

**FM2:
Astronomical Heritage: Progressing the
UNESCO-IAU Initiative**

Focus Meeting 2, “Astronomical Heritage: Progressing the UNESCO–IAU Initiative” Introduction and overview

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Abstract. Marking seven years of formal cooperation between the IAU and the UNESCO World Heritage Centre to implement UNESCO’s “Astronomy and World Heritage” Thematic Initiative, this Focus Meeting reviewed achievements, challenges, and progress on particular World Heritage List nomination projects.

Keywords. Astronomical heritage, World Heritage

1. Introduction

Since 2008 the International Astronomical Union has worked with the UNESCO World Heritage Centre to implement its “Astronomy and World Heritage” Thematic Initiative (whc.unesco.org/en/astronomy/). Through deliverables such as the *ICOMOS–IAU Thematic Study on the Heritage Sites of Astronomy and Archaeoastronomy* (Ruggles & Cotte 2010) and the Portal to the Heritage of Astronomy (www.astronomicalheritage.net), it has been influential in developing broad criteria for assessing the heritage values, and ultimately the potential Outstanding Universal Value (needed for inclusion on the World Heritage List), of cultural sites of all ages relating to astronomy. Since 2012, representatives of the IAU have begun to work directly with State Parties to help develop particular potential nominations for inscription onto the World Heritage List.

This Focus Meeting set out to review achievements to date, discuss some of the most challenging issues in the assessment of different types and categories of astronomical heritage, and evaluate progress in projects focusing on particular potential nominations.

Highlights included Teasel Muir Harmony and David DeVorkin’s panel discussion on “The Development of Mauna Kea as an Astronomical Site”; an hour-long presentation on Polynesian archaeoastronomy by archaeologist Patrick V. Kirch; and two very productive sessions focusing on the preservation of dark skies in a World Heritage context, organised in collaboration with FM21 on “Mitigating Threats of Light Pollution and Radio Frequency Interference”.

A taster event held at the Bishop Museum in Honolulu on August 9, two days before the start of the Focus Meeting itself, featured the announcement that the AURA Observatory in Chile has become the world’s first IDA Dark Sky Sanctuary, and the launch of a revised edition of the book *Nā Inoa Hōkū*, long regarded as a definitive source of reference for anyone studying the use of astronomy in Polynesian voyaging, by Hawaiian authors Rubellite Johnson and John Mahelona working in collaboration with Clive Ruggles.

PDF versions of presentations in this Focus Meeting, as available, can be found on the FM2 page on the UNESCO–IAU Portal to the Heritage of Astronomy (www.astronomicalheritage.net/index.php/community/news-events/focus-meeting-at-iau-general-assembly). Those in the joint sessions are also available on the FM21 pages on the NOAO website, www.noao.edu/education/IAUGA2015FM21.

2. Sessions and topics

2.1. *The implementation of the Astronomy and World Heritage Initiative: achievements, issues and prospects*

This session, intended as an introductory briefing for all participants, featured invited reviews by Anna Sidorenko, Clive Ruggles and Michel Cotte on behalf of UNESCO, the IAU, and UNESCO’s advisory body ICOMOS, respectively.

2.2. *The potential for archaeoastronomical World Heritage sites*

Given increasing interest by various governments in nominating ancient sites connected with astronomy for inscription on the World Heritage List, the second session addressed relevant issues such as credibility (Clive Ruggles) and serial nomination (Juan Belmonte *et al.*). Morgan Saletta pointed out that the astronomical significance may derive from illumination hierophanies rather than observations of celestial targets. A second paper by Juan Belmonte (not included below) addressed the problem of dealing with popular “fringe” theories concerning astronomy that pollute sensible interpretations, even at existing World Heritage sites: this is a particular problem in the case of Egyptian pyramids.

2.3. *Recognizing the twentieth-century heritage of astronomy*

Following a provocative historical perspective by Virginia Trimble, papers by Christina Barboza and James Hesser *et al.* provided case studies of 20th-century observatories in Brazil and Canada respectively, and how they are being, and might be, dealt with as heritage sites. The session concluded with an hour-long panel session organised by David DeVorkin and Teasel Muir Harmony in which John Jefferies and former colleagues shared their recollections and views relating to the history of the establishment of Mauna Kea Observatory, which forms part of the “Windows to the Universe” project (see below).

2.4. *World heritage and the protection of working observatory sites*

Dark skies cannot of themselves be recognised under the World Heritage Convention. However, light pollution not only affects night sky quality but also affects the integrity of other resources and, indeed, whole ecosystems. It is also linked to the issue of energy waste through lighting. These factors affect the sustainable management of both cultural and natural sites, including existing and potential World Heritage Sites.

This—the first of two joint sessions with FM21 (“Mitigating Threats of Light Pollution and Radio Frequency Interference”) dealing with preserving dark skies and protecting against light pollution in a World Heritage framework—focused upon working observatory sites and their dark skies.

The first half of the session featured presentations by several of the key participants in the “Windows to the Universe” project, one of the main nomination projects being advanced within the Astronomy and World Heritage Initiative. This is being led by Chile, but with potential partnership from Spain, the United States and France. In addition to the papers by M. Smith *et al.* and C. Smith *et al.* included below, there was an important presentation by Gabriel Rodríguez, from the Energy, Science & Technology and Innovation Direction, Ministry of Foreign Affairs of Chile, outlining Chile’s plans

to continue to attract and facilitate the installation of international radio and optical observation projects and to protect their exceptional skies. These plans include various initiatives connected with UNESCO's World Heritage programme.

A number of presentations described efforts to protect observatories from light pollution and/or radio frequency interference, in Chile (Pedro Sanhueza, not included below), Hawai'i (Richard Wainscoat, not included below), Arizona and the Canary Islands (Richard Green, not included below), and South Africa (Ramotholo Sefako).

Finally, Rémi Cabanac and Michel Cotte outlined a practical approach to the recognition of Dark Sky places as possible World Heritage sites using the Pic du Midi Observatory as a case study (not included below).

A fuller report on this session will be found in the FM21 pages in this volume.

2.5. Preserving dark skies and protecting against light pollution in a World Heritage framework

This, the second of the joint sessions with FM21, shifted the focus away from cultural sites (modern observatories) onto natural sites and landscapes with dark skies. Following a stunning presentation of nightscape photography by Babak Tafreshi (not included below), Michel Cotte described a way in which the "Windows to the Universe" concept can be elaborated in a heritage context. John Hearnshaw, Dan Duriscoe and Arkadiusz Berlicki then reported respectively on night sky preservation issues at the Aoraki-Mackenzie International Dark Sky Reserve in New Zealand, National Parks in the United States, and the Izera Dark Sky Park in Poland and the Czech Republic (none included below).

A fuller report on this session will be found in the FM21 pages in this volume.

2.6. Observatories, observations and archives: scientific, historical and heritage issues

This session focused upon the challenge of balancing different categories of astronomical heritage and in particular how moveable and intangible heritage can best be taken into account when considering the heritage value of fixed places. It also highlighted two other important potential nomination projects in progress: the "Route of astronomical observatories" project, which is concerned with classical observatories from the Renaissance to the rise of astrophysics (overview by Gudrun Wolfschmidt), and the "Odyssey of human creative genius" project, which is concerned with scientific and technological heritage related to space exploration (overview by Olga Dluzhnevskaya and Mikhail Marov). The remaining papers by Elizabeth Griffin and Areg Mickaelian *et al.* concerned the digitization of plate archives—moveable items of continuing scientific as well as heritage value whose adequate preservation presents a range of challenges.

2.7. Hawaiian and Polynesian cultural heritage relating to astronomy

The centrepiece of this session was a presentation by archaeologist Patrick V. Kirch (not included below) on recent applications of archaeoastronomy to the interpretation of prehistoric monuments in Polynesia. Drawing upon case studies of temple sites in Mangareva and Hawai'i, he demonstrated that Polynesian ritual architecture frequently exhibits regular patterns of orientation, including alignments upon astronomical phenomena such as the solstices and the rising position of the Pleiades. He concluded that Polynesian temples were not only places of offering and sacrifice to the gods but also locations for formal astronomical observations that were crucial for keeping the lunar calendar synchronized with the solar year. Clive Ruggles *et al.* followed with a report on the publication of the revised edition of *Nā Inoa Hōkū* and its implications for the recognition and preservation of Hawaiian star knowledge. This incomparable intangible heritage relating to Polynesian navigation also informs and motivates living cultural traditions.

2.8. *Dealing with movable and intangible heritage in a World Heritage framework*

The final batch of case studies relating to moveable and intangible heritage featured an invited paper by Alejandro López on the potential pitfalls as well as the advantages of recognising living practices as “cultural heritage”. The intangible heritage of living cultural practices also featured in a presentation on native D(L)akota skywatchers in the United States by Annette Lee (not included below), as well as in that on Gufa, a Nepalese cultural ritual, by Pritisha Shrestha, and in the broad comparative study by Sona Famanyan *et al.*

The concluding paper by Rosa Ros and Beatriz García describes how cultural practices relating to astronomy can form an integral part of astronomy outreach activities and suggested important ways of connecting education and outreach on the one hand and history and heritage on the other.

3. Outcomes

In view of several examples of astronomical heritage in danger highlighted at the meeting, such as the prehistoric dolmens of Jordan (presentation by Belmonte *et al.*), an important recommendation to emerge from the general discussions was that the new Commission C4 on World Heritage and Astronomy should—in addition to three Working Groups already proposed to advance the “Windows to the Universe”, “Route of astronomical observatories” and “Odyssey of human creative genius” nomination projects—aim to establish a Working Group on Astronomical Heritage in Danger, which would (unlike UNESCO itself) be able to identify and publicise such cases whether or not the site(s) in question were already inscribed on the World Heritage List.

In view of the importance of preserving dark skies at places whose heritage value, and potential OUV, is largely or exclusively natural rather than cultural, it was noted in discussions that Commission C4 needs to establish firm links and seek cooperative projects with the IUCN in the same way as it does with ICOMOS.

The strong focus upon intangible heritage in the form of living cultural heritage, both in Hawai‘i and elsewhere, led to the question of whether it might be appropriate to recognise some living cultural practices relating to astronomy under UNESCO’s Convention for the Safeguarding of Intangible Cultural Heritage (www.unesco.org/new/en/santiago/culture/intangible-heritage/convention-intangible-cultural-heritage/). This would represent a new avenue for the AWHI, and Michel Cotte considered this in some detail at a follow-up meeting on Hawaiian, Oceanic and Global Cultural Astronomy held in Hilo in the week following the GA (www.astronomicalheritage.net/index.php/community/news-events/cultural-astronomy-meeting-big-island), suggesting Polynesian navigation as a possible case study. On the other hand, Alejandro López has raised a number of critical issues in the very conception of intangible heritage. His observation that, in various ways, the very concept of heritage is defined within, and constrained by, a Western mental framework presents a real issue if it is to be reconciled with the “universal” aspect of OUV (meaning that something should be recognised as valuable by all cultures).

The meeting concluded by identifying a number of important links between heritage, history, outreach and education activities within Division C.

References

- Ruggles, C. & Cotte, M. (eds.) 2010, *Heritage Sites of Astronomy and Archaeoastronomy in the context of the UNESCO World Heritage Convention* (Paris: ICOMOS –IAU)