

Meeting Notes by Ellen McMahon and Jonthon Keats

Meetings with Official RII Centers and Institutes

1. Arizona Astrobiology Center
2. Arizona Institute for Resilience (AIR)
3. Arizona Space Institute
4. Bio5 Institute
5. Biosphere 2
6. Confluentcenter for Creative Inquiry
7. Data Science Institute
8. France-Arizona Institute for Global Grand Challenges
9. Institute for Computation & Data-Enabled Insight
10. Udall Center for Studies in Public Policy

Additional Meetings:

11. Lab for Tree-Ring Research
12. Research Innovation Impact (RII)
13. Santa Rita Experimental Range (CALs)
14. UITS, DataVis
- 15> UA Sky School

RII Centers/Institutes contacted but no response:

The Institute for LGBT Studies (no response, Brian Dodge, Director)
National Institute for Civil Discourse (May be just DC-based)
Space4 (may be redundant)
Stem Learning Center (communications through Jen)
Transportation Research Institute (no response, Arlie Adkins, interim)

Arizona Institute for Resilience (AIR) - Sharon Collinge, director, Gretchen Henderson (GH), Jonathon Keats (JK), Ellen McMahon (EM)

Meeting Notes, Ellen McMahon EM

- AIR goal to “shine a light” on Arts and Humanities perspectives.
- New hire, 20% job is to cultivate collaborations, Liz Pattersen,
- New hire Julia Glennon to focus on environment funding (RDS)
- Suggested we could meet with Indigenous Resilience Center (IRES)
- Arts integration in new GDP, Resilience Practice Professional Masters (since moved to SBS)
- Discussed a possible 3-week short course intro. for this cohort in multi-modal ways of knowing including, artistic and indigenous methods of sense-making. Diversity of perceptual registers and thinking like/with an artist to help grads do research differently, become thought leaders in addressing human and environmental resilience.

Meeting Notes, JK:

- Indigenous practices and arts research both provide alternative ways of knowing. Both were once highly valued. They were both subsequently disparaged. There is now a new appreciation for Indigenous ways of knowing. What might arts research learn from this positive development?

- The importance of place: International resonance given that the Sonoran Desert environment anticipates the future in many other places. Partnerships with Morocco, Mexico, Israel.
- Two goals: Thinking like arts researchers and thinking with arts researchers.
- AIR is very strong in the natural sciences and to some extent in the social sciences. Sharon is committed to bolstering the arts and humanities.
- Liz Patterson previously worked on land issues. Within AIR, she will focus on supporting interdisciplinary research.
- Julia Glennon has been hired to work in Research and Development Services with a focus on sustainability. She will develop workshops, for which there are some funds. This could be an opportunity for arts research. (Julia was previously Jonathan Mabry's assistant at the Tucson City of Gastronomy, where Jonathon worked with her. Before that, she worked with Gary Nabhan on heritage food research.)
- There is currently a full proposal for a professional masters program, with the first class expected in 2024. It will offer an MS in resilience practices, a 2-year program. There could be an arts and humanities piece, possibly a course.
- Resilience is the ability to withstand and to respond to environmental shocks. The focus is both on human societies and ecosystems, so that communities and ecosystems are not destroyed. Arts can help people to become more resilient.
- Possible course on sense of place and ways of knowing.
- Tumamoc has been moved back into AIR.

Biosphere 2 - John Adams and Kevin Bonine, GH, JK, EM

Meeting Notes, JK:

- Previous collaborations with artists: dance and music performances that used B2 spaces such as the lung, and that engaged B2 audiences (but didn't really engage the science).
- Readymade audience of 100,000/year. This audience could be used to research artistic engagement.
- Importance of reaching the hearts of visitors to enact behavioral change with an impact on Biosphere 1. This requires artistic engagement.
- "There's not a lot of difference between the best art and the best science. They both involve thinking about something new."
- Current research projects: (1) geochemistry of the terraforming processes, with a social scientist; (2) thermal tolerance of coral response to heat and experimentation on coral strains that may be more heat tolerant; (3) drought response in tropical rainforests, with monitoring of stress including measurement of volatiles. These projects have the benefit of scale and topographical context, but experiments can be undertaken only serially because there's only one facility. Also of note: B2 is distinct from e.g., large aquariums because B2 allows researchers to set parameters away from optima and to observe biotic and abiotic response.
- Previous artist-in-residence program: Problematic because of insufficient resources and artists' tendency to dwell on B2's past instead of present research (a general problem with how artists engage B2).
- B2 remains unique. Nobody is building a B3. This makes B2's work all the more vital and the need to communicate it to the public all the more important.

- The need to incentivize faculty, who may see artistic collaboration as a distraction from their research. (A fancy name? Financial resources? Grad student art-and-science fellows?) On grants that require an outreach dimension, it's an afterthought, which presents a challenge for B2 administrators, but also may be an opportunity. (A Department of Afterthoughts...?)
- Letting artists loose to reorganize the visitor experience at B2 so that it isn't so linear: B2 is open to artistic experiments with the audio tour and audience experience in general. This could initially be done for a select audience (or self-selecting audience) and the most successful ideas could be integrated into the standard tour.

EM

- Person studying collaboration: (Jennifer Croissant)
<https://sociology.arizona.edu/people/jennifer-croissant> researching the researchers' collaboration. Other contact for this project, Scott Saleska
<https://eeb.arizona.edu/person/scott-saleska>.
- B2 Innovative Teaching Fellows program incentivizes faculty to integrate B2 into their courses.
- Cost of staying is \$100. per day so this discourages long term residents.
- Recent article in Scientific American
<https://www.scientificamerican.com/article/biosphere-2-the-once-infamous-live-in-terrarium-is-transforming-climate-research/>
- Gail Pickering currently working on a project recording sounds in the biomes, B2
<https://www.gailpickering.com/> (Aaron Bugaj will know more about this)
- Good documentary;
<https://www.thewrap.com/spaceship-earth-film-review-biosphere-2-documentary/>

Bio5 - Jennifer Barton, GH, JK, EM

Meeting Notes, EM:

- Barton said, 20 years ago Bio5 was innovative because we had plant science and engineering in the same institute. Now that is more common so what is the future of Bio5?
- They do diagnostics and therapeutics, interested in technology acceptance and behavior change related to the medical, like cancer prevention.
- They are interested in knowing what people want. The arts can be useful in this.
- They focus on: showing impact, translating discoveries, and workforce development because they are TRIF funded.
- Several projects connecting the arts with mental and physical health are underway.

Specific People mentioned:

Kasi Kilbaugh (Health Science Design)
Kelle Hyland, BIO5 Outreach and Development
Mike Dake, VP Health Sciences

Meeting Notes, JK:

- Barton was briefly the director of UAMA, though this was due to administrative needs at the time. She says that she has no real knowledge of art. Nonetheless it gave her insight into how art museums work.

- Bio5 was created to foster cooperation between people with expertise in different fields. People involved in Bio5 are specifically interested in interdisciplinary and transdisciplinary work.
- The creative work of engineering involves discovering needs, writing up specs, determining what technologies might be appropriate, developing technologies to address the specs, and testing the results against the specs. But even the most beautiful tech fails most of the time because people don't think about the cultural environment in which it will need to work. Success depends on meeting a technical need and also convincing people that the technology will be good for them. The arts might potentially address this cultural dimension. (This is especially pertinent in preventative medicine, e.g., skin cancer, where changing behavior is especially important.)
- When Bio5 was founded, the idea that a plant scientist would talk to a medical engineer was considered radical. Now it's routine. Barton is therefore interested in finding the current equivalent to interdisciplinary science (i.e., radically new approaches to research today), so that Bio5 can continue to break new ground. She acknowledges that there is still very little interdisciplinary collaboration between scientists and people in other fields including the arts, humanities, etc., and that this could be an innovative approach to research.
- Health Science Design Program: Problem of how to create medical devices that people want to use and spaces that promote wellness. These design challenges can potentially benefit from the arts.
- Bio5 receives TRIF funding, so Bio5 needs to show impact (economy, workforce, health). This takes good communication, which can benefit from the arts.

Follow up

Jonathon will follow up with Jennifer regarding opportunities for artists to work with Bio5 to explore possible futures for medicine and health through public exhibitions that showcase speculative medical advances, integrating public opinion in the research and development process. He will also follow up with her about the potential of artists to creatively engage the translation process from the lab to market.

Ellen is working with RDS to convene an affinity group interested in arts and health.

Center for Astrobiology - Dante Lauretta, Corey Knox, Shesh Vinay, JK,EM (recorded)

Meeting Notes, EM:

- New center will be located on the UA mall, across Cherry street from the planetarium (\$750,000. of support for 5 years from RII).
- Front yard, passed by thousands of students every day and shaded side yard are opportunities for art projects to connect outer space research with unique qualities of place. Extreme environments and extremophiles.
- Dante is Interested in how his work can reveal the origins of life and possibly consciousness. Committed to bringing Astrobiology to the public with big bold ideas (What is life?).
- Corey stressed their mission to center diverse communities, bringing together applied humanities, science, and education research.
- They want the lobby to be exciting, inviting and informative. Great opportunity to request art funding to transform their lobby and outdoor spaces.

Confluentcenter - Javier Duran, Yadira Caballero, GH, JK, EM

Meeting Notes, EM:

- The Humanities Initiative is to work with/in community to counter research as an extractive machine.
- They don't embed artists but partner with them.
- Currently managing 48 projects funded by a Ford Foundation Grant (through the library) on archiving and cultural heritage.
- NEH grant to preserve cultural heritage supported: the Gem and Mineral Museum, UA Press Indigenous publishing focus, Borderland Initiative, and African American Museum.
- "Tales from Tumamoc" recorded stories from people on Tumamoc Hill, all recordings available through Confluentcenter.
- Photographer, Bill Hatcher was involved.
- Tohono O'odham PhD student
- *Where the Clouds are Formed*, exhibition involving Ophelia Zedida.
- Art space in Hermosillo Sonora, maybe go down as a "delegation" to see what the possibilities are.
- They designate community partners as "creative scholars" so they have more flexibility in paying them.
- Residential space badly needed for visiting scholars and artists.

Meeting Notes, JK:

- The term *creative inquiry* has been used by the Confluentcenter as a stand-in for any research that is not science. Initially it was the least challenging term to use for something that did not exist on campus 30 years ago.
- Confluentcenter has a strong commitment to community engagement as an antidote to extractive research by the university.
- Show & Tell sessions are used to connect with the community.
- Library project with a focus on archiving. Communities need to build their own archival process.
- Archiving can be creative, involving artists. There is the potential to challenge epistemologies. It's also an opportunity to address extractiveness, appropriation, and issues of representation.
- Funding for the Art Institute on Tumamoc Hill came from Confluentcenter. But it was problematic because expectations were not shared between the stakeholders.
- One major challenge for visiting artists and scholars is the lack of residential space on campus.
- Confluentcenter has an interest in cultural heritage, and has NEH funding for a project with UA Press, the Mineral Museum, etc.

Follow up

Jonathon will follow up with Javier about their overlapping interest in creative archiving as a means of challenging existing taxonomies and epistemologies.

Data Science Institute - Nirav Merchant, Director, JK, EM

Meeting Notes EM:

- Nirav said, the more data people see the less likely they are to change what they think and how they act. We lack interpretive frameworks between data and willingness to act. We need to care as much about the frameworks as we do about the data.
- This institute helps people manage data in all disciplines and in so doing anticipate futures.
- Generative AI is going to change everything about data imaging and visualization.
- He wants to improve the systems for connecting student workers with research centers. He is interested in this campus wide but has particular interest in working with art/design students.
- Art students Monica Lent, Mariah Wall, and Katie Yung work, or have worked, in his lab doing illustration and UI/UX.

Specific People Mentioned:

Stephan Luberoff
 Steve Rains (Health Communication)
 Mimi Nicter (medical anthropologist)
 Jand Bonbaur? (UITS)

Data Science Institute - Follow-up Meeting recommended by Nirav with Deputy Director, Maliaca Oxnam, JK and EM

Meeting Notes, JK:

- AI is a confusing topic for many people that needs to become “touchable.” Art can facilitate conversation.
- Creation of scenarios: People tend to think very linearly. They don’t know how, when, or why to bring in the artistic dimension.
- Challenge of time commitment: Everyone is constantly working to bring in research funding to support their lab and pay for their research. Non-tenured faculty are focused on tenure requirements (which tend to be uniform across universities and therefore difficult for the administration to change). The most creative faculty are either very new or very senior.
- Art is underappreciated in design-oriented computer science fields such as UX.
- Putting art on the walls can have an impact on researchers and their research. They see art over and over again and ask “how do people know how to do that?” The new building is a good opportunity for exhibition of art.
- The new data lab (when they move to the new research building on the mall) will be a place for researchers to go for support on their projects, including support on visualization. This could be a good place to offer artistic perspectives and generate interest in art. It could be playful or instructive.
- The interdisciplinary communications gap: Researchers don’t know how to explain their work to each other, an impediment to collaboration. As a result, the institute is running two training programs (funded as part of the Strategic plan), one related to resilience and the other to health science. These could be opportunities to bring in the arts translationally. (Students from different disciplines are in these classes together.)
- The impact requirement for science grants: This is a problem for scientists and may be an opportunity because the arts can be a means of communication.
- Small and large arts initiatives are both important, and both of interest to the institute.

EM

- Data training is funded by UA Strategic plan. Twelve graduate students get \$7500. per semester to attend two meetings a week. In the first one they learn new skills, related to data, in the second one they reflect on how it is related to their research. Arts Research perspectives and approaches could easily be integrated into this program. Demonstrating how they can bring arts research into their work. Imaging most likely is already part of the training.

Follow up

Jonathon will follow up with Nirav and Maliaca about developing workshops in which researchers in diverse fields use artistic expression as a common language for collaborative problem-solving. He will also follow up about the potential for artists to enlarge the impact of innovations at the tech transfer stage through creative misapplications.

The workshop, Sculpting the Future was inspired by this conversation.

Institute for Computation & Data-Enabled Insight - Barney Maccabe, director, JK, EM (recorded)
(Scheduling Teresa Saeed, tsaeed@arizona.edu)

Meeting Notes, EM:

- Quote on the website. "Beyond our people, data is our most valuable resource for expanding human potential."
- Barney was recently brought in from Oak Ridge National Laboratory by John O'Neil and Betsy Cantwell to create a new transdisciplinary institute focused on data analysis and high performance computing and to build community by bringing data science currently happening in several places together.
- He was at U. of New Mexico also for several years where he worked with ARTSLab, (Art, Research, Technology, and Science) an interdisciplinary center for emerging media with an emphasis on immersive and interactive technology
<https://finearts.unm.edu/venues/arts-lab/>. Related to what CFA is trying to do with the Live and Immersive Arts BA led by Peter Torpey.
<https://sxsw.arizona.edu/person/peter-torpey>
- We began by talking about the agency of matter and early debates about scientific methods. He's interested in defining humanness in the face of AI and what it means for the future of humanity.
- He sees Arts research and data as foundational to these challenges. Talked about how data connects things and maps back to reality. He plans to host GPT Chat working groups, help faculty with how to address Chat GPT in syllabi and course work, lecture series, seminars.
- We discussed science as interested in the measurables, art as interested in the immeasurables. Jonathon pointed out that it's our methods of measurement that determine what we can measure.
- Barney mentioned the book THE SEVEN MEASURES OF THE WORLD.
- I think it was Barney who mentioned ASU's Decision theater, Analytics, predictive modeling, integration and convening expertise combine to allow decision-makers to understand complex problems and the consequences of decisions before they are made.
<https://dt.asu.edu/>

- Zoom Recording
 - https://arizona.zoom.us/rec/share/NQg4W60m1q5w_V2OJEKHaXHlqGATff-bgkJsVnm_3GP_FSjdQA8tZjcEA2DwlgmL.bwnERbszaOc-5gBC?startTime=1687471295000

Lab of Tree-ring Research - David Frank and Charlotte Pearson, JK, EM

Meeting Notes, EM:

- Remodeling the building which will create a new space for hanging art on the wall. They are interested in working with art and artists seemingly with in-house staff.

Follow up

Jonathon has followed up with Charlotte about her research on multiproxy data (i.e., correlating tree ring growth with astronomical events, which overlaps with his interest in constructing narratives from multiple sources including nonhuman narrators. He will meet with her in October to further explore possibilities for collaboration.

Research Innovation Impact (RII) - Jim Buizer and Elliot Cheu, (Interim VPR) JK, EM

Meeting Notes EM:

- Elliot encouraged us to lead with a framework of Arts Research, then follow with project/examples. Elliot clarified that there are 16 official RII centers.

UA Space Institute- Tim Swindle and Erika Hamden, EM, JK

Meeting Notes EM:

- Topics: Tim said he's most familiar with "The Studio" at JPL, a model of artists working with space content/data.
- Quote from these artist/designers, *"While we do not solve equations or engineer landing gears, we do look at the world differently than a scientist or an engineer. We organize their information and ask them questions that their peers do not ask, with the hope that it will help them see their incredibly complicated ideas in a new way. Or, as we say, "help them think through their thinking".*
- When asked what she would like to know which may not be possible with her research approach and methods, Erika responded, "I am not interested in what can't be known. I only want to know what I can know."

Follow up

Jonathon has followed up with Erika on her research about ultraviolet detector technology, ultraviolet-visible spectroscopy instrumentation and spectroscopy. She is advising him on a project in which he is imaging the UV markings on flowers visible to pollinators, part of his research on nonhuman aesthetics.

UA Space Imagery Center is relevant to the conversation but was not discussed: <https://www.lpl.arizona.edu/sic>

Udall Center- Bob Varady and Andrea Gerlach, EM, JK

Meeting Notes, EM:

- Topics: Water governance, recalibrating ourselves, co-producing with community, enfranchising other species,
- Of interest: Jonathon's Fluvial River Time project.
- Discussed: 1) Hosting a series of luncheons for water-related Udall research faculty with Jonathon in October. 2) Exploring the possibility of funding an external artist Udall fellow.

Specific people mentioned by Bob in the meeting and after:

Thomas Christiano, Philosophy
Adriana Zuniga, river restoration in Nogales, Rosemont copper mine.
Laura Lopez-Hoffman, environmental policy
Chris Walter (?)
Courtney Crossen (CAPLA)
Native Nations Institute: Stephanie Carroll, Miriam Jorgensen, Stephen Cornell,
and Joan Timeche
Plant Women Resilience Network (?)

UITS Research Technologies - Jeremy Frumkin, Devin Bayley, JK, EM (recorded)

Meeting Notes, EM:

- Research Technologies Department of UITS has three supercomputers that are dedicated to all University researchers.
- Devin's DataViz role involves 1) discovery 2) outreach and communication
- Jeremy talked about business model: horizontal skills (AI) and vertical skills (discipline specific)
- We talked about DataViz (SciViz and InfoViz) and Art as filters where data is poured in and something else comes out "meaning"?
- Devin does the DataViz Road Show
- Devin recommended several people for us to follow up with:
 - Francesca Samsel <https://www.youtube.com/watch?v=Dil5FoXCFgM>
 - Jeff Oliver, library <https://lib.arizona.edu/people/jeffrey-oliver-phd>
 - Joshua Levine, associate professor in the [Department of Computer Science](#) Stephen Kobourov, <https://www2.cs.arizona.edu/~kobourov/>
 - Data Science Alliance k- 12 (?)
- Link to Zoom Recording:
 - https://arizona.zoom.us/rec/share/_Y7pDo63gfzt21OLEEV3gWe5zSwH8odc86c3v7J9CtwcdxveXMh5hdtc5XTCyw24.fq58KqIZV5GAslkr

France-Arizona Institute - Joaquin Ruiz, GH, JK, EM

Joaquin is setting up a follow up meeting with people we should talk to.

Meeting Notes, JK:

- Grand Challenge focus areas include the future of food, energy, and water, with arid environments such as the Sonoran and Negev Deserts as especially interesting cases.
- Grand Challenges are decided by CNRS leadership in partnership with Joaquin and his team at UA. Climate, food, and health are major areas.

- PhD students from CNRS and UA can collaborate through the Grand Challenges program.
- France-Arizona Institute is working with partners in Mexico City and the State of Sonora.
- Joaquin has connections to the French Consulate in Los Angeles (which is the consulate responsible for Arizona. He also has connections to the science attaché in DC.

Post Meeting, Developing Ideas

Udall

One or two lunches could be organized while Jonathan is here in October on broad themes such as time, place, and community, all relating to water if that resonates most with the center. External fellowship, Full year beginning Jan. 24. Project: game and book he's currently developing as a Berggruen Institute Fellow. Jointly-sponsored (CFA, RII, AIR) including a series of workshops and conversations could be cross-listed since the idea would be for everything to converge and new collaborations to emerge. EM

Data Science Institute

EM

K Map/ serendipity engine. Currently not functional for the arts. How could it be opened up? What would it look like to include other than scientific knowledge (poetic, experiential, embodied, indigenous) and interests and passions in which people have not demonstrated expertise?

JK

Bringing Artistic playfulness into the R&D process. This could potentially provide measurable real-world impact that could bring revenue to the university by expanding the UA patent portfolio. We could prototype it inside the Data Science Institute – which is appealing because so many other departments use the Data Science Institute as a resource – but in the long run it might be interesting also to consider embedding arts research in the university's technology transfer office. I'm imagining a space in which new inventions from across the university would be explored by artists before they're patented, generating new affordances, use cases and patent claims by questioning underlying assumptions and applying some imagination. In other words, the tech transfer office would also become a space for technological transformation, transfiguration, transmutation, and transubstantiation.

Notes from Space Institute, outgoing director, Tim Swindle: A list of projects (mostly at UArizona, some elsewhere), with comments. It's a very random list, but may give you some ideas. This is by no means a set of recommendations, just a list of things I've seen tried.

- The Art of Planetary Science (TAPS). Annual show at the Lunar and Planetary Laboratory (LPL), started by graduate students about 10 years ago, now run by later generations. The grad student who led the effort at the start, Jamie Molaro, has now done versions at two or three national meetings. It was very successful at bringing together scientists and people from the arts community, particularly visual arts (there have been attempts to have music associated with it, but personally think those have been less successful).

- Bennuval. Dante Lauretta, PI of the OSIRIS-REx mission, led two events at Fox Theatre in downtown Tucson, trying to connect with the performing arts, and with stories and folklore. I'm not sure how well those worked (I couldn't make it to either one).

- Moon Tree. There's a tree between Flandrau Science Center and the main LPL building (Kuiper) that was planted from seeds that were carried around the Moon by an astronaut, which is known as the

Moon Tree. There was a story in the Daily Wildcat that it looked like the Moon Tree was dying, although it turns out that it's just a non-native species that doesn't even have leaves at a time when the local flora is starting to bloom. So we had an event, jointly sponsored by LPL, the Poetry Center, and the Campus Arboretum (and including an appearance by members of the astronaut's family, some of whom live in Tucson). It was a one-time event, although a sketch inspired by it hangs by the elevator in Kuiper.

- Inside the entrance to Kuiper is a clay sculpture of a lunar crater. It's been there since the 1960s, and the signage had no backstory. It was actually one of a set of 3D models of lunar landscapes that Gerard Kuiper, the founder of LPL, hired a sculptor to produce by trying to make something that matched the appearances seen in telescope images taken under different lighting conditions. In the 21st century, 3D images are generated digitally by combining images of the same area taken by a spacecraft at two different times (we have some of the world's experts on that). We also have a group that was working with 3D printing of things like lunar craters to use to enhance the experience of students with visual impairments. So our 3D modeling group generated a digital image of that same crater, the 3D printing group made a print of it, and it's now hanging nearby, with signage that explains the significance of all of it.

- The Psyche mission, led out of ASU, has a portion of their budget devoted to the arts, so they've had people create various kinds of visual art, poetry, music, dance, etc., related to the mission. Some of it has shown up at TAPS.

- Events at Library Special Collections. The papers of Gerard Kuiper and several other prominent people associated with space at the university are housed there, and they have had special events a couple of times. One was an event of Moon poetry, not necessarily related to the papers, but I think we all co-sponsored it. The other is, I think, more relevant. The great niece of Tom Gehrels, one of the people whose papers are housed, there is an actress, director, etc., at small theaters in England. She did a one-person show based on the life of Tom, which includes being in the Dutch resistance as a teenager (and having his brother die in a concentration camp) before becoming a scientist and ending up in LPL. She did a scaled-down version of the play.

- The College of Science has an annual lecture series at Centennial Hall that draws crowds of 1000-2000 each night. For years, they've had a short musical performance associated with it, though the music wasn't particularly related. This year, they had a local poet compose a poem for each of the lectures. I'm not qualified to judge poetry, but I really liked the last one in particular, written from the viewpoint of the COVID vaccine.

- There's a long-running "Artists and Writers in Residence" program that the U.S. Antarctic Program has, where artists or writers apply for grants to go. That's something that could be copied relatively easily, although it requires the artist or writer to get out of their silo enough to learn what might be interesting to them. I'm very familiar with three grants over the years, two of which I would say were successful. The unsuccessful one was giving a scientist and a professional photographer a grant to produce a book about the Mt. Erebus volcano. The writing wasn't that good, and the photos were published at small scale in black-and-white, so they didn't have impact either. Another grant went to an established science fiction writer, Kim Stanley Robinson, who created the most realistic work of fiction about Antarctica I've seen. The third was for a writer of science non-fiction to join a team searching for meteorites (of which I was a part). That experience was one chapter in a book about meteorite hunters, and is the best description of that experience I've seen. The author, Chris Cokinos, later moved to the English department here, and

was director of the creative writing program, among other things. His next book is about observing the Moon.

- I mentioned the scale model of the Solar System that is being installed on the Mall soon, including illustrations by James Tuttle Keane, a scientist at JPL who is in demand from scientists for his artistic talents.

- And I've seen various astronomy-based musical pieces that have been composed, although I frankly haven't found any of them particularly good, not as good as the play or the best of the artwork and the poetry.

Five Site Focus:

1. Biosphere 2 (Follow up visit planned)
2. Experimental Ranges (four including Santa Rita) (contact, Brett)
3. Mount Lemmon Sky School (contact to TBD)
4. Tumamoc (contact, Sharon Collinge)
5. Health Sciences and/or Data Science and/or Bio5