

Editorial

In 1923, the first planetarium projector, the Zeiss Model 1, was unveiled in Jena, Germany. Two years later, and almost 350 kilometres away, the first planetarium opened to the public in Munich. From 2023 to 2025, the world will celebrate the Centennial of the Planetarium, bookended by these two momentous occasions.

In our opening article, *The stars were just the beginning*, a team of representatives from the International Planetarium Society, including the current president, Michael McConville, take us on a tour of planetarium history, spanning one hundred years of technological innovation and creative ingenuity. They remind us that although planetariums were first imagined as a “window into the Universe”, the stars were truly just the beginning.

In this issue of the Communicating Astronomy with the Public Journal, we present works from under the dome. In our first article, *Evaluation and insights from a sonification-based planetarium show intended for improving inclusivity*, the authors discuss a tested way to make the planetarium accessible to more diverse audiences. No matter the audience, every good planetarium show has a story to tell. In *A guide to communicating astronomy with storytelling in planetariums*, we get a beginner’s guide to writing engaging stories for the planetarium and beyond. Of course, through their storytelling, planetariums convey an incredible amount of valuable information. The article, *Digital planetariums as new tools for conceptual change*, describes how the “allocentric” perspective afforded by planetariums can help learners confront their misconceptions. In Portugal, one planetarium has worked to bridge astronomy education and communication. The article, *Science communication through astronomy education: The creation, implementation, and assessment of Porto Planetarium’s science education strategy*, delivers the important lessons from this case study. One way to engage learners with the planetarium is by directly involving them in its construction. In *Build your own cardboard planetarium: A DIY experience for students*, the authors describe a design for a do-it-yourself cardboard planetarium. Mobile planetariums have become increasingly popular in their ability to bring the planetarium experience to wider and larger audiences. We are excited to share the insights of an expert team in *The NOVA Mobile Planetarium: Ten best practices for planetarium projects based on an astronomy education success story*. The article, *The UNAM/AMT Mobile Planetarium: Lessons learnt on how to run a student-driven mobile planetarium project in Africa*, relays a case study based on the NOVA Mobile Planetarium Project in a unique outreach setting. In our final article, *Empirical study on the digital planetarium system for measuring visual perception of the night sky: Analysis of impact from light pollution and astrotourism*, the authors take a slightly different spin on planetariums. Using the planetarium as a tool, the authors investigate how light pollution and astrotourism experiences can impact perceptions of the true dark sky.

Planetariums are often described as dark sky oases – a space to experience an authentically dark sky in a world whose sky is ever brightening. The articles presented here span the depth and breadth of creative uses for the planetarium. We hope that these works inspire you to engage with your local planetarium and rediscover the awe of the night sky.

As a note to our readers and potential authors: all articles in this issue follow our new guidelines for submission. As with Issues 31 and 32, each article has been reviewed by a member of our Editorial Board and an external Peer Reviewer. We welcome submissions on a rolling basis, and invite everyone to learn about our new Submission Guidelines on our website, www.capjournal.org.

Kelly Blumenthal
Editor-in-Chief and Managing Editor

Cover: This edition of CAPJournal celebrates the one hundred years of the planetarium. In 1923, the Zeiss Model (pictured here in the foreground) was unveiled in Jena, Germany, and two years later, the first planetarium opened its doors to the public in Munich. Since then, we have seen incredible advancements in planetarium technology. The background image is from the state-of-the-art planetarium, the 4D2U (Four-Dimensional Digital Universe) Dome Theater at the National Astronomical Observatory of Japan. Institutions like 4D2U demonstrate the power of planetariums to not only bring astronomy to a wide audience, but also to visualise astronomical data. The background of our front cover is a still image from a show on the formation of dark matter haloes across the history of the Universe using a simulation performed by the NAOJ’s supercomputer “ATERUI”.

Image Credit:

Foreground Image: ZEISS Archive

Background Image: Formation and Evolution of Dark Matter Halos (II. Formation of the Large-Scale Structure of the Universe) ver.2; Simulation: Tomoaki Ishiyama; Visualization: Hirotaka Nakayama; 4D2U Project.



Contents

The stars were just the beginning	4
Evaluation and insights from a sonification-based planetarium show intended for improving inclusivity	6
A guide to communicating astronomy with storytelling in planetariums	13
Digital planetariums as new tools for conceptual change	21
Science communication through astronomy education: The creation, implementation, and assessment of Porto Planetarium’s science education strategy	24
Build your own cardboard planetarium: A DIY experience for students	29
The NOVA Mobile Planetarium: Ten best practices for planetarium projects based on an astronomy education success story	35
The UNAM/AMT Mobile Planetarium: Lessons learnt on how to run a student-driven mobile planetarium project in Africa	43
Empirical study on the digital planetarium system for measuring visual perception of the night sky: Analysis of impact from light pollution and astrotourism	52