

ENGAGING OUR COMMUNITIES: BUILDING COLLABORATIONS TO ENRICH AND DIVERSIFY PLANETARIUM PROGRAMS

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Figure 1 by Nathaniel Schardin.

Abstract

Planetarium theaters ought to be inclusive spaces. To reach this goal, planetarians are encouraged to develop meaningful, long-lasting partnerships in their communities. I will share three approaches we have used at the University of Wisconsin-Milwaukee Planetarium to build such partnerships. The first involved co-creating content with six Indigenous cultures and languages of Wisconsin for the program “*Indigenous Voices: Sharing the Wisconsin Sky*.” For the second approach, we invited African American community leaders and artists to present in the planetarium as well as UWM African alumni, faculty, staff, and students to share cultural perspectives and experiences. The third involved working with the Student Muslim Association and the Milwaukee Muslim Women’s Coalition to highlight the many important Islamic connections to the sky. These partnerships build over time and are wonderful ways to grow both professionally and personally. Be prepared to listen, learn, and respectfully ask questions.

Our profession is eager to serve our communities and yet, there is plenty of evidence that planetarium audiences often don’t reflect the diverse demographics of their communities; our audiences tend to be more affluent, educated, and white (Peterman et al., 2022). It is important to point out that this disparity is not reflected in people’s *interest* in science. As a response,

planetarians have put out the call “to develop reciprocal and meaningful relationships with local neighborhoods and community groups to create more inclusive learning environments for the future (Peterman et al., 2022).”

During the last decade, I have cultivated partnerships across campus and beyond to ensure the planetarium serves a broader group of people. I want to share some examples of what this can look like. All these collaborations have brought in more diverse audiences, led to programs that are richer in content than what we could possibly have produced on our own, and helped facilitate more nuanced understanding of other cultures.

1. Collaboration with the Electa Quinney Institute for American Indian Education

Since 2010, I have been eager to work with Indigenous scholars to create public programs highlighting Indigenous astronomy in the region. As I found out, these collaborations take time because people need to build relationships and trust. After reaching out to various people, I finally found a person interested in the project in 2014, Margaret Noodin, who teaches Ojibwe. We have been building capacity ever since. We have submitted three Advancing STEM Informal Learning (AISL) National Science Foundation (NSF) Grant applications. During the preparation of these applications, we worked with people from different Nations in the region, prepared material to support programs at the Indian Community School in Franklin, WI, and now infuse our regular planetarium programs with references to Indigenous astronomy.

In 2018, faculty, staff, and students associated with the UWM Planetarium and the Electa Quinney Institute for American Indian Education (EQI), in collaboration with community members, created a series of programs called “Indigenous Voices: Sharing the Wisconsin Sky” (see Figure 1). The idea behind the programs was to find astronomical terms, ways to map the sky, and cultural connections to stargazing (Creighton & Noodin, 2018) for each of the Indigenous languages and cultures of Wisconsin (Ho-Chunk,



Figure 2 (top) and 3 (above) by Jean Creighton.

Menominee, Ojibwe, Oneida, Potawatomi, Stockbridge-Munsee). We were also hoping to celebrate students at UWM who identified as members of these Nations.

Our original series was very successful: Members of different nations visited the planetarium to present and learn, and members of our local community, including urban American Indians, participated in the programs (Figure 2). Some of our goals were hard to achieve at the time. For example, we identified only a very few Indigenous star stories. However, we connected with Mike Zimmerman Jr., a local scholar who is knowledgeable about the night sky and fluent in three regional languages (Ojibwe, Potawatomi, and Odawa). We were unable to find any celestial words in Ho-Chunk or Mohican (the language spoken by Stockbridge-Munsee people). We are planning to augment this work by recording Mike and researching more words (especially in Ho-Chunk and Mohican) with the help of new language teachers at UWM. The entire program will be archived at the University of Wisconsin-Milwaukee Library.

Benefits

One of my favorite moments of “Indigenous Voices” was when Katinee

Shawanokasic and Monea Warrington (Figure 3), two Menominee women, spoke in the planetarium to a full house, which included 15 teenage Menominee girls visiting from their reservation.

The sparkling eyes of the young women manifested their pride that two women from their community were in positions of authority in a university planetarium.

This anecdote demonstrates some of the benefits of this type of work: Not only do you become an ally in a more meaningful way, you get to celebrate different peoples’ cultures and languages and make them more visible in the community.

Another great aspect of this is that you can add other constellations or names during the stargazing portion of our other public programming, even if the topic of the presentation is unconnected. General audiences are interested in how the sky was made sense of by the people who were here first.

Challenges and Suggestions

Work with Indigenous groups takes time because they are weary of people who make meteoric appearances: They show up out of nowhere, stay bright for a short burst, and then disappear, never to be seen again. It takes **time** (think years, not weeks) and persistence to show that you are interested in a long-term collaboration and that you are willing to follow their needs and timelines.

You will need to educate yourself through conversations, webinars, and articles. Give people your time to meet. I gained some important insights during regular meetings with people from different nations while we were working on the three NSF grants. During those regular interactions, I got glimpses of a world different than mine. For example, it was striking how different the impact of the pandemic was on the Indigenous members of the

collaboration: Everybody had funerals to go to, not just for community Elders but also for middle-aged and young people. It was sobering to hear about the grief and loss, and it helped me understand the **frame of mind** that might prevent someone from coming to a meeting.

From my experience in the last 9 years, people who have night sky knowledge, are fluent in a local Indigenous language, and are willing to present to an audience are very **rare**. If you are so incredibly lucky to find such a person, work with them closely because you are helping preserve some of this knowledge. If you can find a person willing to present to an audience and to become familiar with the night sky, then work with them and you can learn together. Hopefully that person will reach out to Elders to find words or ways of interacting with the sky.

Figure out what the Nation needs and wants from your collaboration. There are going to be circumstances in which your goals are not aligned; recognize this when it happens and take a step back. If people ask you to help, do what you can. For example, I was nervous to present a program for Indigenous Peoples’ Day by myself. I felt that I would be called out as a fake, an imposter. But my collaborator said that they don’t have enough people for the events and that I am an ally: She is comfortable with my representation. I was honored of course. Happily, we did find a speaker in the end, but I was willing to **step in when asked**.

Often, people speak of Indigenous people in the past tense; it is crucial to avoid doing so. One of the main points of these collaborations is to show the vibrancy of Indigenous people today! **Be sensitive to cultural norms**. For example, it is common in my experience that Indigenous people in Wisconsin do not want to be photographed. Their reluctance to be perceived as a poster child of their Nation is understandable. Be aware that even people who grew up on reservations might not be fluent in their language, and this can be a source of discomfort or embarrassment. Introductions are very important: Leave your education or titles at the door

and instead focus on where you are from, who your people are, and your immediate family.

2. Collaboration with the Black Student Center, the Department of African and African Diaspora Studies, and Sociocultural Programming

As many of us do (for example, see Peterman et al., 2022), I noticed that Black/African American people were **not represented** in our public programs as well as one might expect given that the population of Milwaukee consists of 39% Black/African American people. In 2016, I asked for help from colleagues in UWM's Inclusive Excellence Center and received outstanding advice: Include programs about African skies and consider astronomical connections with Islam.

Subsequently, we reached out to UWM's Black Student Center, the Department of African and African Diaspora Studies, and the Sociocultural Programming office to collaborate and connect the planetarium with community partners. In 2017, we tried two free programs. To mark the beginning of Black History Month, Sociocultural programming sponsored **"Celebration of African Culture,"** which included a speaker, food, live music and dancing, and stargazing at three different latitudes of Africa. With speakers from the Department of African and African Diaspora studies, we offered **"Under African Skies"** at the planetarium (Figure 4), 30-minute shows on Wednesdays during February with a speaker associated with a different African country every week and stargazing from that latitude. We have noticed that the programs we offer during Black History Month have a significant increase of Black audience members, some of whom are African American and some of whom are Africans working or studying here. Perhaps more importantly, when people become familiar with the planetarium, they come back for other programs too. We have continued offering these programs and, so far, we have had speakers from Algeria, Egypt,



Figure 4 (above) by Nathaniel Schardin; Figure 5 (right) by Autumn Chandler Carroll

Ethiopia, Kenya, Malawi, Senegal, South Africa, Tanzania, and Uganda.

Over time, these programs have evolved to include opportunities to learn about the region's food, music, famous people, acclaimed novels, and personal stories to the extent that the guest speakers wish. These programs also build momentum in securing future speakers. Mohamed, an Algerian undergraduate student, invited an Egyptian UWM alumnus to attend and, after seeing the program, this guest was eager to talk about his country the following year. One of our early programs mentioned specifically Moshi, Tanzania, because we had images that one of my staff took while visiting. At the end of the program, an obviously moved audience member approached me to say that his grandmother lives in Moshi and he loved seeing his home stars. He ended up presenting on Tanzania for "Under African Skies" the following year! We have found that the African students, faculty, and staff at UWM love talking about their homeland. This, again, is an example of building capacity and collaborations; the more we continue to offer this programming and work with community members, the more the word spreads to people who are interested or see that we are making a concerted effort and want to participate.

Benefits

One can offer more support and visibility to Black people in our



communities by offering opportunities to co-present in our planetariums. We have invited students, staff, faculty, musicians, and leaders to speak their stories, from a pastor and community organizer who builds connections between disparate Milwaukee groups to a Navy veteran who, after long work shifts in many places around the world, made time every day to center himself by looking at the stars (Figure 5).

Challenges and Suggestions

African Americans and African immigrants may experience racism in similar ways but can also have fundamentally different experiences depending on their families' educational and economic situation. It isn't safe to assume anything about anyone's background. Share some of your own experiences in life and find things you have in common. As an immigrant who grew up on a different continent, I can find common threads with people who grew up

elsewhere: being homesick, feeling confused at times, and experiencing joy remembering some of the experiences I have had. As a person who is passionate about what I do, I can find common threads with people who are passionate about giving back to their community.

Diversify your sources of information, the people you surround yourself with, and what you read to get more insights on how other people live. For example, listen to this interview of Clint Smith, an African American writer and poet, who discusses many topics including how the history of slavery is distorted and how it still affects people now: <https://www.npr.org/2023/03/29/1166783252/in-above-ground-clint-smith-uses-poetry-to-confront-the-legacy-of-slavery>. If you don't have time for all of it, search for the piece called "Gold Stars" which talks about the experience of being an African American dad. Unless you are an African American parent, you might be surprised.

3. With the Muslim Student Association and the Milwaukee Muslim Women's Coalition

I grew up in Greece, a predominately Christian country, and indeed, because of the complicated history of being occupied by the Ottoman empire and the current uneasy relationship of Greece with Turkey, I became aware of how ignorant I am of Muslim traditions. My eyes were opened by friends from Senegal, a predominantly Muslim country, especially when I visited their welcoming country. Since 9/11, being a Muslim in the US (and many other parts of the world) has clearly been challenging. I felt the planetarium could help in making more people in our community see Muslim people for who they are: peace loving, creative, and a diverse group. To showcase this, we recorded UWM Muslim international students saying their name, where they are from, and how to say "hello" in their language.

The aforementioned "Under African Skies" programs did involve a predominantly Muslim country from North Africa: Algeria. The presenter, Mohamed Maache (Figure 6), was

so interested in presenting at the planetarium again that we co-created a weekly series called "Arabian Nights" (Figure 7) with the help of Lina from UWM's Muslim Student Association. The program involved two students talking about their cultures (Algerian and Palestinian), contributions of scholars to the field of astronomy, and pointing out various stars with Arabic names. Every week, Mohamed and Lina offered the audience tea and homemade sweets. I suspect that many people in the audience had never had that kind of interaction with a young Muslim man or woman. To further emphasize science contributions, we collaborated with the Milwaukee Muslim Women's Coalition to produce a live program "Exploring Islam: Under the Stars."

Benefits

I have become a better teacher because of this collaboration. For example, when I was teaching "Searching for Life in the Cosmos," I noticed that a group of female Muslim students were somewhat reluctant to engage with the material in the course because they were not sure if the notion of extraterrestrial intelligence was sanctioned by Islam. When I was able to find readings that showed that the Quran embraces the idea of finding life beyond Earth, the students' attitudes changed markedly.

As another example, paying attention to when Ramadan begins and ends helped me avoid the embarrassment of bringing food to a daytime class that some people cannot eat. One of my Muslim students is a member of the Rohingya ethnic group and mentioned how gratifying it was to have a teacher who knew about Ramadan.

Challenges and suggestions

Not all people who come from predominantly Muslim countries are devout Muslims, just as not all people who come from predominantly Christian countries are devout Christians. Many people who feast around Christmas might be observing a cultural celebration rather than a religious one. The same is true of people who grew up surrounded by Muslim traditions. My recommendation is to

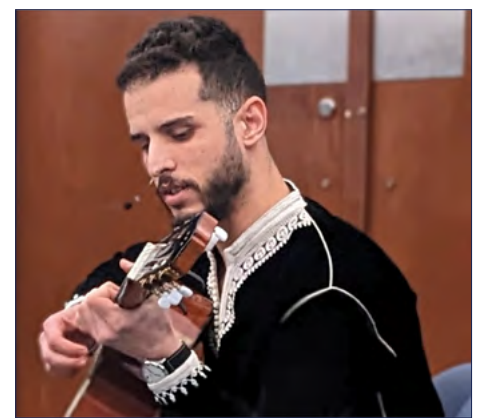


Figure 7 (top) by Nathaniel Schardin; Figure 6 (above) by Jean Creighton.

follow the lead of the person with whom you are talking.

Conclusion

Because of these rich collaborations, I am more likely to read more about and participate in diversity, equity, and inclusion efforts. I have made mistakes, to be sure, but I have learned to dust myself off and climb back on. As time goes on and you become wiser, you are likely to build trust and meaningful relationships with a broader group of people, which ultimately enriches your personal and professional life.

This work is not without challenges. Finding people for your team with the right personality for collaborations is crucial; they must be good listeners, ask questions respectfully, and have the humility to learn from others. Seek collaborators who value the knowledge and skills that you bring and give you the benefit of the doubt if there is a misunderstanding.

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African Astronomical Observatory in Sutherland. These photos/videos would be made available freely for anyone to download and use.

After some time (Nico had to save some funds), a secondhand Nikon D5300 camera with photography equipment and editing software was purchased. Several time lapse videos were created and uploaded to Nico's YouTube channel.

During this period, Nico was approached by AFAS to form part of a working group with the sole purpose of developing an affordable mobile planetarium for the African continent. Nico started working on an affordable fisheye projector concept. Ultimately, the camera setup originally earmarked for astrophotography ended up being used to capture and compare the output of different projector and lens combinations. The combination of the fisheye lens with a higher resolution camera made it possible for Nico to share his results with the rest of the working group (located across Africa).

The funds earmarked for a camera that was originally meant for astrophotography ended up being used to help develop an affordable fisheye projector that can be used in smaller/mobile planetariums.

The Projector concept that looks the most promising can be manufactured for under \$1000.

Once the affordable mobile planetarium project has been completed, time and energy will be redirected towards creating amazing time-lapse videos (center of the Milky Way season is fast approaching).

<https://www.youtube.com/watch?v=WOOuQBWTS6A> (about the 26 minutes point - Nico Van der Merwe from Sutherland Planetarium (South Africa) talks about his Sutherland Planetarium (<http://www.sutherlandplanetarium.co.za>), a fisheye lens astrophotography project to make time-lapse photos of the southern skies and make freely available for anyone to download and use, and a project developing an affordable fisheye projector and mobile planetarium for the African continent.)

This is the projector he used in a test setup (it is similar to the ones he uses in his planetarium):

https://www.amazon.com/BenQ-Theater-Projector-TH671ST-Ambient/dp/B076MHKTFH/ref=sr_1_1?dchild=1&keywords=benq+th671st&qid=1608537412&sr=8-1

The auxiliary lens:

https://www.amazon.com/Xit-XT1458F-0-14x-Super-Fisheye/dp/B00B49LNRK/ref=sr_1_1?dchild=1&keywords=0.14x+auxiliary&qid=1608537493&sr=8-1

With the 0.14x auxiliary lens, Nico is able to cover approximately 90-95% of my 8.4m dome. He reports that the focus looks pretty good across the entire dome; the 3000lumens seems sufficient for this size dome. His next step will be to develop a permanent attachment for the lens onto the projector and perhaps try and get a 4k projector.

African Planetarium Association *Rising Star*:

“The South African produced planetarium film, ‘*Rising Star*’ has been added to the ESO Astronomy full-dome content database and is now available for international downloads via their website: <https://www.eso.org/public/videos/rising-star/>

The film, accessible to all ages, premiered on 19 October 2020 at the Iziko Planetarium and Digital Dome in Cape Town, and was supported by the SAAO and SARAO. It offers the viewer an engaging and fully immersive glimpse into the world of South African astronomy, and highlights the many remarkable facilities hosted in the country, along with some of their latest results. This includes views of the Southern African Large Telescope, and the most powerful radio telescope in the Southern Hemisphere, MeerKAT.

As the first of its kind to be produced in Africa, ‘*Rising Star*’ hopes to stimulate the production of many more locally produced planetarium films, popularize Africa’s numerous scientific achievements, and inspire the next generation of astronomers.

Read more here: <https://supernova.eso.org/news/announcements/ann22004/>”

Small and portable planetarium consortium:

For some time, an effort has been made to pull together a group of planetarians to form a consortium for mobile and small dome folks purchasing content at a group rate. Things are finally coming together; nine people are interested and two vendors have agreed to work with us, Hubblo (<https://hubble.ca/en/>) and Adler (<https://sites.google.com/adlerplanetarium.org/adlerproductions>). If you are interested, the details are still being worked out and maybe you can join, or we can form other groups interested in the same idea.

Engaging Our Communities (con't.)

I hope I have convinced you that reaching out and collaborating with diverse communities is worthwhile and important. The groundwork takes time, but the rewards are priceless and long lasting. Your planetarium can become a place in which you offer programs that welcome more people, attract more diverse staff, and better understand people with different backgrounds. This work is just one step towards contributing to a more inclusive planetarium environment.

References

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