



Springboard to action

**Recommendations for improving
equity, inclusion and diversity
in Astronomy**





— Patricia Brogna, Lina Canas, Susana Deustua, Sonia Duffau, Garry Foran, Beatriz Garcia, Jimi Green, Jarita Holbrook, Tune Kamae, Chiaki Kobayashi, Annette Lee, Thelma Oppelt, Amelia Ortiz Gil, Francesca Primas, Prospery Simpemba, Irsad Tio Majid, Lucianne Walkowicz, Junichi Watanabe, & the IAUS358-SOC

10 January 2021

Cover: Participants at the first IAU Symposia on Astronomy for Equity, Diversity and Inclusion held in Mitaka Campus of the National Astronomical Observatory of Japan (NAOJ).
Credit: NAOJ/IAU OAO

Internal cover: Detail of a broader image of the Carina Nebula, a massive star formation region in the southern skies. The original image was taken in infrared light using the HAWK-I camera on ESO's Very Large Telescope.
Credit: ESO/T. Preibisch

Preamble

Equity, inclusion and diversity in Astronomy means the promotion and implementation of policies, structures and programs that ensure equity of access and opportunity to every individual who aspires to engage with or participate in the fields of Astronomy and Astrophysics.

It is axiomatic that every individual is unique and has their own set of intersecting identities that should be honoured and valued. These may be typical or atypical, permanent or temporary, congenital or acquired, visible or hidden, and may be disclosed or undisclosed for personal safety or other reasons. Accordingly, the International Astronomical Union and its member organisations commit to the development of an environment in Astronomy that enables the full and active participation of any individual to a level commensurate with their aspiration, and regardless of such factors as age, gender, sexual orientation, ethnicity, cultural or linguistic background, geographical location, neurological or

physical ability, religious or political beliefs, or their socio-economic or immigrant status.

It also means respecting local and Indigenous knowledge¹, defined by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in [1], while raising awareness of the distinctions between traditional knowledge, science and pseudo-science.

The realisation of such a goal necessarily requires the involvement of everyone associated with Astronomy and Astrophysics, regardless of their role or employment status, including: administrators, academic faculty members, researchers, facility support staff, educators, students, outreach professionals, etc.

This being said, it is important to note that barriers to equity are multi-dimensional and interdependent; they may be systemic, deliberate or unwitting, arising from both conscious and unconscious biases, and are often embedded in the educational system. Evidence-based research in education, learning and

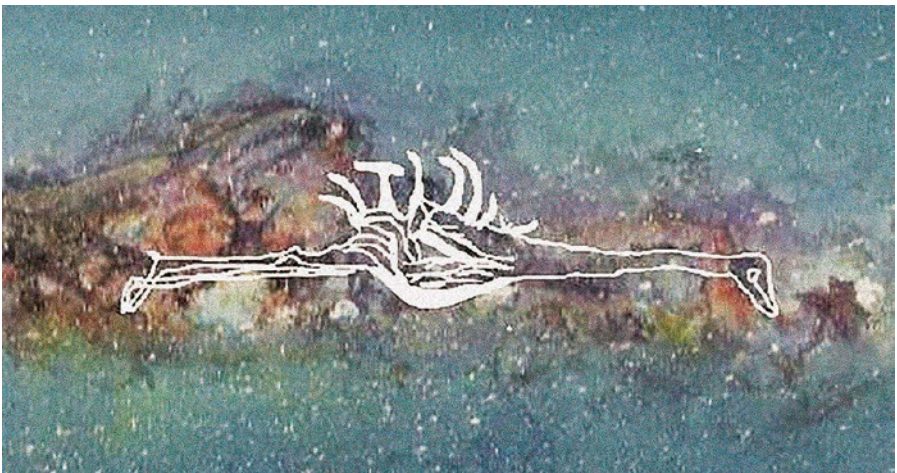
1 See the Explanatory Supplement at the end of this document

child development indicate that intentional, well-integrated, and well-scaffolded instruction provide each child with academic, social, cultural and emotional skills [2]. An effective response will require the identification of existing sources of inequity, and an understanding of how they evolve with time.

While the informed development of mitigating strategies and their

effective implementation depend crucially on the availability of relevant data, absence of such must not be used as an excuse for inaction against a status quo that inequitably impedes the entry, retention or progress of any individual.

The listed recommendations are a first step – a springboard that is hoped will lead to long-term, sustained actions.



A Milky Way dark constellation of the Moqoit indigenous people in Argentina, representing Manic. This dark constellation image is in a region near the Coalsack. The Coalsack is at the head of the Manic. Painting by Jessica Gullberg, constellation from Alejandro Lopez.

Leading the way: Recommended actions for the IAU

The mission of the International Astronomical Union is to promote and safeguard astronomy in all its aspects (including research, communication, education and development) through international cooperation. As stated in its 2020-2030 Strategic Plan [3], the IAU promotes the inclusive advancement of astronomy in every country, strives to be an inclusive organization in which all astronomers are welcome at all its activities, and strongly supports the notion that astronomy as a whole is enriched when there is a diverse body of astronomers.

- 1.** Accordingly, the IAU and its Offices will work to increase the participation of under-represented and unrepresented populations in Astronomy, and:
 - will actively research and implement best diversity, equity and inclusion (DEI) practices in the execution of all its affairs;
 - will show leadership by example with respect to diversity of representation in the composition of its decision-making bodies;
 - will make recommendations to member organisations and individual members with respect to policies and actions that promote equity of access to, and greater diversity in, Astronomy education, research and community activities;
 - will encourage its members to increase the diversity of representation at meetings, conferences and on decision-making bodies, and provide context sensitive consultation and advice on the implementation of these recommendations;
 - will provide sessions on equity, inclusion and diversity at the General Assembly, Symposia and Regional Meetings.

A session can be a workshop, lunch meeting, round tables, invited talk, topical session, exhibits, outreach activities etc.;

- will distribute to conference organisers guidelines on diversity, equity and inclusion, and unconscious bias to support the preparation and realisation of genuinely inclusive meetings and symposiums held under its auspices, whether as in-person, virtual or hybrid events;
- will work to provide documents, publications and online material produced under its auspices that:
 - use gender-neutral language;
 - are accessible to all users, irrespective of their disabilities and/or abilities consistent with international standards and best practices [4] and utilizing User Centered Design [5]

2. The IAU Executive Committee Working Group on Astronomy for Equity and Inclusion:

- will disseminate practices and lessons learned in diversity, equity and inclusion through its communication channels to member countries and individual members;
- will compile and curate a collection of useful publications and resources from around the world that are relevant to the subject of DEI in Astronomy, and make these available via the IAU website;
- will prepare a proposal for the evolution of Inspiring Stars into a sustainable project, with the paired goals of : (i) disseminating 'Inspiring Stars' around the globe and (ii) training teachers in how to use Astronomy can become an accessible vehicle for visually impaired and blind students in the learning of science.

3. IAU Division C (Education, Outreach and Heritage) will accept nominations of PhD theses in the area of equity, inclusion and diversity in Astronomy for the annual IAU PhD Prize program.

Recommended actions for IAU National and Individual Members

These are actions that are encouraged by the IAU. The IAU can only make recommendations and provide information on best practices but they cannot be mandated by the Union.

- 1.** National and individual members are encouraged to work with their governmental organizations, educational institutions, and other entities to support structural changes in favor of diversity, equity and inclusion, and collaborate with them on implementation and the development of achievable metrics of success.
- 2.** National and individual members are encouraged to maintain statistics on diversity, equity and inclusion in Astronomy, and make those available on public websites.
- 3.** National and individual members are encouraged to work with governmental agencies and educational institutions to offer scholarships that support the goals of equity of access and increased diversity for:
 - primary and secondary school students
 - university students and PhD students in the physical (exact) sciences
 - individuals preparing to be science teachers

References

1. <http://www.unesco.org/new/en/natural-sciences/priority-areas/links/related-information/what-is-local-and-indigenous-knowledge/>
2. Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B. and Osher, D. (2019), Implications for educational practice of the science of learning and development, Applied Developmental Science. DOI: 10.1080/10888691.2018.1537791
3. IAU Strategic Plan 2020-2030, (2018).
https://www.iau.org/administration/about/strategic_plan/
4. Díaz-Merced, W., Murphy, N., Aarnio, A., Monkiewicz, J., Nordhaus J., and Tuttle, S. (2017). Improving Accessibility of Astronomical Publications.
<https://visavis.ucr.edu/wp-content/uploads/2018/09/diaz-merced17.pdf>
5. World Wide Web Consortium (W3C). How to Make Your Presentations Accessible to All, Web Access initiative, Strategies, standards, resources to make the Web accessible to people with disabilities.
<https://www.w3.org/WAI/teach-advocate/accessible-presentations/>

Resources for Diversity, Equity and Inclusion

The IAU Executive Committee Working Groups on Astronomy for Equity and Inclusion and Women in Astronomy have begun collecting references on initiatives around the world and resources on best practices, which can be accessed via the links at: https://iau.org/science/scientific_bodies/working_groups/259/



A group of girls exploring the tactile moon at a school for blind girls in India.
Credit: Divyadarshan Purohit & Amelia Ortiz-Gil

Acronyms and Definitions

Diversity includes all the ways in which people differ, encompassing the different characteristics that make one individual or group different from another¹.

Equity is the fair treatment, access, opportunity, and advancement for all people, while at the same time striving to identify and eliminate barriers that have prevented the full participation of some groups².

Inclusion is the act of creating environments in which any individual or group can be and feel welcomed, respected, supported, and valued to fully participate².

Individual Members, IAU: Professional scientists whose research is directly relevant to some branch of Astronomy.

National Members, IAU: Organizations representing national professional astronomical communities, desiring to promote their participation in international Astronomy.

DEI	Diversity, Equity and Inclusion
IAU	International Astronomical Union
UCD	User Centered Design
UNESCO	United Nations Educational, Scientific and Cultural Organization
WG	Working Group

1 <https://www.racialequitytools.org/glossary>

2 <https://independentsector.org/resource/why-diversity-equity-and-inclusion-matter/>





www.iau.org