ADVANCING INCLUSION

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(All opinions expressed in this talk are my own and not necessarily those of NOIRLab.)
Recipe for an Astronomical Inclusion Revolution

✓ Recognition

✓ Informal Institutional Change

Formal Institutional Change

Incentives w/

Consequences & Rewards

Cultural Change

Harness Innovation through Research Inclusion
Formal Institutional Change

Access

Science leadership and policy making activities (e.g., committee membership and input to committees) often come from too narrow a group of scientists. Narrow groups often underestimate barriers to inclusion that stymie good ideas.

Policies

Policies and procedures need to be regularly monitored and re-assessed for intended effectiveness. We need to address the proper problems and concerns.

Incentives

Research funding (e.g., grants) is currently not tied to metrics or progress on the inclusion of underrepresented and disenfranchised groups. “Broadening Participation” must be about workforce and research participation, not just public outreach and education.

Leadership

Discussions around ‘inclusion in science’ are challenging and often shunned. Need high level policy groups to engage in the discussion for there to be traction.
Access is Crucial

- **Advisory Access** - Access to decision making on issues of science direction
- **Scientific Resource Access** - The availability of resources to support scientific research

Norman, 2018, ASP

[Image: Can Big Data Lead an Inclusion Revolution?](https://astrosociety.org/file_download/inline/12faca89-b5f4-4e59-aa62-ce7ad5add47c)
Axes of Expertise and Diversity

“I didn’t know what I didn’t know.”
- Paula Stone Williams, a transgender woman

- Scientific expertise
- Technical expertise
- Project affiliation and non-affiliation
- Personal experience in science
  - Institutional affiliation
  - Career phase and work status
  - Personal identity
Scientific Resource Access and The Evolution of Insider Status

Josh Peek, et al., 2019
Diversity, **Equity** and Inclusion

**Equity** ≠ **Equality**

The quality of being fair;  
To provide all with the support they need to reach and exceed goals;

The state of being equal.

The focus is on outcomes.
Funding for Scientific Resource Access

https://astroarchive.noao.edu

https://antares.noirlab.edu

https://datalab.noao.edu/

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Policies that support DEI

Open Skies

Pros: Anyone with a good idea can apply for merit based time

Cons: Institutions with private (large) telescope access have advantage

Mitigation: Focus on implementation and regular assessment, revision

Dual Anonymous Review

Pros: Better focus on the science of the proposal

Cons: Can conflict with other science mission priorities

Mitigation: Focus on implementation and regular assessment, revision
RESEARCH INCLUSION
Valued as part of how we assess scientific merit

• Policies and procedures that support mutually beneficial partnerships

• Opportunities for scientific networking and collaboration building

• Technical infrastructure that enables participation

• Provide science platform/tools training
We must be deliberate about HOW we embrace and practice Diversity, Equity and Inclusion to advance cultural change in Astronomy and Astrophysics.

- **ACCESS IS CRUCIAL**
- **POLICIES REVIEWED**
- **RESEARCH INCLUSION VALUED AS SCIENTIFIC MERIT**
Backup slides
We need leadership from leaders

Need high level policy groups to engage in the discussion for there to be traction (e.g., insist on funding for inclusive programs and meetings, access and resources for the broadest community).

Bulletin of the AAS, 51(7).

**Tying Research Funding to Progress on Inclusion**
https://baas.aas.org/pub/2020n7i014

Managing groups and organizations proposing to administer projects for agencies should be asked to demonstrate competency with respect to diversity and inclusion metrics.

**Recognizing and Supporting the Growing Importance of a Tech Savvy Astronomy and Astrophysics Workforce**
https://baas.aas.org/pub/2020n7i018

To ensure a workforce capable of taking advantage of the computational resources and the large volumes of data coming in the next decade, we must identify and support ways to make software development training widely accessible to community members, regardless of affiliation or career level.

**Providing a Timely Review of Input Demographics to Advisory Committees**
https://baas.aas.org/pub/2020n7i024

We recommend that advisory committees that collect community input, (e.g., the Decadal Survey review committee), also collect, compile and review input demographic data before finalizing reports, (e.g., the final 2020 Decadal Survey Report).

**Astro Big Data and the Inclusion Revolution**
https://astrosociety.org/file_download/inline/12fa
ca89-b5f4-4e59-aa62-ce7ad5add47c

The goal of inclusion will not be reached without a sustained, committed backing of the full big data enterprise. It is crucial that the scientific community recognize that investments made in pursuit of inclusion, by way of big data, are the way we advance the field of astronomy and astrophysics into the next century and beyond.
The Anecdote

Big Astronomy Project

- Cutting Edge Technology
- Innovative Methods
- Education
- Public Outreach

Great Science
- New Areas of Science

Community Collaboration

Broadening Participation
- Pipeline Building
- Professors at HBCUs
- And their Students
- Partnered with Big Astronomy Project Staff
- Modelled on a successful program
The Anecdote

Big Astronomy Project +10 years

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Research Inclusion

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History: First Decadal Survey in 1964

Sections about the astro-professional workforce, its development and how to modify workforce demographics

I Introduction and General Statement
II The Present Position in Ground-Based Astronomy
   Theoretical Astrophysics
   Optical Astronomy
   Radio Astronomy
   The dilemma of the astronomy graduate school in 1964
   Manpower
III A Program for construction of Optical Telescopes
IV A Program for construction of Radio Telescopes

Survey concern: Not enough telescopes & instruments to get good data for theses.