UWM students go 'outback' to aid in astronomy research

By Sarah Vickery, Letters & Science

In the Australian outback sits a forest of spider-like antennas, gathering data from the distant reaches of the universe. It’s the Murchison Wide Array, a radio telescope array that uses low-frequency radio waves to detect and study things like hydrogen emissions, the ionosphere, supernovae, and more.

This summer, four UWM undergraduates spent a week building those antennas.

Physics majors Rusty Mundorf, Kaleb Maraccini, William Fiore and Robert Bavisotto are all undergraduate researchers who work with UWM Physics professor David Kaplan. When Kaplan needed a crew to work on expanding the MWA, they each applied.

“We were responsible for the hex, which is a section of the telescope,” Mundorf explained. “We built 576 of those little antennas and went and put them out on the field and wired them so they could be hooked up to the computers for analysis.”

It’s a small thing now, but it could generate big results later. The MWA is an international collaboration among several universities and organizations, each studying different astronomical phenomena. Kaplan’s group at UWM uses the data collected from the array and other locations to search for pulsars.

“Pulsars are rapidly spinning neutron stars (leftovers from supernova explosions) which emit radio waves from their poles, creating a lighthouse effect whereby if the Earth is in the path of the pulsar’s beam of radiation, we see a “pulse” of radio waves,” Fiore said. “Pulsars are the densest objects in the universe apart from black holes, and are typically about the size of Milwaukee.”

Sometime in the future, the MWA, and the antennas built by the UWM students, might be able to use the pulsars to detect gravitational waves, ripples in the fabric of space-time predicted by Albert Einstein and recently proved to exist by a team from the Laser Interferometer Gravitational-Wave Observatory (LIGO), which included scientists from UWM.

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Behind any politician is a team of dedicated, knowledgeable staffers who never see the spotlight despite all of their efforts managing constituent issues, campaigns, and a political office. We’re proud to finally put the spotlight on Lois O’Keefe, a 1982 graduate with a Political Science major who has given generously to the College of Letters & Science.

O’Keefe is untraditional in many ways, starting with her schooling. She had already started her family by the time she began attending UWM, and she was the oldest intern working in then-Senator William Proxmire’s office after his staff recruited her for a paid internship in his Washington, D.C. office.

“Since I was older, they didn’t treat me as an intern. I handled crazy stuff that nobody else wanted to do, like nuclear power plant expansion, as they were discovering that one plant to be built in California had a schematic for the nuclear energy plan being setup upside down,” she recalled with a laugh.

After her internship, O’Keefe jumped straight in to the Master’s in Human Relations and Labor program and from there secured a job with the Service Employee’s Union. In 1988, while working for the Carpenter’s Union’s Regional Council, she helped organize a reception for the Wisconsin Senate Democratic primary winner, Herb Kohl, owner of the Milwaukee Bucks. The Union had backed another candidate but wanted to honor the winner and get to know him. O’Keefe quickly applied for a position on his state staff after the November elections and Kohl hired her.

“I worked for Herb for almost his entire first term. I did labor law cases and union issues in general,” O’Keefe said. “The UWM Master’s program was critical to my being able to brief the senator properly about union issues as they occurred. I believe that program made a big difference in my getting hired by him and he was a superb boss.”

Then, in late 1993, O’Keefe learned about political appointments – specifically, the Regional Appointee of the Department of Labor in Chicago. She called the Kohl Chief of Staff in D.C. and asked for help getting the job. O’Keefe began her appointment in July of 1994 and reported to then-Secretary of Labor Robert Reich.

“I still get the occasional email from him,” O’Keefe said. “We would go to events in the region and he would bring two or three of them along just because he was a good professor and wanted his students to learn about government.”
Science and religion have been butting heads since the days of Copernicus and Galileo, and it seems like that holds especially true in American politics. The conservative right tends toward more religious while the liberal left seems to embrace science.

However, said UWM Sociology professor Timothy O’Brien, there’s a third group out there – a portion of the American population that is both religious and scientifically literate. He explores the “post-seculars”, as he has dubbed them, in his new paper, “A Nation Divided: Science, Religion, and Public Opinion in the United States” published in Socius: Sociological Research for a Dynamic World.

“We were looking at was the assumption that science and religion are conflicting sources of knowledge. There is this assumption in the popular imagination that if you’re scientifically-oriented you can’t be religious, and if you’re religious you can’t be scientifically-oriented,” O’Brien said. “What was found was that it is true to some extent, although public attitudes about science are more complex than that. Basically we found three big groups of Americans based on their attitudes about science, their knowledge about science, and their attitudes about religion.”

O’Brien and his coauthor looked at publicly available survey data and sorted respondents into three categories: The “moderns,” those most familiar with and favorable toward science; the “traditionals,” the most religiously devout and the least familiar with science; and the post-seculars, whose worldviews blend elements of both science and religion.

The next step was examining how each group approached social issues that weren’t directly related to science or religion.

“If we look at the modern group and the traditional group and their political and social attitudes, they differ in virtually every domain of human society. When it comes to criminal justice, they are different. When it comes to families, they are different. When it comes to civil liberties, race relations, sexuality, we see a big schism between these traditionalists and the moderns,” O’Brien said. “As you might expect, moderns tend to hold more liberal or progressive opinions and traditionalists tend to be more conservative or orthodox.”

That holds true across the board, whether it comes to stem cell research or marijuana legalization or child-rearing practices, O’Brien discovered.

The wild card is the post-secular group. Their unique perspective, embracing both science-oriented and religiously-inclined views, led them to have equally unique attitudes toward social issues. They are more conservative when it comes to gender and sexuality, but lean progressive when it comes to social justice, civil liberties and education.

“Basically what we have found is that scientific Americans aren’t necessarily liberal. … We also find that religious Americans aren’t necessarily conservative; they are progressive in some domains as well,” O’Brien explained. “The overall finding is that people’s attitudes about science and religion really map onto their socio-political attitudes in a more diverse set of ways than I think people usually acknowledge.”

That’s important because moderns and traditionalists make up 70 to 80 percent of the American population, and they vote predictably. It’s the

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Life in the Milwaukee County Medical Examiner’s office is no CSI. In fact, Forensic Investigator Taylor Kroes gets exasperated when it’s mentioned.

“I don’t think I’ve ever interviewed a suspect,” she said. “It’s unfortunate, but we can’t take a liver temperature and tell you when a person died. There’s so much science that goes into it.”

Kroes and her colleagues deal with death on a daily basis. When there is a homicide, a drug overdose, a death in the home, or a death under suspicious circumstances, she is called out to the scene to shed light on the situation. She will talk with police, interview family members, and pore over medical records to determine what happened.

“We’re the eyes and the ears for the doctors in our office,” she explained. “We help determine if they need an autopsy or not, and the doctors can go off our report at the end of the day to help them determine the cause and manner of death.”

It can be tough, but working in the Milwaukee County Medical Examiner’s office has been Kroes’ dream job since she decided to major in Anthropology at UWM. She chose the university because it was within easy driving distance of her hometown, Racine, but she had a hard time choosing a major until she took an introductory anthropology course and got hooked.

Kroes was especially drawn to forensic anthropology, using skeletal analysis and archaeology techniques to solve criminal cases. The natural next step was to earn a certificate in Forensic Science alongside her Bachelor’s degree. The Forensic Science program spans several disciplines, including biology, chemistry, and criminal justice, and trains students to analyze DNA evidence, identify common drugs, and get familiar with human anatomy.

“What I liked in forensic anthropology was being able to look at the bones,” Kroes said. “I loved to be able to touch them and feel them and get to know them.”

That love lead her to an internship in the Milwaukee County Medical Examiner’s office, which continued briefly after her graduation in 2013. She took a part-time job with the Kenosha Medical Examiner’s office after that and gained the requisite two years of experience needed to become a forensic investigator with Milwaukee County. She made the move back Milwaukee in January of 2016.

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WHERE DID YOUR DEGREE TAKE YOU?

Graduate uses Religious Studies to help the homeless, youth

By Sarah Vickery, Letters & Science

UWM graduate Audra O’Connell laughs when you ask about her Comparative Religions major and how it even remotely relates to her job. She gets that question a lot.

“One of the coolest things about the Religious Studies program is that it encapsulated a lot of different things: history, art, music, literature, everything that makes civilization what it is,” she said. “It was a neat way to learn why we think and do the things that we do. That’s everything that I do every day, is figuring out what people need and why they need it and going about it in an appropriate way.”

O’Connell is the executive director of Walker’s Point Youth and Family Center, a Milwaukee-based shelter that temporarily houses teens and children in crisis, provides family counseling, and performs community outreach for at-risk youth.

She was always interested in ministering to those less fortunate, and served as a Protestant missionary in Ireland and San Francisco while attending college. O’Connell chose UWM for its academic resources in religion in what is now the Religious Studies program.

“You could be taking the class on Gilgamesh or reading the works of Josephus, not something that you would normally think applied to everyday life. [My professors] would pull out these kernels of truth that are applicable into today’s world and we would discuss, ‘Why is this the same? What does it mean? How do we live it out in our lives?’” O’Connell recalled. “There are debates that occurred in class that I still think about today when I’m doing the work that I do now.”

After graduating in 2008, O’Connell signed on with the Guest House, a Milwaukee men’s homeless shelter, and handled the organization’s permanent housing department for five years. From there, she joined a local nonprofit called Impact, charged by the city and county of Milwaukee to develop a unified system for homelessness services in the county. After two years, O’Connell came to her current position in March.

Walker’s Point provides O’Connell plenty of opportunity for ministering, even if it’s not religious. The center has a myriad of programs designed to help families cope with everything from poor grades to drug addiction, teen pregnancy, abuse, and homelessness.

“We are the only shelter in Milwaukee County that takes teen parents with their children,” O’Connell said. “When you are in the shelter, there are therapists that work with you. We also have transitional housing programs for 18 to 21-year-olds. We have … an outreach worker that goes directly onto the street to work with 11 to 25-year-olds. It can be as simple as handing out condoms and making sure they know how to use them, to assessing for the risk of human trafficking and getting them into the shelter and connecting them with a a therapist.”

In addition, Walker’s Point works with schools to provide youth empowerment classes with topics such as dating and domestic violence, as well as community-based
Recommended summer reading from L&S authors

If you don't have a good book lined up for your beach reading, we have some suggestions. Enjoy the excerpts below from two books recently published by Letters & Science faculty. Excerpts reprinted with permission.

John Bascom and the Origins of the Wisconsin Idea

By J. David Hoeveler, History

A moral society, [Bascom] believed, will exercise vigilance in assuring a fair distribution of its wealth, the more so as the industrial age created both vast accumulations by some individuals and impoverishment by many. “Large production,” Bascom wrote, “must in any long period go hand-in-hand with relatively just and generous distribution.” “Relatively just.” Bascom did not support socialism, as will be noted. Without the public monitoring, though, economic forces, acting wholly under private control, will create huge disparities of income, even to the point of destroying the very system from which they derive. The state cannot remain indifferent. Furthermore, Bascom believed, the state has full right to decide how much of private wealth it will protect. Assuring “proximate equality,” preventing one class from being permanently disabled, restoring those who have fallen—all these imperatives of the ethical state impose on it a “conscientious watchfulness.” ...

Bascom had some other suggestions for securing greater social equality by means of state action. They did not constitute a long list but they did anticipate measures that became common later in the Progressive Era. For one, he called for taxes on inheritance. Accumulation of wealth and its perpetuation over generations Bascom found unjustifiable. Such perpetuation deprives future generations of opportunities, and confounds efforts to preserve a fair race over the long years. Yet we see again the ideal of individual rights skewing the subject in the interest of the powerful, Bascom complained. But he held his ground. “Death must be a final relinquishment of rights,” he wrote. Besides, he believed, it’s a simple matter: “The world belongs to the living, not to the dead.”

Hoeveler’s book examines how the ideas of UW president John Bascom shaped the development of Wisconsin. Read it all by visiting http://amzn.to/2aBsF9v.

The American Census: A Social History (2nd edition)

By Margo J. Anderson, History

The most obvious use of the census during the war was as an instrument to measure the relative military strength of the Union and the Confederacy. On the heels of Fort Sumter, Kennedy sent a report to Lincoln listing the number of white men aged eighteen to forty-five in the free states, the “border slave” states (those that had not seceded), the seceded states, and the territories. Of the 5.5 million men of military age, 69 percent were in the free states. The seceded states could muster 9 percent. If all the remaining slave states joined the Confederacy, it could draw on another 1.1 million men. The prospects for the Union looked quite good. ...

Kennedy’s staff used postal route maps for counties in the South and annotated them with the results of the 1860 census. On the face of the map, data were written in for each county. Thus, for example, Northern commanders had data on the number of whites, free colored, and slaves for each county. They also knew the amount of improved land, the number of horses and mules, and the quantity of wheat, corn, oats, and other crops produced in the county.

General William Tecumseh Sherman made the most notable use of such statistical information in his march through Georgia to the sea. Sherman acknowledged his debt to the Census Office for the information both at the time and after the war. “No military expedition was ever based on sounder or surer data,” he wrote to his daughter Ellen. The data made it possible for Northern commanders to operate with short or no supply lines, to live off the land, and thus to move faster than traditional armies.

Anderson’s book explores the deep impact the census has had on America since its conception more than two centuries ago. Read it all by visiting http://amzn.to/2a3tBT6.
Alumni Accomplishments


Anika Yetunde Jones ('15, PhD Anthropology) was hired as a tenure-track Assistant Professor of Anthropology and Sociology at Oakton Community College in Des Plaines and Skokie, Ill.


Forensic investigation

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“Milwaukee County covers a lot of people, so you’re constantly busy, so much more than in Kenosha,” Kroes said. “Everybody that dies in their home, we get called for. We get called out to suspicious (deaths) – shootings, homicides. Overdoses are big right now. The police investigate the scene as a whole while we focus on the body and gather information from the police about the circumstances of the death.”

Even so, it’s the living who make her job interesting. Sometimes, Kroes said, she becomes the target of surviving family members’ anger. Her job is to talk with them to learn more about the deceased’s circumstances and medical history, which can be difficult for a grieving family. Helping the grieving families are what make the job worthwhile, though.

“I like being able to help people,” Kroes said. “I feel like this is an odd way to help people, but I feel like I’m helping them with one of the hardest parts of their lives. We’re the ones who deal with that loved one. We have a responsibility to let them know what’s going on.”

She has some advice for those who are interested in a similar career: Know what you’re getting into.

“It’s blood and guts and gore. My husband has learned to eat through my gory stories. Sometimes it’s hard and sometimes it’s easy. Some of my friends tell me they can’t stand the sight of blood, and I think, you could never do my job,” she said. “Can you stand being yelled at by family members? Can you stand going out to a homicide at 3 a.m. to talk to the police when you’re dead tired?”

If you can, it’s a rewarding career. Just, don’t ask if it’s anything like CSI.

Religious studies alumna

*continued from page 5*

parenting and nurturing classes for adults. The organization also staffs a 24-hour crisis line for teens, which is also available to parents struggling to deal with their children.

“The best and the most challenging parts of the job are one and the same. It’s helping kids who may not have anyone to advocate for them. We’re helping them feel welcome and safe and secure,” O’Connell said. “They have a place where they can be who they are.”

As executive director, she’s not only responsible for overseeing the programs and managing her staff – O’Connell has to watch them closely for burn-out – but she can also steer Walker’s Point into the future. She wants to focus on issue-prevention by strengthening family empowerment programs, and combatting homelessness by increasing housing capacity.

“It’s the big picture. It’s where are we going, who are we going to be, and how are we going to get there,” O’Connell said. “I’m excited to see how I can take some of the principles that I’ve learned in my other jobs and from UWM and figure out how I can apply them to Walker’s Point.”
In the Media and Around the Community

Noelle Chesley (Sociology) spoke about *New Directions in Gender, Work, & Family Research* and presented original research findings regarding the role that family technology practices play in shaping family intimacy at the Work Family Researchers Network conference held in Washington D.C. in June.


In June, Jennifer Jordan (Sociology) presented a paper titled “Drinking Revolution, Drinking in Place: Craft Beer, Hard Cider, and the Making of North American Landscapes” at the Dublin Gastronomy Symposium in Dublin, Ireland. All of the papers from that symposium are available at [http://arrow.dit.ie/dgs/](http://arrow.dit.ie/dgs/).

Gun control and criminal justice are heated debates on the national level, but in OnMilwaukee.com, Jessica McBride (Journalism, Advertising, and Media Studies) documented how several of her students conducted investigative research into local gun crime to bring hard facts and evidence to the discussion. [http://bit.ly/29QnOVd](http://bit.ly/29QnOVd)

Patricia Torres Najera (’91, BA Economics; ’03, MS Urban Studies) was profiled in the *Milwaukee Journal Sentinel* for her ability to create compromise and bring communities together in her role as the chairwoman of the Milwaukee Plan Commission. [http://bit.ly/29QjIg1](http://bit.ly/29QjIg1)


You be the judge – did Donald Trump handle the Republican National Convention in the manner that Thomas Holbrook (Political Science) said the Republican presidential candidate would need to in the *Austin American-Statesman*? [http://atxne.ws/2a5sZQB](http://atxne.ws/2a5sZQB)

Several Letters & Science faculty members, including Margo Anderson (History), David Petering (Chemistry and Biochemistry), Merry Wiesner-Hanks (History), Swarnjit Arora (Economics), and Robert Schwartz (Philosophy), penned an editorial for the *Milwaukee Journal Sentinel* outlining UWM’s contributions to Wisconsin’s economy. [http://bit.ly/2al5C0m](http://bit.ly/2al5C0m)


Elena Gorfinke (Film Studies) gave the talk “Walking Still: Vulnerable Endurance in Tsai Ming-liang’s Walker Series,” as the Dennis Turner Memorial Lecture of the English Department and Film Studies Program at Wayne State University.

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Video Stories

Recent graduate Tevin Smith used his internship experience not only to gain a leg up in the working world, but to enhance his time at UWM. 
https://youtu.be/rdBrjvBX2go

If you can’t make it in to the UWM Art History Gallery this summer, never fear - you can still get your fill of the UWM Art Collection right here! 
https://youtu.be/X2GsBMoUwSg

People in print


In the media

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Gender doesn’t matter as much you’d think when it comes to U.S. presidential elections, said Kathleen Dolan (Political Science) in the Washington Post. http://wapo.st/291NYUA

In June, Erin Winkler (Africology) was in Washington, DC to work with the Smithsonian National Museum of African American History and Culture on museum staff training, and in July she gave a talk at the corporate headquarters of American Girl Doll Company in Middleton, Wis.
**Take to the field!**

The UWM Field Station invites you to attend several August events promoting sustainability, learning, and an appreciation for the wonders of the world. To register for any event, visit [http://bogfriends.org/events/event-registration](http://bogfriends.org/events/event-registration).

**August 5**

Riveredge Nature Center, 7-8:30 p.m. "Protecting our Planet Through Sustainability" - Roger Kuhns. Geologist and environmental scientist Roger Kuhns discusses sustainability progress to date and additional measures needed to combat the threat of climate change while promoting community and economic development. There is a $5 entry fee.

**August 7**

Cedarburg Bog, 10 a.m.-Noon. Dragonflies and Butterflies for Beginners. Learn about the intricacies and identification of dragonflies and butterflies on a nature walk with Kate Redmond. Meet at the Highway 33 parking lot.

**August 20**

Cedarburg Bog, 9 a.m.-Noon. Ethnobotany. Join ethnobotanist Lee Olsson to discover what can be learned from Native American plant names and botanical culture, as well as various uses for plants, from dyes to medicines. Meet at the field station. Wear comfortable hiking shoes and dress for the weather.

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**L&S salutes continued from page 2**

O’Keefe helped organize events where Reich could talk to local labor leaders. On one memorable trip to Milwaukee, the Secretary, an avid baseball fan, attempted to talk with the Commissioner of Major League Baseball Bud Selig about the baseball strike in the major leagues.

The Clinton Administration ended in 2000 and O’Keefe found herself working for the county of Milwaukee distributing a large grant for youth services. When money for the grant ran out in 2004, she began working on the campaign of Congressional candidate Gwen Moore, and was hired to her staff after Moore won the election. O’Keefe served as Moore’s district director.

These days, O’Keefe is retired and sits on the boards of several organizations she’s always admired but never had the time to join. She keeps threatening to slow down and take it easy, but so far she’s as busy as ever, and she always makes time to give back to her alma mater.

“I give back to places that helped me get started in the workplace,” O’Keefe said. “One is UWM and it always will be.”

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**Religion and science continued from page 3**

Post-seculars who have disproportionate sway in American political elections. They tend to vote Republican, but with this year’s unorthodox election, it’s anybody’s guess.

“I think that both science and religion are inherently political,” O’Brien said. “I think that is something that political scientists and sociologists widely recognize that you can’t seal these institutions off from one another, so it’s hard to talk about the scientific implications or the religious implications of this absent of the political implications.”

That’s true of American politics, but it might not be the case in different political systems, especially in predominately religious societies or governments with more than two major political parties. O’Brien’s next steps will be to examine how science and religion interplay in foreign societies.
“The LIGO announcement was really exciting. That was really cool thinking about all of the years that went into that project,” Maraccini said. “When NANOGrav (the organization Kaplan belongs to searching for pulsars) discovers gravitational waves, it’ll be really cool to be a part of that.”

“It’s always interesting to see the practical side of science, and there is a sense of pride in seeing something that you’ve built after a week of work, knowing that someone will use it to study something meaningful in the future,” Fiore added.

The students spent five days on the project in the Outback. The area around the MWA is a “radio quiet” area, meaning all radio transmissions, from car radios to microwaves to cellphone signals, must be silenced so they don’t interfere with the MWA’s data collection. The area itself is isolated and can only be reached via a long ride on dirt roads.

The work was repetitive, so much so that Mundorf bragged he could assemble a dipole antenna blindfolded by the end of it. He couldn’t, but did come close, he reported with a laugh.

The students would be working on-site by 7:30 in the morning and work until about 4 or 4:30 p.m. It’s currently winter in Australia, so temperatures were on the cooler side – relatively.

“I had a few people, as I was walking around in shorts and a t-shirt because it was 75 degrees and gorgeous outside, asking if I was crazy. I told them where I come from this is beautiful and then I tried to explain Wisconsin winters to people,” Mundorf said.

“For me, it was really fun, and really cool, learning more about how the MWA works,” said Maraccini. “I was taken aback by all the logistics of working on telescopes like these.”

The MWA involves miles of wire to carry data back to computers for analysis, and the instruments are very sensitive. That’s good for research but can be a problem when it comes to maintenance. Maraccini learned how the iron in Australian soil can corrode the array, especially during a wet season.

After the project ended, Fiore and Maraccini stayed behind in Australia for more research while Mundorf and Bavisotto returned to the United States. The project was a cool opportunity for research, and one that will look great on a resume, Maraccini said.

“I want to go to graduate school and get into research,” he added. “This is a great place to start.”