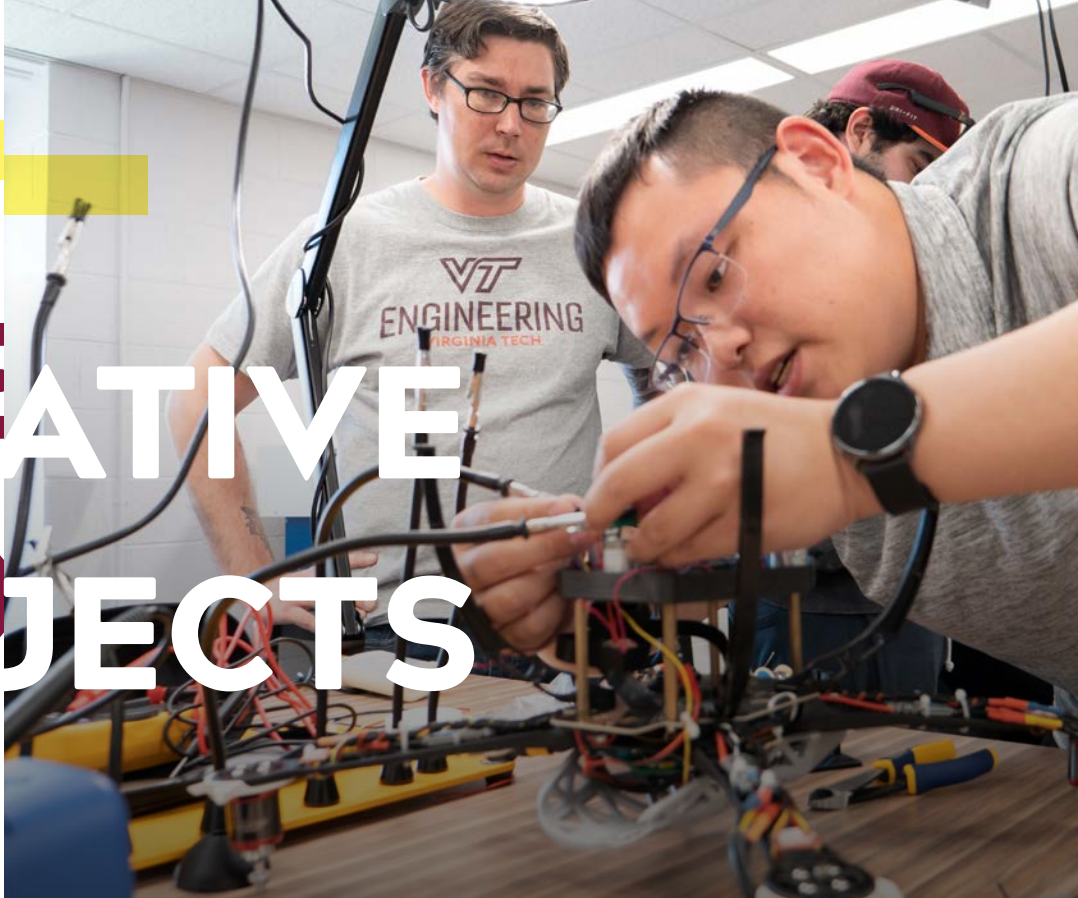
VIEW THE COLLECTION
bit.ly/s22marshak

BY READER REQUEST

CREATIVE PROJECTS

in the
Prototyping
Studio

Photos by Chase Parker



Ryan Ard, mechanical engineering '22 (left) and Yuezhong Xu electrical and computer engineering '22 (right).

ART AND SCIENCE

come together in the newly launched Prototyping Studio on the fourth floor of Newman Library. Two projects are featured here:

THE FIRST is a drone built by engineering students and capable of autonomously delivering small payloads to employees in a factory environment.

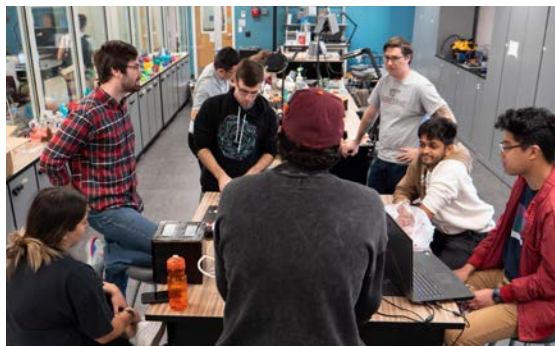


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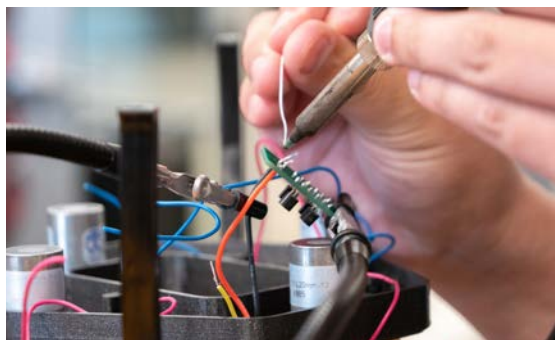
The purpose of this project has been to create a system of autonomous delivery drones that can carry payloads and deliver them to operators at a manufacturing plant. The prototyping studio has been instrumental in helping us create this project. The people here lent us their expertise very generously. They've also had electrical components and expensive equipment that we don't have personally, they've been able to let us use that.

Chris Graveline, mechanical engineering '22.

Left Photo: Shlok Agarwal, electrical and computer engineering '22.



The engineering auto delivery senior design team meets in the Prototyping Studio.



A team member soldering connections for the drone.

THE SECOND

project comes from one of the studio's own student employees, Sarah Fasco, who is using the studio's 3D printers to create original works of art.

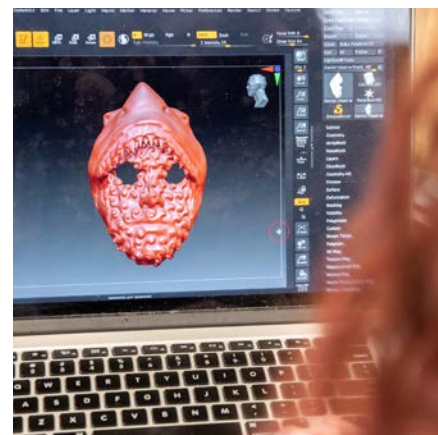
Each piece is a mask that manifests different types of fears, such as **Trypophobia**, a fear or disgust felt when seeing tightly grouped holes. ■



“

For people like me in my major, we specialized a lot in 3D modeling. So if you want to make it physical, it makes it easier to have access to 3D printers to get replicas of what we imagined digitally. It's really cool that it's a free resource that anybody can use and learn how to 3D print stuff.

Sarah Fasco, creative technologies, '22



Bottom left photo: Sarah Fasco wearing her custom mask.
Top right: Fasco painting the 3D printed mask base.
Bottom right: Fasco 3D sculpting another mask.



WATCH MORE
bit.ly/s22proto



Grant Beefs Up

Grazing Initiative that Benefits Farmers and Environment

By Elise Monsour Puckett

ROLLING GREEN PASTURES dotted with grazing cows are a common sight in Virginia. However, there's more strategy behind those grazing cows than most people know, such as the impact on land, water quality, and farm profitability.

In 2015 a team of Virginia Cooperative Extension agents, farmers, and representatives from state and federal conservation agencies from Northern Piedmont and Northern Shenandoah Valley created the Graze 300 VA Initiative "to enable Virginia farmers to achieve 300 days of livestock grazing per year by facilitating better pasture management and environmental stewardship." Since then, Graze 300 VA has grown to 30 Extension agents and specialists working together with farmers across Virginia.

This year, the Graze 300 VA movement is beefing up its mission — thanks to a grant from the Virginia Tech College of Agriculture and Life Sciences and the Virginia Agricultural Experiment Station. Virginia Cooperative Extension agents Carl Stafford, Bobby Clark, and John Benner, and Inga Haugen, University Libraries' liaison to the College of Agriculture and Life Sciences, are leading the program's efforts.

The grant will help build on existing Graze 300 VA successes, research social factors that influence farmer change, provide in-depth grazing management training, develop better educational resources for Virginia's farmers, and

broaden the use of technology, including designing a grazing app to advance the Graze 300 VA initiative.

Most farmers graze about 220 days per year, from spring until fall, and supplement with hay during the four-month cold season. Winter feeding can account for more than 50 percent of production costs due to the cost of making hay. Inflation and spikes in farm equipment, fuel, and fertilizer expenses



make traditional grazing less profitable than years past. Currently, only a handful of farmers in Virginia regularly reach a 300-day grazing season.

According to the team's background work, if 20 percent of Virginia farmers adopt better grazing management practices and extend their grazing season closer to 300 days per year, Virginia farms could increase profitability by more than \$6 million per year.

"We have collected several case studies of farmers who have successfully

extended their grazing season and have become more profitable," Benner said. "We continue to share these experiences with other farmers."

The team said getting farmers to adopt the extended grazing movement won't be easy. Farmers' deep-seated traditions surrounding grassland and livestock management techniques are interwoven into the fabric of these communities. To help create strategies to encourage farmers to adopt new practices, the team recruited colleagues from the College of Liberal Arts and Human Sciences.

"We believe there are traditional barriers to adopting this new way of farming that we don't fully understand," said Clark. "Thus we have engaged the Virginia Tech Sociology Department to help us better understand those factors."

"Farm profitability helps to ensure that Virginia's rural communities are resilient and vibrant," Clark continued. "Over the long term, farm profitability is a repetitive cycle. We teach farmers more profitable technologies, and as farmers adopt these technologies, it becomes the new normal. The net benefit of this cycle ensures citizens have a safe, affordable, and consistent supply of food."

They just need the technology to do it.

The team wants to create similar technology as developed in Ireland for collecting and monitoring farm production data and evaluating



A falling plate meter is used to measure the amount of grass in a field so farmers have more precise readings in managing their grass. Photo by Bobby Clark for Virginia Tech.



Beef cattle graze on a family farm in Augusta County, Virginia. Photo by John Benner for Virginia Tech.

management decisions. This technology integrates well with Graze 300 VA partners, the Center for Advanced Innovation in Agriculture and their SmartFarm Innovation Network (Sustainable Precision Animal Agriculture).

To create this technology, the team tapped the University Libraries' DataBridge team to assist in scoping potential solutions and implementing a project plan. The goal is to allow Virginia cattle farmers to better capture information on their pastures and livestock and allow for more efficient use of their land and extend the grazing season further into the year. Essential data such as paddock usage to indicate cattle rotation, cattle health, and biologics will be considered for the app.

"This app can have a big impact on Virginia farmers," said Jonathan Briganti, manager for DataBridge. Briganti will scope "the diverse climate, cattle breeds, and workflows seen in American farms." Such an effort requires a deeply researched and carefully executed plan, which is why the principal researchers work methodically to bring the right domain experts in the room, Briganti added.

The application will assist producers tracking and managing forage output and grazing to reduce feed costs and improve environmental quality.

Extending the grazing season also has environmental and production benefits. In well-managed pastures, the sod is thicker. This reduces runoff, soil erosion, and nutrient losses. Therefore,

farmers use less fertilizer. Additionally, because thicker sod captures more water in sudden rainfall events, the pastures are more productive during dry summers when occasional storms are the only source of moisture.

The team is also partnering with farmers, agribusinesses, and several agencies to improve water quality. According to Clark, extending the grazing season will improve water infiltration, nutrient use efficiency, and soil organic matter while encouraging fewer barren areas in fields. A longer grazing season also reduces the amount of sediment, nitrogen, and phosphorus that ends up in surface waters that could eventually run into streams and rivers.

"A type of farming that works on flatlands, like vegetable or crop farming, might be a poor choice in the mountains," said Haugen, who was a grazing dairy farmer before she was a librarian. "This program works with what folk are doing and helps them to be better in many

areas. It benefits them and our communities that share the water, air, and soil, and then also our downstream neighbors."

"An enormous challenge the world faces is finding ways to have good water quality or improve water quality that do not cause a major financial burden on people or industry," said Clark. "In this case, we are achieving better water quality and better farm profitability." ■

We are achieving both better water quality and better farm profitability. It is a win-win situation.

Bobby Clark



The true cost of sharing

National group investigates the institutional cost of research data sharing

By Ann Brown

VIRGINIA TECH and five other members of the Data Curation Network and the Association of Research Libraries (ARL) were awarded a National Science Foundation EAGER grant (#2135874) to conduct research, develop models, and collect information related to cost for public access to research data. The group, led by ARL, is composed of data specialists from Virginia Tech, University of Michigan, Duke University, University of Minnesota, Cornell University, and Washington University in St. Louis.

Public access to research data increases transparency of research results, heightens the visibility of institutional scholarship, and can accelerate the pace of discovery through scholarship. However, common questions around public access to research data remain. Where are funded researchers making their data publicly accessible, and what is the quality of the corresponding metadata? How do researchers make the decision on how and why to share data? What is the cost to institutions to implement the federally mandated public access to research data policy?

“National and international discussions are happening surrounding the research data landscape,” said Jonathan Petters, University Libraries’ assistant director of data management and curation services, who is providing input and expertise on behalf of Virginia Tech. “It is important for Virginia Tech to be a part of this discussion and provide input at this high level.

“The University Libraries has a robust data services program to assist researchers in publicly sharing their data as required by many funding agencies, including through our institutional data repository,” said Petters. “We also know researchers use other data repositories, that may or may not have fees, to share their research data. We want to capture where and how Virginia Tech-generated data is shared so we can analyze the overall cost of public access to research data.”

The group will also specifically focus on developing and analyzing models and collecting costing information for public access to research data within the environmental science, materials science, psychology, biomedical sciences, and physics disciplines.

“We will be interviewing select faculty and involving them in answering our group’s questions about where, how, and why they share their data,” added Petters. “This research will help drive discussions here at Virginia Tech about sharing data and how much it costs. We do share research data through our institutional data repository at no cost to researchers, but there is an expense to maintain the system and staff the services. It also takes researchers’ time and dedication.”

The group hopes this research will provide for better understanding of the challenges to providing public access to research data from the institutional perspective. ■

— “ —
We want to capture where and how Virginia Tech-generated data is shared so we can analyze the overall cost of public access to research data.

Jonathan Petters



To me, this is how science should work.

Collaborative research leads to potential identification of SARS-CoV-2 human emergence and new COVID-19 therapeutics

By Ann Brown

Through collaboration that incorporates the use of computational modeling, data, and virology, a group of Virginia Tech researchers tackles the latest questions surrounding COVID-19. The group's project in COVID-19 human adaptation and transmission, "A selective sweep in the Spike gene has driven SARS-CoV-2 human adaptation," was published in *Cell*. Now, the team is building on that research for therapeutic discovery.

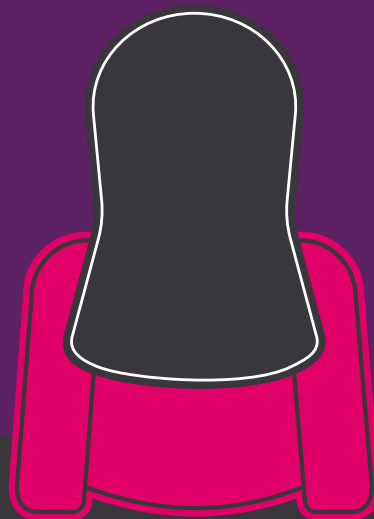
In 2020, prior to the beginning of the pandemic, Anne M. Brown, assistant professor of biochemistry and University Libraries' science informatics consultant and health analytics coordinator, and James Weger-Lucarelli, assistant professor in the Virginia-Maryland College of Veterinary Medicine's Department of Biomedical Sciences and Pathobiology, were analyzing mutations in the Mayaro virus, which causes severe arthritis in humans.

"We were interested in understanding how Mayaro virus might adapt to mosquitoes that commonly bite humans and are abundant in tropical areas," said Weger-Lucarelli. "Dr. Brown is capable of analyzing how viral mutations impact the structure of proteins, which might impact their ability to infect their target cells. When the COVID-19 pandemic hit the U.S., we saw a natural extension of our previous work with SARS-CoV-2."

In the meantime, Weger-Lucarelli and his colleague Pawel Michalak, from the Edward Via College of Osteopathic Medicine in Monroe, Louisiana, were working on advanced sequencing methods that identified selective sweep mutations in SARS-CoV-2 that could have led to human adaptation and enabled sustained

human-to-human transmission. Upon the discovery of several mutations of interest, they reached out to Brown to tap her expertise as a computational biochemist and rationalize the impact of mutations on the spike (S) protein, which mediates receptor binding and fusion to ACE2 and causes human infection. Both Weger-Lucarelli and Michalak served as corresponding authors on the work.

"Dr. Weger-Lucarelli led the project to identify potential mutations using cutting-edge techniques in the lab but needed to understand the biochemical and structural impact of such a change — to rationalize it at the atomistic level and incorporate the role of glycans in this discovery," said Brown. "We analyzed the structural data provided, connected

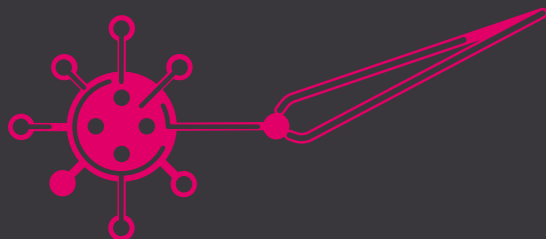


the emerging influence of glycans on spike dynamics, and helped connect the dots.”

They worked through possible structural mutations through data modeling and highlighted a small change that could have driven human adaptation, essentially what changed to make it harmful and transmissible to humans.

“This collaboration is unique because of how different our expertise is,” said Weger-Lucarelli. “Dr. Brown is a molecular modeler and bioinformatician, and I am a virologist. We have been able to combine our different skill sets productively.”

Amanda Sharp, a graduate student in genetics, bioinformatics, and computational biology, worked with Brown in mapping the mutation and finding ways to clearly and accurately display the complex data visually. Additionally, Xiaofeng Wang, associate professor in the School of Plant and Environmental Sciences in the College of Agriculture and Life Sciences, optimized methods for manipulating the SARS-CoV-2 genome and is an author on this work.



“This project really highlighted how we all bring talents to the table, work together, and can do some very impactful science together,” said Brown.

This research gives a better understanding of the genetic changes that were necessary for SARS-CoV-2 to sustain transmission in humans following its emergence from animal reservoirs. According to Weger-Lucarelli, given the importance of this mutation, this part of the virus’s protein can be targeted by antivirals or vaccines to treat the disease.

Brown and Weger-Lucarelli are continuing the collaboration and pursuing funding to study recent mutations in SARS-CoV-2 in humans that are helping it to further adapt to human transmission. They were recently awarded a Virginia Tech CeZAP interdisciplinary team-building pilot grant to molecularly barcode SARS-CoV-2 to probe in vivo evolutionary dynamics. In addition, they received a Virginia Tech Data and Decisions grant to build on their previous research, expand their research team collaborators, and develop antivirals to fight COVID-19.

“We have assembled a collaborative group that combines Dr. Brown’s and my expertise, along with excellent computational and medicinal chemistry collaborators,” added Weger-Lucarelli.

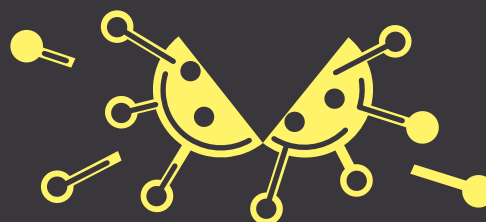


While working on the evolutionary emergence of SARS-CoV-2, Brown and Weger-Lucarelli were also beginning a collaboration with Sanket Deshmukh, assistant professor in chemical engineering in the College of Engineering, and Andrew Lowell, assistant professor of chemistry in the College of Science, to investigate new routes to repurpose drugs that could target the SARS-CoV-2 Mpro protein, a major target for antiviral therapeutics for COVID-19.

According to the group, remdesivir is the only antiviral currently approved for use to treat COVID-19. With the large amount of data available about existing drugs and natural products, it’s advantageous to begin drug discovery by using existing compounds as starting molecules. Virginia Tech awarded the group a Data and Decisions seed grant to expand the collaboration to computationally predict compounds, validate their mechanism of action, and use data-driven approaches to functionalize new CoV-2 specific compounds.

The research group’s vision is to use recent advancements in relative free energy calculations and computing resources to rationally design and quantitatively predict drugs that could make a difference in treatment of the virus. They will use advanced algorithms and data modeling to predict which compounds best target the aspect that makes the virus replicate. Then, they will test those first in the lab. This will make the drug discovery process more efficient and effective.

“To me,” said Brown, “this is how science should work, truly working together to bring more of these pieces of the puzzle together more rapidly in order to have the greatest impact, and move the needle forward on the knowledge we have on these biological questions.” ■



Studios Technology Lending





By Trevor Finney, Juliette Good, and Ellie Kohler

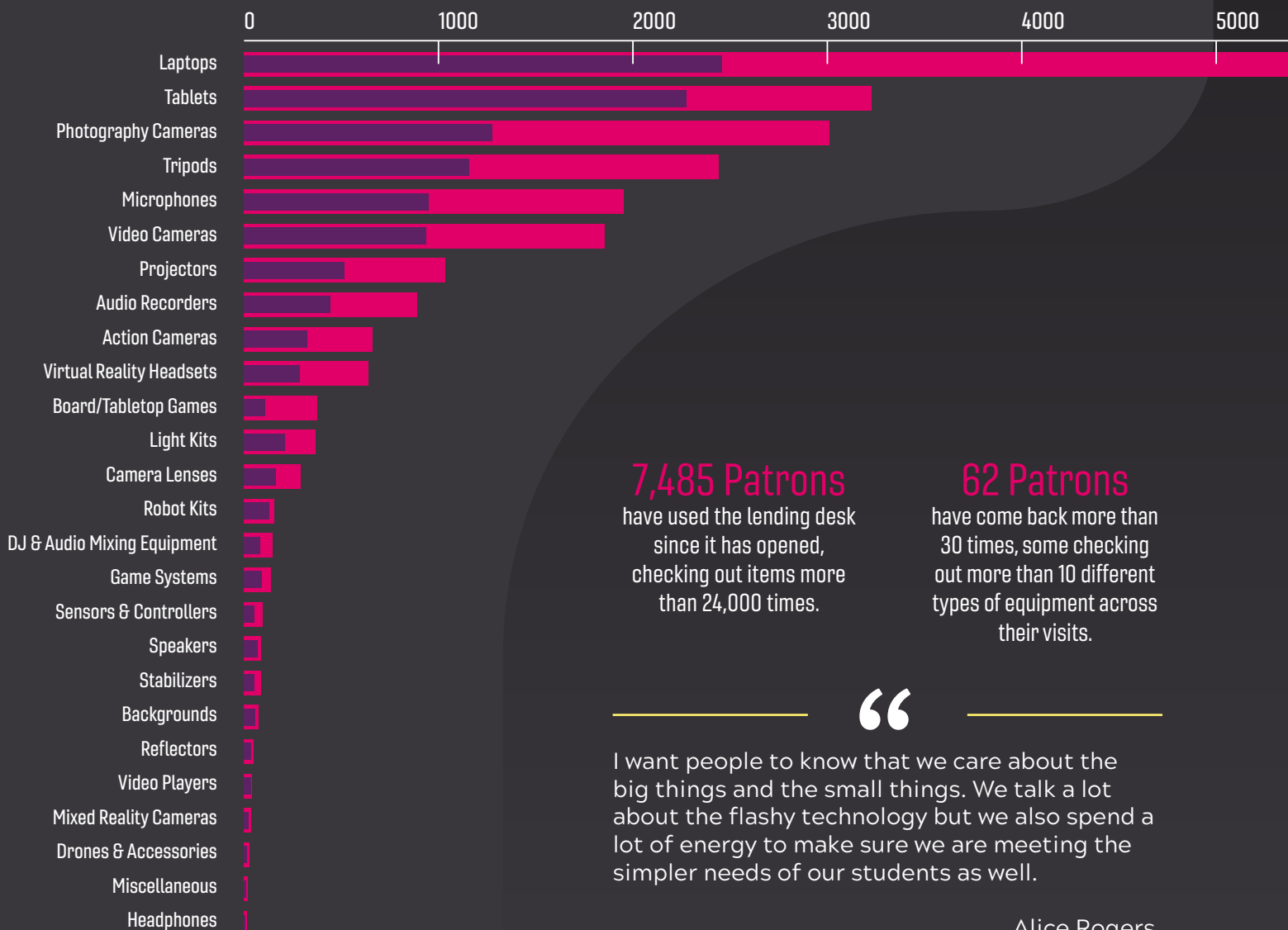
Located in Newman Library, the Studios Technology Lending Desk, originally the Media Design Studio, opened in March 2018 as a way of providing access to technology for students, alumni, and employees at Virginia Tech. “Almost all of our students’ fields need some level of technological literacy,” said Alice Rogers, manager of the studio.

“The library serves everyone and meets people where they’re at. That’s a big philosophy for us and for the library.” In addition to lending equipment, the desk also works to educate students, “We teach workshops on a mix of soft skills and hard skills to use technology well. We want to do whatever we can to support our students.”

Total Technology Lending by Type

March 8, 2018 - January 13, 2022

 Total number of checkouts
 Total number of unique patrons



7,485 Patrons
have used the lending desk
since it has opened,
checking out items more
than 24,000 times.

62 Patrons
have come back more than
30 times, some checking
out more than 10 different
types of equipment across
their visits.

“

I want people to know that we care about the big things and the small things. We talk a lot about the flashy technology but we also spend a lot of energy to make sure we are meeting the simpler needs of our students as well.

Alice Rogers



Alice Rogers and student employee Dylan Craft '22 check-in equipment.
Photo by Trevor Finney.

SEMESTER SNAPSHOT

During the Fall 2021 semester the studio was in full swing with more than **3,300 bookings** and more than **1,100 unique patrons**. More from the Fall 2021 semester:

ACTION CAMERAS

were checked out for **2,800 hours**

DJ EQUIPMENT

was borrowed **80 times**

74 CIRCULATING LAPTOPS

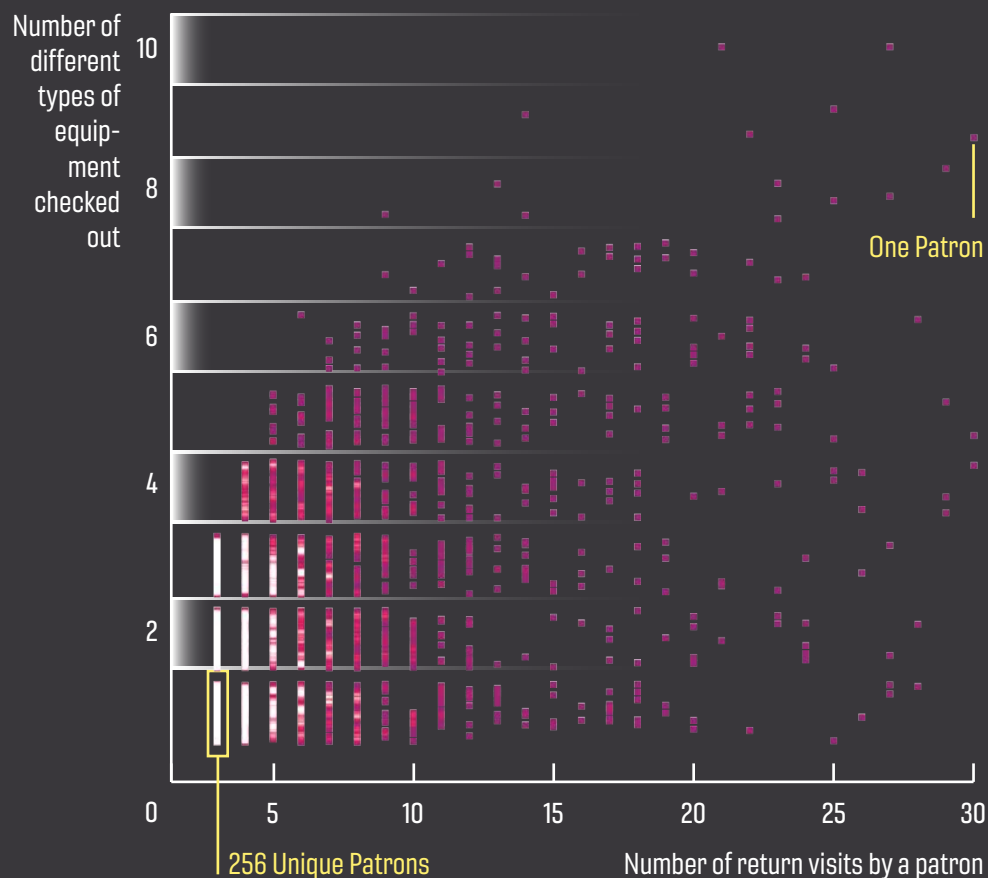
were checked out, on average, almost **70% of the time**

15 TYPES OF HIGH-END CAMERA LENSES,

including telescope and cinema lenses, were checked out **105 times**.

Return use by patrons with 3-30 visits

March 8, 2018 - January 13, 2022



COLOR OF FREEDOM

Exhibition in Virginia Tech's Newman Library honored the diversity of American women in the military

By Shay Barnhart

IN A UNIQUE OPPORTUNITY to celebrate Black History Month and the 100th anniversary of women students at Virginia Tech, the Military Women's Memorial brought a special traveling exhibition, "The Color of Freedom: Honoring the Diversity of America's Servicewomen," to Newman Library in February.

Virginia Tech's Blacksburg campus was the inaugural stop on the exhibition's tour, sponsored by Virginia Humanities. It was on display Feb. 10-March 16 on the library's fourth floor, across from the Corps of Cadets Museum space.

Visitors were able to immerse themselves in the contributions of military women of color who have served throughout American history. It included the stories of military servicewomen of color along with QR codes to access oral histories that provide firsthand accounts of select servicewomen featured in the exhibit.

The exhibition's goal is to build awareness of the sacrifices of women from diverse backgrounds who forged a path for women of all backgrounds to serve in and with the U.S. military.

That mission is important to the Virginia Tech Corps of Cadets, which partnered with the Military Women's Memorial to bring the exhibition to campus, said Capt. Jamie McGrath, director of the corps' Rice Center for Leader Development. In 1973, Virginia Tech was among the first of the senior military colleges to admit women to its Corps of Cadets, three years before the federal service academics.

In 2005, the Corps of Cadets named its first Black female regimental commander, Christina Royal, who graduated in 2006 with a degree in sociology from the College of Liberal Arts and Human Sciences and was commissioned into the U.S. Air Force. The most recent Black female in that role was



TRAILBLAZERS

Trailblazers are pioneers—those who go first and who show a way for others to follow. These women endured and overcome discrimination in the U.S. Armed Forces which allowed today's women of color to thrive.

Jeanette Mulvihill-Matney - U.S. Coast Guard - 1960s-Present



"I think we all of the color aspect, that's what actually drew me to join the Coast Guard."

Sarah Kaye Evans - Women's Army Corps (WAC) - 1940-1950



"The Women's Corps played a very important part in helping me and giving me a lot of the work I needed."

Jeanette Mulvihill - U.S. Marine Corps - 1960s-Present



"The Marine Corps played a very important part in helping me and giving me a lot of the work I needed."

SERVING AROUND THE WORLD

Wherever the U.S. Armed Forces were deployed, women served—voluntarily and unwillingly. Despite the military's history of excluding women due to race, injury, death, or American health, women stepped up and met the challenge.

Aida Nancy Sanchez - U.S. Army Medical Specialist Corps (Physical Therapist) - 1950-1970s



"We always had been very proud to serve, and it was always to work as the physical therapists and then when the military opened up to women."

Toyomi "Terry" Nakashima - Women's Army Corps (WAC) - 1940s-1950s



"ONE OF 13 WACS SENT TO OCCUPIED JAPAN."

Gianna Fimbres - U.S. Air Force, 1950-1955, U.S. Army, 1957-1959 - Operation Desert Storm



"The way it all comes and goes, and I want to tell you the 'real' women. I want you to know that I am not just a girl, I am a woman."

WE ALSO SERVED

Women have performed supporting roles for the military throughout history. These women risked their lives, traveled to far away and dangerous locations, and performed critical and impactful work. Their efforts were pivotal to the military's ability to operate and accomplish its mission.

Harriet Tubman - Civil War



"I had a right to liberty or death. I could not live where I was, I would live where I could."

Cathy Williams - U.S. Army - 1940s-1950s



"I was a part of the 6888 Central Postal Directory, and I was a part of the 6888 Central Postal Directory."

Lakota Sioux Nurses - Spanish American War



"The United States Government, through the Department of the Interior, had a policy of forcing Native Americans to live on reservations and to adopt Western culture."

A LIFELONG COMMITMENT

The Women's Armed Services Integration Act of 1948 enabled women to make the military a career. The fulfilling nature of military service has inspired countless women to pursue decades-long career paths, devoting their lives to our country.

Louise "Alma" Abando-Ramos - Women's Army Corps (WAC) - 1940s-1950s



"I was a part of the 6888 Central Postal Directory, and I was a part of the 6888 Central Postal Directory."

Lafitte (Rita) Angeli - Operations Air Support Group, 1970-1977 - Operation Desert Storm



"I was a part of the 6888 Central Postal Directory, and I was a part of the 6888 Central Postal Directory."

Bridgette (Smith) Arnold - U.S. Air Force, 1950-1957 - Operation Iraqi Freedom



"I was a part of the 6888 Central Postal Directory, and I was a part of the 6888 Central Postal Directory."

THE COLOR OF FREEDOM
HONORING THE DIVERSITY OF AMERICA'S SERVICEWOMEN

While all women in the United States Armed Forces share a history of discrimination based on gender, race and traditional cultural values in their pursuit of opportunity for service in the armed forces.

Through persistent efforts in demanding inclusion for their right to serve, women of color have seen their roles across society and all sectors tremendously expanded, including their presence in today's military.

Born during a time when our country seeks healing amid persistent calls to dismantle systemic racism, this exhibit seeks to highlight the diversity of women of color in the nation's defense. Across the decades and for all the challenges, women of color still found meaning and value in serving in uniform despite the military's shortcomings and history of systemic discrimination on multiple fronts—from race, gender, ethnicity and national origin, to sexual orientation and gender identity.

According to a 2018 government report, women of color represented nearly 61 percent of enlisted women in the U.S. Armed Forces and about 38 percent of women officers.

Artifacts from our original installation of the Color of Freedom exhibit tell more of Military Women's history. Scan the QR code to learn more.

It is an honor to help highlight the military contributions of women of color to the U.S. armed forces, women's history, and to share their achievements here at Virginia Tech.

Scott Fralin



Scott Fralin and Amy Poe construct the exhibit on the fourth floor. Photo by Trevor Finney.

Mame Ngom in fall 2020, who graduated in 2021 with a degree in political science from the College of Liberal Arts and Human Sciences and was commissioned into the Air Force.

"The Military Women's Memorial's mission is to honor and tell the stories of women, past and present, who serve our nation aligns with these traditions," McGrath said. "Bringing the 'Color of Freedom' traveling exhibit here highlights the strong tradition of women leaders at Virginia Tech and demonstrates our commitment to honoring those who've served and encouraging those who will serve our nation in uniform."

The University Libraries partnered with the Corps of Cadets to host the exhibition in Newman Library.

"It is an honor to help highlight the military contributions of women of color to the U.S. armed forces, women's history, and to share their

achievements here at Virginia Tech," said Scott Fralin, University Libraries' exhibit curator and learning environments librarian.

Located at the gateway to Arlington National Cemetery, the Military Women's Memorial is a memorial and education center honoring women's contributions to the service of our nation. It is the only historical repository documenting all women's service through an interactive database, educational exhibits, and world-class collections.

At Virginia Tech, July 2021 through December 2022 marks two major milestones in the university's history: the 150th anniversary of the university's founding and the 100th anniversary of women students at Virginia Tech. Women were first admitted to the university for full-time studies in 1921. ■



SEE THE VIDEO
bit.ly/s22exhibit

Exhibit photo by Chase Parker.

THE PRICE OF FREEDOM

Those who raise their hand to protect our country from enemies both foreign and domestic risk making the greatest sacrifices for the American people. Unfortunately, all too many are tragically injured, or do not make it home. Freedom is never free, and these women paid the price for ours.

Vanessa Guillen - U.S. Army, 2009-2010

Vanessa Guillen was a U.S. Army soldier who served in Afghanistan. She was killed in action on September 15, 2010, while on patrol. She was the first female U.S. soldier to be killed in action in Afghanistan.

I AM VANESSA GUILLEN ACT

Hazel Ying Lee - Chinese American Service Wives (CASW), World War II

Hazel Ying Lee was a Chinese American woman who served as a nurse in the U.S. Army during World War II. She was the first Chinese American woman to be commissioned as a nurse in the U.S. Army.

FIRST CHINESE WOMAN TO FLY FOR THE U.S. MILITARY

Emily (Tatum) Persi - U.S. Army, 2000-2002 - Operation Iraqi Freedom

Emily (Tatum) Persi was a U.S. Army soldier who served in Iraq during Operation Iraqi Freedom. She was killed in action on March 1, 2002, while on patrol. She was the first female U.S. soldier to be killed in action in Iraq.

She was just the kind of girl you want your son to be like.

SERVICE DOESN'T STOP

Upon returning to civilian life, these women went on to serve their communities as teachers, government leaders, and activists—among other callings. Their dedication to service added these women to the ranks, through the glass ceilings and traditional power structures to become forces for change.

Leida "Tammy" Duckworth - U.S. Army, 1997-1999 - Operation Iraqi Freedom

Leida "Tammy" Duckworth was a U.S. Army sergeant who served in Iraq during Operation Iraqi Freedom. She was injured in action on May 3, 2003, while on patrol. She was the first female U.S. soldier to be injured in action in Iraq.

IN 1902, SUSIE KING TAYLOR PUBLISHED A CIVIL WAR MEMOIR

Susie King Taylor - Civil War

Susie King Taylor was a African American woman who served as a nurse in the U.S. Army during the Civil War. She was the first African American woman to be commissioned as a nurse in the U.S. Army.

FIRST MILITARY WOMAN IN HISTORY TO BE APPOINTED WHITE HOUSE PHYSICIAN

Connie Mariano - U.S. Navy Medical Corps - 1970s-2000

Connie Mariano was a U.S. Navy nurse who served in the U.S. Navy Medical Corps from the 1970s to 2000. She was the first African American woman to be appointed as a nurse in the U.S. Navy.

MORE THAN A UNIFORM

These highlighted women felt that their essential core affected their military service. Their service is a testament to embracing personal calling and identity with a call to serve.

Saleha Jabreen - U.S. Army, 2000-2002 - Operation Iraqi Freedom

Saleha Jabreen was a U.S. Army soldier who served in Iraq during Operation Iraqi Freedom. She was killed in action on March 1, 2002, while on patrol. She was the first female U.S. soldier to be killed in action in Iraq.

Don't let anyone or anything stop you.

Pratima Dharm - U.S. Army, 2000-2002 - Operation Iraqi Freedom

Pratima Dharm was a U.S. Army soldier who served in Iraq during Operation Iraqi Freedom. She was killed in action on March 1, 2002, while on patrol. She was the first female U.S. soldier to be killed in action in Iraq.

Julieanne Sohn - U.S. Marine Corps, 2000-2002 - U.S. Marine Corps Reserve, 2000-2002 - Operation Iraqi Freedom

Julieanne Sohn was a U.S. Marine Corps soldier who served in Iraq during Operation Iraqi Freedom. She was killed in action on March 1, 2002, while on patrol. She was the first female U.S. Marine Corps soldier to be killed in action in Iraq.

WOMEN IN THE U.S. MILITARY

From the earliest days of our nation to the present, the experiences of women of color in the military—their achievements and their struggles—have paralleled and continue to shape the evolving roles of women in American life and progress in furthering civil rights.

1857	1865	1875	1890	1917-1918	1920
First female U.S. Army nurse	First female U.S. Army soldier	First female U.S. Army sergeant	First female U.S. Army captain	First female U.S. Army colonel	First female U.S. Army general
1940	1941-1945	1942	1943	1944	1945
First female U.S. Army major	First female U.S. Army lieutenant colonel	First female U.S. Army major general	First female U.S. Army brigadier general	First female U.S. Army division commander	First female U.S. Army corps commander
1952	1954	1964	1967	1971	1972
First female U.S. Army lieutenant general	First female U.S. Army major general	First female U.S. Army brigadier general	First female U.S. Army division commander	First female U.S. Army corps commander	First female U.S. Army division commander
1976	1977	1979	1980	1985	1988
First female U.S. Army lieutenant general	First female U.S. Army major general	First female U.S. Army brigadier general	First female U.S. Army division commander	First female U.S. Army corps commander	First female U.S. Army division commander
1995	1996	1998	1999	2001	2003
First female U.S. Army lieutenant general	First female U.S. Army major general	First female U.S. Army brigadier general	First female U.S. Army division commander	First female U.S. Army corps commander	First female U.S. Army division commander
2011	2013	2014	2015	2017	2018
First female U.S. Army lieutenant general	First female U.S. Army major general	First female U.S. Army brigadier general	First female U.S. Army division commander	First female U.S. Army corps commander	First female U.S. Army division commander



Community Policing in Nigeria

Four scholars publish book in effort to elevate
democracy and reduce violence in Nigeria

By Elise Monsour Puckett

— “ —
We hope
that our
book will
contribute
to the
democracy
of the
people

Biko Agozino

“OUR LIVES BEGIN TO END the day we become silent about things that matter,” said Martin Luther King Jr. in 1965. In 2021, four Nigerian criminal justice scholars from different academic institutions came together and made their voices heard about something that matters - police brutality in Nigeria.

Their words formed the book, “Community Policing in Nigeria,” by Emmanuel Onyeozili, professor of criminology and criminal justice at the University of Maryland Eastern Shore; Biko Agozino, professor of sociology and Africana studies at Virginia Tech; Augustine Agu, retired senior policy officer at UNICEF; and Patrick Ibe, professor and chair of the Criminal Justice Department at Albany State University.

Simultaneously published by Fourth Dimension Publishing Company in Nigeria and Virginia Tech Publishing housed in University Libraries in the United States, this book is an examination into the ongoing policing problems in Nigeria. It compares models of community policing around the world while discussing best and flawed practices that may

serve as guides for Nigeria and the rest of Africa to help maintain peace and order.

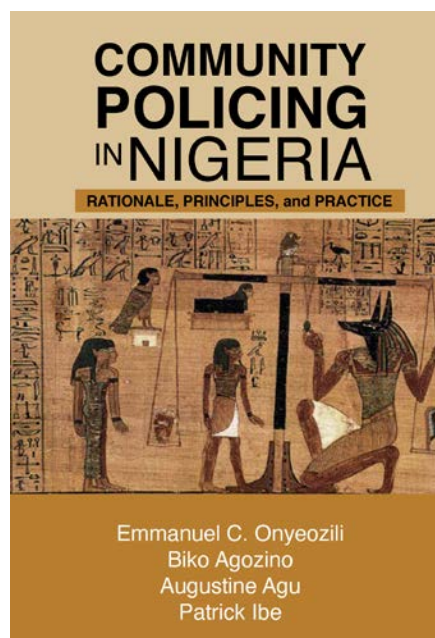
The Black Lives Matter movement has brought attention to police brutality around the world. Africans have not had a police force or prison system in their country for thousands of years; however, in Nigeria, the government uses Special Anti-Robbery Squads (SARS) that are known for excessive abuses on the African people. Nigerian citizens are protesting in the streets and demanding an end to the brutality through the #EndSARS nationwide protest.

“Imagine a future Nigeria in which policing is part of the solution to insecurity rather than making the problem worse,” said Peter Potter, director of Virginia Tech Publishing. This book helps build the path to do just that.

The book authors have backgrounds in and knowledge of Nigerian policy and criminal justice. “We responded to the widespread demand for community policing in Nigeria due to widespread insecurity and brutal policing by offering a



Biko Agozino. Photo provided by Agozino.



The 182 page book was made freely available to everyone.



Youth gathered for a prayer session in Nigeria as a part of the End SARS protest. Photo by Tope. A Asokere via Unsplash.

theoretically relevant examination of rationale, principles, practices, and case-studies of community policing as potential lessons for Africa,” said Agozino.

Since the release of "Community Policing in Nigeria" and several others on the same topic, the president of Nigeria announced a decision to approve N13.3 billion (approximately \$31.5 million) in funding for the community policing initiative across the country as one of his nine key priorities of his administration bringing hope to the country.

"Community Policing in Nigeria" may not have been published if not for advocates who saw the country's need for this information and its importance. The book ran into publishing challenges in Nigeria, including very high up-front printing costs. In addition, Fourth Dimension Publishing in Nigeria was struggling financially with the death of their founding members. However, the new director of Fourth Dimension Publishing, Benjack Ejiofor Nwankwo, advocated for the book and surprised the authors by raising funds for the printing. He then quickly distributed copies throughout Nigeria. To also raise awareness, two influential and well established online blogs, Antipode and Africa Is a Country, extracted sections of the book to post online.

"Then Virginia Tech Publishing crowned all that honor by updating and freely offering the book online under Creative Commons and through Amazon," said Agozino. "Virginia Tech Publishing was a delight to work with. The editing was spot on and the patience with our ever-changing text updating was exemplary."

It is the team's hope that this book will be the foundation for a series of historical and empirical theory-policy-relevant book publications with an emphasis on Africa. The authors look forward to seeing readers engaged in discussion around this book and welcome others' opinions and critiques.

"The growing insecurity across Africa was not inevitable given that Africans were able to run their lives without a police force or prisons but through the communities for thousands of years, as our book cover symbolizes," said Agozino. "We hope that our book will contribute to the democracy of the people as opposed to the militarization that leads to escalations of violence." ■



DOWNLOAD A FREE COPY
bit.ly/s22nigeria

Women are central to Virginia Tech's story and at the core of our success, growth, and impact as an institution of higher education.

Anna LoMascolo

Documenting women's footprint in Virginia Tech history

By Elise Monsour Puckett

History can be hard to find. Kira Dietz and Anna LoMascolo are on a mission to share the history and untold stories of women of Virginia Tech's past. After thumbing through thousands of old campus photos, yellow-aged handwritten letters, class notes, and other rarities, the duo presents an interactive virtual timeline on the History of Women at Virginia Tech.

This timeline includes extraordinary women who were firsts in their era, held compelling roles, and made significant impacts on campus.

Visitors will tour through the fascinating records left behind by historical women and learn about their major milestones. This year's Women's History Month theme in March is 100 Years of Women at Virginia Tech, elevating the 100th anniversary of the admission of women as students to the university and aligning with the university's sesquicentennial.

Leading the project are Dietz, University Libraries' assistant director of Special Collections and University Archives, and LoMascolo, co-director of programming for Virginia Tech's Women's Center. However, the team says the impetus and energy behind the launch of the project was Dr. Patricia Hyer, associate provost emerita at Virginia Tech who was originally inspired by the Virginia Tech LGBTQ+ Digital History and Timeline.

"Pat is a walking encyclopedia of Virginia Tech women's history and is herself such a significant figure in that history,"



Ella Agnew

Ella Agnew was the first female home demonstration agent in the country. She worked for the Virginia Cooperative Extension from 1910-1919. In 1926, she was the first woman to receive the VPI Certificate of Merit. Agnew Hall was the first building on campus to be named after a woman.

said LoMascolo. "She gave us a lot of direction and inspiration in the early months of the project."

In the beginning stages of the project, Clara Cox, Linda Plaut, Faith Skiles, and Jessie Meltsner came together to share stories, brainstorm ideas, and start putting pen to paper.

The History of Women at Virginia Tech website is a digital effort to share the history of the roles that women, including students, staff, faculty, and administrators, have played on campus even before women were first admitted as full-time students in 1921. The site includes scanned documents and images, oral histories, and university publications.

"Women are central to Virginia Tech's story and at the core of our success, growth, and impact as an institution of higher education," said LoMascolo. "Unfortunately, women have historically been excluded from the telling of that story."

Much of history glosses over the roles of women outside the home. For example, women did not appear as members of their class in The Bugle yearbook until 1947, 26 years after women were first admitted as full-time Virginia Tech students. "Our earliest women students created their own handmade yearbook, leaving their mark so that history would know they were here, who they were, and what they had faced, overcome, and accomplished," said LoMascolo. "In a wonderful play on words, they titled their yearbook, The Tin Horn."

While white women were the first to be admitted as full-time students in 1921, it is important to note that women were students on campus in part-time and special student circumstances as early as 1916. International women students were on campus

1921

Women students are first admitted to Virginia Polytechnic Institute (now Virginia Tech).

1925

First five full-time women students graduate from VPI.



1940

The first woman's dormitory, Hillcrest Hall, opens on campus.



as early as the mid-1930s and it would take until 1966, with the admission of the first Black women students, for women of all races to be part of the student body.

Virginia Tech is rich with history and many more stories of historically influential women in Virginia Tech's history can be found in the timeline, including Carmen Venegas, believed to be the first Latina student to graduate from the engineering department and the first woman overall to receive a degree in electrical engineering.

"There are scores of these examples and all moments of transformation in Virginia Tech's history," said LoMascolo. "I find these historical moments fascinating, motivating, and important and I'm proud to be a very small part of the same history as these trailblazing women."

The timeline also includes some full stories told by the women themselves, like in the collection of Black Women at VT Oral Histories, inspired decades ago by then doctoral student, Elaine Carter and launched by Carter and Tamara Kennelly, associate professor emerita of University Libraries.

Dr. Laura Jane Harper

In 1960, Dr. Laura Jane Harper became the first dean of the School of Home Economics (later the College of Home Economics). She helped to increase the number of women's programs on campus and was an advocate for women students through her tenure and beyond.



Recorded are the oral histories of many of Virginia Tech's first and early Black women students who shared their stories and reflected on their challenges and triumphs in the 1960s and 1970s.

LoMascolo feels a special connection to this project as she and her family are tied to Virginia Tech's history. "I am the great-granddaughter of Angelo LoMascolo, a Sicilian immigrant who was Virginia Tech's original tailor," explained LoMascolo. "My familial roots with Virginia Tech run deep."

Some may remember three small white houses that dotted Stanger Street: Smith House, Price House, and LoMascolo House, named for LoMascolo's grandfather. "I spent a good bit of time in LoMascolo House as a child and watched it be torn down when I was in middle school. Fast forward to 2004 when I was hired to work at the Women's Center, located in Price House, I felt like I'd come full circle in ways."

Later that year, LoMascolo watched Price House be torn down and then all of those small houses were gone. "Mine and my family's past at Virginia Tech inspires my interest in the history of this university," said LoMascolo. "I am captivated with women's history at Virginia Tech and feel a deep sense of pride to share the history of trailblazers like Ruth Terrett, Linda Adams, Cheryl Butler, Lucy Lee Lancaster, Pat Hyer, and so many others."

"Beginning to share this history has shown us how much we still have to learn, explore, and hopefully, fill in," said Dietz. "This project will always be a work in progress and we will continue to grow, develop, and add new items to the digital collection and timeline as we locate more materials."

Women's history at Virginia Tech is continually evolving as the team has opportunities to explore more historical materials. "There are many more places to look on campus that might reveal more of this story," said Dietz. "There are parts of this history we haven't uncovered or been able to share yet, as well as information we may not have access to."



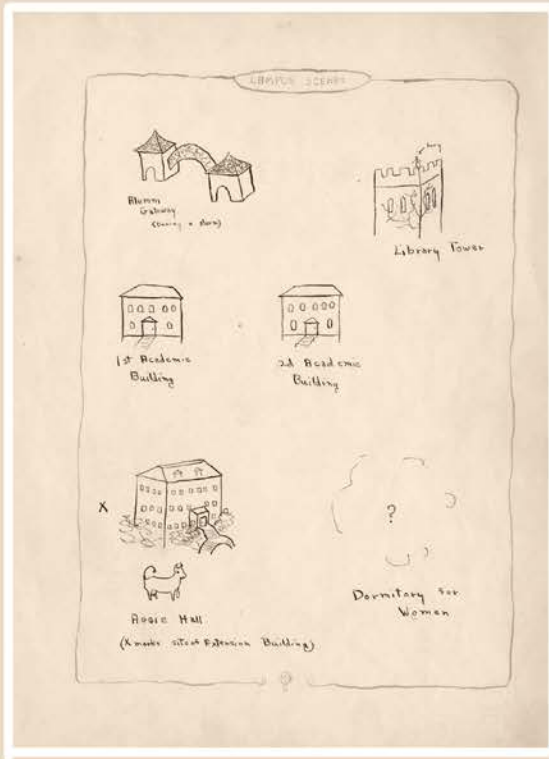
Mary Virginia "Prim" Jones

Mary Virginia "Prim" Jones was the only woman in her mechanical engineering class and one of the first women to graduate from VPI with a degree in engineering. She served as model and mentor for women in engineering.



100 YEARS OF WOMEN AT VIRGINIA TECH

Virginia Tech's 100th anniversary of Women
(Graphic provided by Anna LoMascolo)



A page in The Tin Horn yearbook from 1925 includes hand drawings of buildings on campus.



EXPLORE THE TIMELINE
bit.ly/s22timeline

1960

The first female academic dean is appointed.

1966

The first black women students enroll at Virginia Polytechnic Institute.

1973

Women students join the Corps of Cadets for the first time.



There are ongoing active efforts to document more about women's history from faculty, staff, and alumni on and off campus. The team welcomes any information about women's history at Virginia Tech and invites anyone who is interested in making a historical donation to this collection by contacting Kira Dietz at kadietz@vt.edu. These uncovered stories can help improve the process of documenting history!

"I cannot imagine this project will ever be finished or complete," said LoMascolo. "It is a passion project and we will continue to build upon it as long as we are here. Our hearts are in it." ■

Marguerite Laurette Harper Scott

Marguerite Laurette Harper Scott was one of the first six Black women to attend VPI, enrolling in 1966. During her sophomore year she was elected to the student senate, and upon graduation, Scott taught in Norfolk City schools.



Open medical textbook series

offers curriculum flexibility for faculty and cost savings for students



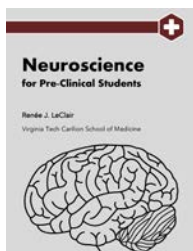
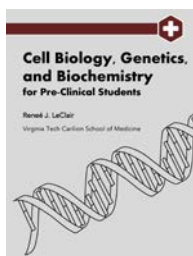
RENÉE LECLAIR, Virginia Tech Carilion School of Medicine associate professor, remembered her frustration when she designed an integrated course for first-year medical students and couldn't find a single textbook or resource to support the classroom experience she envisioned. Thanks to a VIVA grant, University Libraries Open Education Initiative, Libre Texts and Virginia Tech Publishing, she and her colleague Andrew Binks teamed up to author their own.

Virginia Tech Carilion School of Medicine and Virginia Tech Publishing, through Virginia Tech's Open Education Initiative housed in the University Libraries, are publishing a five-volume textbook series for pre-clinical medical students that is adaptable and freely downloadable through Pressbooks and LibreTexts. This series aligns with the United States Medical Licensing Examination and is based on faculty experience and peer review. VIVA's Open Course Grants, University Libraries' Open Education Initiative, Virginia Tech Publishing, and Libre Texts supported the creation of the series.

The first in the series, *Cell Biology, Genetics, and Biochemistry for Pre-Clinical Students* by LeClair, covers foundational knowledge of genetics, cell biology, and biochemistry. It is now available through Virginia Tech Publishing and LibreTexts.

The second in the series also authored by LeClair, *Neuroscience for Pre-Clinical Students*, covers neuroenergetics, neurotransmitters, neuropeptides, and selected amino acid metabolism and degradation. LeClair designed this text for students already introduced to fundamental concepts of biology and chemistry essential to understanding the textbook's content.

Three more texts in the series, authored by Andrew Binks, an associate professor at Virginia Tech School of Medicine, are currently in various publication stages. *Cardiovascular Pathophysiology for Pre-Clinical Students*,



Covers for the first two books, authored by Renée LeClair. Cover design by Kindred Grey.

Pulmonary Pathophysiology for Pre-Clinical Students, and *Pulmonary Physiology for Pre-Clinical Students* are scheduled for publication in 2022.

Binks said now is a perfect time for the series.

"Medical education had traditionally included independent basic science courses, each covering a different discipline, such as biochemistry or physiology and each discipline had its own thick and expensive textbook," said Binks. "There is now a transition to integrate the disciplines in the classroom to reflect how they are integrated and interdependent in the human body and in medicine. The opportunity to write our own books gave us the flexibility to support an increasingly integrated medical curriculum with short, movable chapters that could be quickly rearranged to suit the course restructuring."

"The topics chosen here are predominant content areas in the course I currently organize and topics I have delivered in the past," said LeClair. "There were also some great open educational resources (OER) to reference from Openstax that made some sections easier to write."

The textbooks are adaptable to a professor's teaching style because they are openly published under a CC BY-NC-SA 4.0 Creative Commons license. This permits anyone with access to the internet download, to remix, adapt, and build upon the text in a non-commercial way. They can do this as long as they credit the authors and license their new creation under identical copyright terms.

"While some textbooks are akin to encyclopedias, containing every possible concept at expert levels, this series is purposeful," says Anita Walz, University Libraries' assistant director for open education and scholarly communication. "It is highly focused and relevant to selected courses taken during the first few years of medical school. Students using the texts are not expected to

“Our intention was for any school, with limited access to resources, to freely use our books to support pre-clinical education of their students.”

Andrew Binks



Andrew Binks, Renée LeClair, and Anita Walz reviewing materials for the first two books. Photo by Trevor Finney.

become biochemists or cell biologists, but are being trained as physicians. A larger percentage of these focused texts are used by students instead of a smaller percentage of the many expensive books previously required for these courses.”

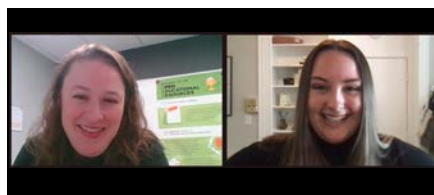
Binks said they’ve always envisioned their books having a global reach and wrote them with that in mind.

“Although there is no standardized medical curriculum, the topics we teach are common and critical elements to all medical curricula, so we’ve made our books highly transferable so they can be used at other medical schools with different curricular structures,” said Binks. “Our intention was for any school, with limited access to resources, to freely use our books to support pre-clinical education of their students.”

“We have had several schools reach out for adoption and at least one online program is adopting the text,” said LeClair. “Given the cost of traditional materials, these books are great options that provide high quality materials at no cost.”

As medical education evolves, the textbooks’ format allows for continual refinement.

Binks and LeClair encourage faculty to utilize and create open educational resources for their classes. They even published a 12-tips article about producing an engaging resource for students.



Anita Walz and Kindred Grey in a remote collaboration session.

“Starting a book can be a daunting process, but classroom materials or preparation materials that faculty have already developed can form the first steps,” said Binks. “Beyond content though, it’s important to decide how you want the books to be used by your students and what might be useful for other medical educators. The adaptability and transferability were important to us, as was the need to support the growing use of active learning.”

With the help of Walz and Kindred Grey, graphic designer and OER assistant, this textbook series graduated from an idea to reality.

“Aspects of publishing such as back matter, front matter, press releases, formatting, page numbering, page layout, peer review coordination, copyediting — and the list goes on — that are essential to the process are details they kept track of and saw through,” said LeClair. “This is in addition to making sure all the Creative Commons licensing and referencing was accurate and accounted for.”

“Don’t do this alone,” said LeClair. “When I started this project, I thought this was something content experts could do individually, but in working with our current team I have a better understanding of the publishing process.”

“Working with the Open Education Initiative and Virginia Tech Publishing has been a phenomenal experience,” said Binks. “The enthusiasm and experience of its team members was critical to the whole process and producing one textbook, never mind five, is difficult to imagine without their help.” ■



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VIBRANT VIRGINIA

book explores urgent topics affecting communities across Virginia's urban-rural continuum

By Julia Kell

A NEW BOOK from the Center for Economic and Community Engagement and Virginia Tech Publishing, housed in University Libraries, examines Virginia's urban-rural continuum and offers practical guidance for communities striving for a more resilient and prosperous future.

Vibrant Virginia: Engaging the Commonwealth to Expand Economic Vitality presents a multifaceted glimpse into the many ways that regions across the commonwealth are working to cultivate strong, robust, and inclusive economies and how seemingly dissimilar localities may be experiencing very similar challenges.

"It may seem easier to focus on the chasms that exist in the wonderfully diverse combination of counties, towns, and cities across Virginia, but doing so would mean we miss an opportunity to collectively think about, work on, and create solutions with far-reaching benefits," co-editors Margaret Cowell and Sarah Lyon-Hill say.

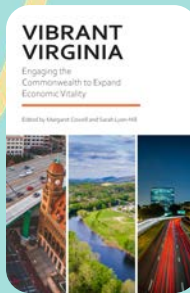
Cowell is associate professor of urban affairs and planning in the School of Public and International Affairs, teaching courses on economic development, community resilience, urban economics, and public policy. Lyon-Hill is associate director for research development at the Center for

Economic and Community Engagement, part of Outreach and International Affairs.


The book includes 15 chapters by scholars and practitioners with deep knowledge of the issues affecting the commonwealth today. They explore urgent topics such as expanding K-12 education reform, encouraging entrepreneurial ecosystems, supporting refugees and immigrants, and expanding broadband access.

"Recent elections show that we are living in a highly contested moment. Of course, we have lots of reasons to be concerned about political divisions and also the inequalities that have become so very visible during the pandemic," Cowell said. "But I also think this moment provides a unique opportunity and the chance to rethink whether these divisions serve us well. What are the ties that bind us and what might be possible if we think more holistically about how Virginians connect and complement one another?"

The book grew from the center's Vibrant Virginia initiative, a university-level program started in 2017 to help higher education be a better partner around the commonwealth and promote scholarship across its urban-rural spectrum.



Vibrant Virginia book cover.
Cover art via Virginia Tech Publishing.



...we are uniquely situated to help tackle and identify challenges and solutions in the urban-rural continuum across Virginia.

John Provo

The initiative supports faculty members in conducting projects with community partners in both urban and rural regions, strengthens strategic relationships between the university and regional stakeholders, and develops scholarly products about development policy — a strategic expansion area for the university.

“We see our work as part of the university’s ability to impact positive change in communities everywhere,”

said John Provo, director of the Center for Economic and Community Engagement. “What has come into focus with the Vibrant Virginia project is we are uniquely situated to help tackle and identify challenges and solutions in the urban-rural continuum across Virginia.”

Over the course of two years, the Vibrant Virginia team held 15 community conversations and three campus conversations and provided

funding for seven seed grants. The book will close out the initiative’s first phase, representing the culmination of Vibrant Virginia’s early efforts.

“Our goal was to curate a collection of writings that would include both practical experiences and scholarly contributions related to Vibrant Virginia; seek to ‘connect the dots’ between learning, discovery, and engagement; advance the important work being done at Virginia Tech and other colleges and universities in Virginia; and celebrate the communities, stakeholders, and government officials with which we regularly collaborate,” Cowell and Lyon-Hill wrote.

To ensure the widest possible readership, Vibrant Virginia is being published in both digital and print editions. The eBook (PDF and ePub) can be downloaded for free from the Virginia Tech Publishing website. An affordable paperback can be purchased from Amazon.

“It was important that this book be read as widely as possible, so we decided early on that cost would not be a barrier to access,” said Peter Potter, University Libraries’ director of publishing services. “We want to continue the conversations started in those earlier community and campus conversations, in order to make a difference in communities throughout the commonwealth.” ■



Sarah Lyon-Hill, left, and Margaret Cowell are co-editors of Vibrant Virginia.



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Level Up



Gaming Design Dream Job



By Elise
Monsour
Puckett



Artwork by
Maureen
Saverot

"I'VE BEEN PLAYING video games my whole life," said Maureen Saverot '15, MFA '18. "As soon as I realized that could be my career, I started looking for ways to craft games and stories for people."

Saverot dreamed of having a career she loved, a job that didn't feel like work, was fun, was creative, and made her look forward to Mondays. University Libraries, along with her Virginia Tech degrees, helped make that dream a reality, and she landed a job at Bungie as an associate narrative technical designer on *Destiny 2*, a free-to-play, online, multiplayer action video game.

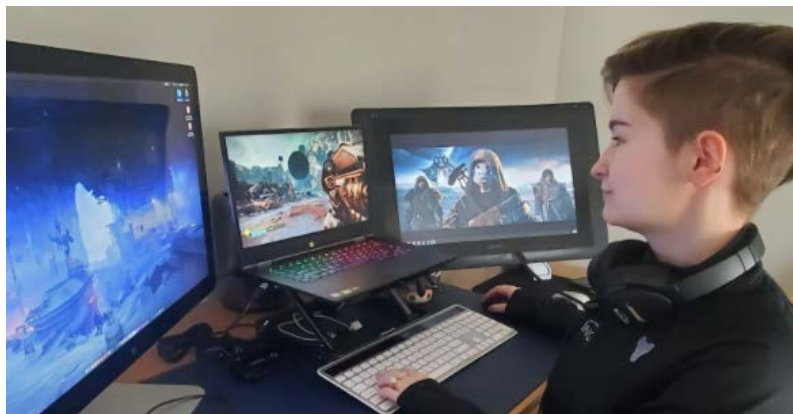
As the saying goes, "Choose a job you love, and you will never have to work a day in your life."

In 2015, Saverot earned an undergraduate degree in studio art and then received a master's degree in creative technologies in 2018, both from the

College of Architecture and Urban Studies. Shortly after, she accepted a position as an emergency hire in Newman Library's Digital Imaging and Preservation Department and worked her way up to a faculty member in just three years, leading a team of student employees. At the library, Saverot was a 3D technical artist specializing in photogrammetry, a type of 3D scanning that uses hundreds of pictures and specialized software to create digital models of real-world objects.

"I loved collaborating with unique collections departments across campus," said Saverot. "We had a variety of





✦ pilot projects that were so interesting, from clothing to fossils to bugs.”

Saverot enjoyed her job with University Libraries, which allowed her the opportunity to collaborate with the School of Visual Arts, Applied Research in Immersive Experiences and Simulations, and Entomology. That added a trove of experience to her resume and also taught her a lot about leadership along the way.

“Bungie itself is a AAA gaming studio, so it’s a bit unusual to jump right in without experience at smaller studios, and University Libraries helped me with that,” said Saverot.

Saverot’s work at Bungie is a combination of both creative and technical skills, which she says is very fulfilling for her. There, her team collaborates with animators, writers, and 3D artists to create narrative-driven content that expands the story of Destiny. Explicitly, her team works to create the content for non-player characters (NPCs). “The teams come together to create these amazing

— “ —
Helping to craft the story experience for players is a dream come true!

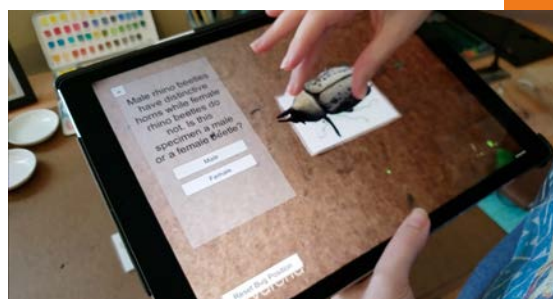
Maureen Saverot



narrative experiences,” said Saverot. “Not only the content creation teams, but the teams that support their tools and workflows as well.”

“Helping to craft the story experience for players is a dream come true,” said Saverot. “And my new job at Bungie means I get to work on video games every day!”

Saverot wants current creative technologies students to stay open-minded about the kinds of jobs they’re qualified for in their futures. “Keep an eye out for positions with unusual names that still encompass the skills you’re learning,” explained Saverot. “Expanding your skill set into using game engines, scripting, and other technical skills can create new opportunities for you. Follow your dreams and make it happen.” ■



From top: Maureen Saverot in her home office (photo provided by Saverot); Saverot capturing a specimen with photogrammetry techniques; a 3D beetle, digitally preserved; an illustration of a beetle used as an augmented reality target; and the app that allows you to scan the target and manipulate the 3D beetle.



WE ARE CELEBRATING

the important work
our faculty and
staff do in the
University Libraries.

(July 1, 2020 - June 30, 2021)

- **Craig Arthur**, F Paige, LP Perkins, D Manning, and J Kabongo presented “Do things for the kids: VTDITC - Hip Hop Studies at Virginia Tech” at the Global Conference on Hip Hop Education.
- **Sara Sweeney-Bear** and **Scott Fralin** published the book chapter “Social Network Theory in emerging library learning spaces and programs” in the *The Social Future of Academic Libraries*.
- **Kayla McNabb**, **Lisa Becksford**, and **Kelsey Hammer** wrote a refereed journal article “‘I think it could be better’: incorporating UX principles into learning experience design” published in *Weave: Journal of Library User Experience*.
- **Kirsten Dean** presented “Scaffolding your instruction with epistemology” at the Critical Librarianship and Pedagogy Symposium.
- R Shinn, C Park, **Kyrille DeBose**, F Hsu, T Cecere and J Rossmeisl published “Feasibility and accuracy of 3D printed patient-specific skull contoured brain biopsy guides” in *Veterinary Surgery*.
- EK Moore, A Kriesbert, S Schroeder, K Gell, **Inga Haugen**, C Barford, EM Johns, D Arthur, M Sheffield, SM Ritchie, C Jackson, and C Parr published the article “Agricultural data management and sharing: best practices and case study in the *Agronomy Journal*.”
- **Amr Hilla**, I Arai, S El-Tawab presented “DataLoc+: a data augmentation technique for machine learning in room-level indoor localization at the 2021 IEEE Wireless Communications and Networking Conference.
- **William A Ingram** and SA Johnson presented “Ensuring scholarly access to government archives and records: a collaboration of Virginia Tech and the National Archives and Records Administration” at the national Innovation Town Hall on Artificial

The University Libraries celebrates the scholarship and outreach of library employees throughout the year. From conference presentations, published articles and books, and outreach into our communities, the University Libraries makes a difference regionally and across the globe.

Intelligence. This was a summary of a five-part online workshop series to discuss and plan how artificial intelligence and machine learning could be used to ensure public access to the massive and ever-growing collection of government records in the National Archives and Records Administration digital catalog. The workshop was supported by The Andrew W. Mellon Foundation and organized by University Libraries at Virginia Tech, in collaboration with the Virginia Tech Center for Humanities and the National Archives and Records Administration.

- **Alex Kinnaman** presented “Perfecting preservation policy: designing interdepartmental agreement through policy development” at the Michigan Digital Preservation Network Member Summit.
- **Ellie Kohler**, H McKelvey, and H Piwowar presented “Beyond cost per use: incorporating open access, citation, and authorship metrics into collection assessment” at the American Library Association 2020 CORE: Leadership, Infrastructure, Futures virtual forum.
- **Edward Lener** wrote a chapter titled “Earth Sciences” in the book *Magazines for Libraries*, 29th ed.
- **Amanda MacDonald** and M Zaldivar presented “Beginning to badge: Exploring digital credentialing at Virginia Tech” at the Badge Summit 2020 and later were invited to give the webinar “Libraries & undergraduate research: exploring digital credentialing in co-curricular programming” at the ACRL Digital Badging Interest Group forum.
- **Gail McMillan** published the paper “Is the IR storage or showcase?” in *Ascending into an open future: the proceedings of the ACRL 2021 virtual conference*.
- **Chreston Miller**, L Hamilton and J Lahne, published a refereed journal article “Sensory descriptor analysis of whisky lexicons through the use of deep learning” in the journal *Foods*.
- T Becker, **Kayla McNabb**, **Katlyn Griffin**, **Julia Feerrar**, C Robertson, O Awotayo,

Lisa Becksford, and M Zaldivar presented “Composition, digital literacies, and instructional design: creating open resources together” at the Conference on Higher Education Pedagogy.

- B Ferrara, S La Paro, B Ripy, J Kozak, HG Hannan, EA Kocevar-Weidinger, K Hodges, **Jonathan Bradley**, **Kayla McNabb**, **Alice Rogers**, S Alcantara-Antoine, W Yarbrough, D Bomba, and S Hudson published the refereed article “Serving our communities: Virginia libraries respond to COVID-19” in the journal *Virginia Libraries*.
- **Trevor Finney** and **Jonathan Bradley** presented “The Virtual Sculpture Garden” at the Open (at the) Source 2021 Exhibition.
- Z Duer, **Todd Ogle**, D Hicks, **Scott Fralin**, T Tucker, and R Yu published the refereed article “Making the invisible visible: illuminating the hidden histories of the World War I tunnels of Vauquois through a hybridized virtual reality exhibition” in the journal *IEEE Computer Graphics and Applications*.
- **Rachel Miles**, **Virginia Pannabecker**, and JA Kuypers published a refereed journal article “Faculty perceptions of research assessment at Virginia Tech” in the *Journal of Altmetrics*.
- JL Hardesty, J Johnson, J Wittenberg, **Nathan Hall**, M Cook, Z Lischer-Katz, **Zhiwu Xie** and R McDonald published the article “3D data repository features, best practices, and implications for preservation models: findings from a national forum” in the journal *College and Research Libraries*.
- **James Tuttle**, **Yinlin Chen**, **Tingting Jiang**, **Lee Hunter**, **Andrea Waldren**, **Soumik Ghosh**, and **William A Ingram** published the conference paper “Multi-tenancy cloud access and preservation” in the proceedings of the ACM/IEEE Joint Conference on Digital Libraries.
- **Scott Fralin** and **Wen Nie Ng** published the chapter “Creating VR Exhibits Based on Digital Collections” in the book *32 Virtual, Augmented, and Mixed Reality Programs for Librarians*.
- LL Wind, **Jonathan Briganti**, **Anne M**

Brown, TP Neher, MF Davis, LM Durso, T Spicer, and S Lansing published the article "Finding what is inaccessible: antimicrobial resistance language use among the One Health domains" in the journal *Antibiotics*.

• **Nathan Hall**, **Alex Kinnaman**, J Shah, T Ge, and **Maureen Saverot** published the paper "Entomo-3D: Digitizing Virginia Tech's insect collection" in the proceedings of the Digitizing Hidden Collections Symposium.

• **Yinlin Chen**, T Jiang, **Lee Hunter** presented "Building scalable serverless digital repositories using amplify open-source framework" at the 16th annual Open Repositories Conference.

• **Alan Munshower**, J Wilkerson, A Anderson, JG Thomas Jr, H Schultz, and K Burns presented "Listening to our place: Towards a democratic history of Mississippi" at the Oral History Association Annual Meeting.

• **Jonathan Petters** co-chaired the session "From principles to metrics to evaluation, increasing TRUST in data repositories" at the Research Data Alliance 17th Plenary."

• **Nathaniel Porter** and E Jardine presented "Pick your poison: the attribution paradox in cyberwar" at the conference of the International Studies Association.

• **Peter Potter** published "Author attitudes toward Open Access" in *Digital Science*.

• **Aaron D. Purcell** published the refereed journal article "An Indomitable Activist: Ethel B duPont and the ranks of labor in Kentucky" in the journal *Ohio Valley History*.

• **Jade Snelling** presented "The potential of the past: documenting women in architecture" at the International Archive of Women in Architecture Symposium.

• **Steven Tatum** presented "Exhibiting a slide collection: the life and career of Leonard J. Currie, FAIA" at the Visual Resources Association Conference, 2021.

• **Patrick Tomlin**, T Elliott, and D Lockaby participated in the ACRL Professional Values Committee Panel: Data Privacy and Academic Libraries at the Association of Colleges and Research Libraries (ACRL) Seminar.

• **Anita Walz**, JM Russell, K Grey presented a poster "Collaborating to build, adapt, and evaluate Open Educational Resources (OER) at the 2021 Conference on Higher Education Pedagogy.

Collaboration provides space for student success

THE FOURTH FLOOR of Newman Library has always been full of students studying, working on projects, socializing, and striving for success. This already easy-to-access and popular student space is the perfect location for the temporary home for student support offices.

In spring 2020, renovations began on the fourth floor of University Libraries' Newman Library to create office space for the Student Success Center and University Studies and Scholarship Support. That fall, they began providing support services to students while their new offices in the Gilbert Street building, a mixed-use building of approximately 250,000 square feet, is under construction.

The Gilbert Street building is expected to be open for full occupancy by summer 2023. In the meantime, the University Libraries is pleased to provide this space to benefit Hokies.

"The university is growing and providing more opportunities for students to succeed and build on their academic success," said Patrick Tomlin, University Libraries assistant dean of learning environments. "It's great that we can do our part in providing this temporary space while new university facilities are being built. This offers us a chance to collaborate with these student support offices and continue to strengthen student resources we have here in the library."

One of the student support programs housed in these offices is the HUB scholarship mentoring program, a partnership between University Studies and the Office of Scholarships and Financial Aid that helps scholarship students renew their scholarship or grant funding while building supportive relationships.

Maggie Yang, a second-year industrial systems engineering student and scholarship recipient, said the program made a difference in helping her successfully transition to Virginia Tech as a first-year student. "It made me realize the goals that I want to achieve. I feel like I have a purpose in college and something to aim for," said Yang.

Page Fetter, assistant director of university studies and scholarship support and coordinator of HUB, said this temporary location in Newman Library has helped the program provide its important services to students.

"Presence is an important factor in student support. By offering access to scholarship mentoring services in the library this year, we can be present amongst the wide range of students from all colleges we serve," added Fetter. "With a central location that students utilize, we can provide them with resources and support in an approachable way." ■

What's New?

BY READER REQUEST

"What has changed in the Newman Library ... since 1988?"

Newman Library has changed significantly over the years to meet the needs of our diverse students, staff, and faculty. The collection has grown and evolved (*see our Spring '21 magazine for more information on how*) and our services and spaces have too. **So much has changed, but our mission remains the same.** Here are a few areas of the library that you may recognize, and a few that you may not!

Then ...



Our computer friendly spaces have gotten more advanced and collaborative.

Now ...



A few spaces, like our third floor quiet study pods, remain a student staple.



Group study spaces have expanded on the fourth floor and fill up quickly.





The first floor rounded glass study space is now our cafe.



This 2nd floor spot continues to be popular and now also holds our print center, laptop kiosks, event and exhibit spaces.



Even with so much changing inside, Hokies are still greeted by a familiar face.

There is so much more that we can't fit here!

Visit the online version of the magazine to see more photos and **take a virtual tour** that shows off many of our new spaces and services.

"Then" photos courtesy of Special Collections and University Archives. "Now" photos by Chase Parker.

We want your feedback!

We're curious. What do you think of the magazine? Do you have questions about library services or would you like to learn more about library programs? Let us know through the survey link or QR code below.



SHORT FEEDBACK SURVEY
bit.ly/imaginefeedback



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lib.vt.edu

A background image showing students in a library or study area, with a warm orange overlay. The image is partially obscured by a white text box on the right.

Every great idea starts somewhere. At Virginia Tech, **they start here.**

In an age of limitless information and rapid change, access to emerging technology and the perspective to build on it has never been more valuable. University Libraries at Virginia Tech provides expertise and services that transcend geography and time to fuel accomplishments by all Hokies.

Help the University Libraries serve all Hokies for generations to come.
Learn how you can make a legacy gift through your will.

Contact Rachael Carberry, Director of Development,
at restep2@vt.edu or 540-750-0673.