

THE UNIQUE ROLE OF THE PLANETARIUM/ SCIENCE CENTRE IN SCIENCE COMMUNICATION

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ABSTRACT

This paper presents a very broad overview of the planetarium community. It is intended to present some basic facts about planetarium facilities, their distribution around the world, and suggestions for how education/public outreach (E/PO) and planetarium professionals (planetarians) can interact to bring astronomy to the public. These suggestions stem from an ongoing survey of planetarians, which asks what E/PO products they use and the effectiveness of such materials.

Planetarium facilities are among the most useful and attractive places members of the public can visit to learn about astronomy. Many astronomers recount vivid and fond memories of planetarium visits in their youth and these places remain staples for museum and science field trip visits. They reach out to a broad cross-section of society to bring astronomy to the public, often doing so despite low budgets and short staffing.

DEFINING “PLANETARIUM”

For purposes of this paper, a planetarium is defined as the theatre in which a star projector is used to recreate the night sky. In recent years, special effects projectors, sound systems, and video projectors have also supplemented the star projector.

Whatever the planetarium was in the past, in today's practice it has a multi-purpose function: it is a theatre, a classroom, and an immersive experience in which astronomy (and other subjects) are presented as learning experiences. Today's theatres are equipped with widely varying types of equipment, ranging from the familiar opto-mechanical “machine in the middle of a round room” projecting stars in combination with special effects projectors to state-of-the-art digital theatres showing full dome animations. Currently, the planetarium field is undergoing an evolution to a more digital realm, and planetarium professionals are re-thinking their older methods of show production and presentation.

HOW MANY PLANETARIUMS ARE THERE?

The worldwide planetarium community is growing, with more than 3,000 facilities spread across every continent except Antarctica. Roughly one third of these facilities are in universities and/or public venues, while the rest are associated with pre-college schools. Many facilities use largely opto-mechanical star projectors with no

or few auxiliary projector systems. Others contain arrays of projection systems that are used to create multi-media programs along with the star projector. Approximately 150 have converted to full dome video projection systems that project stars and video animations in a wide variety of programs.

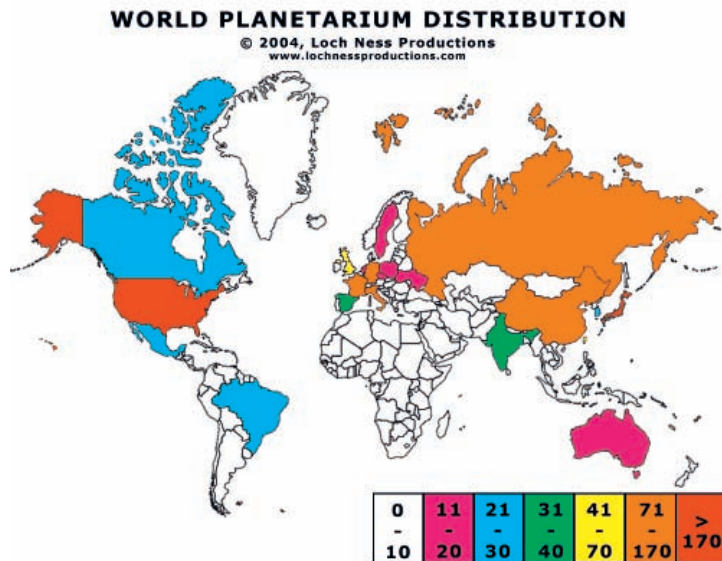


Figure 1. This graphic shows the distribution of planetariums worldwide, colour-coded by number. Courtesy Mark C. Petersen, Loch Ness Productions.

Planetarians encompass a broad range of professionals, including educators, producers, vendors, scientists, storytellers, artists, musicians, animators, writers, and narrators. Many facilities have only one or two full-time staffers assigned to “planetarium duty”. We like to think of them as people who are interested in astronomy and motivated to share it with like-minded members of the public. Many planetarians are astronomers, whether amateur or professional, and with their own interests to share through lectures and shows.

While there are few rigorous studies of planetarium attendance, at least one informal and ongoing survey puts the total attendance at planetarium facilities around the world at 90 to 100 million visitors per year. This figure includes student field-trip visits as well as general public planetarium visitors.

WHO ARE PLANETARIANS?

WHO GOES TO THE PLANETARIUM?

WHAT IS A PLANETARIUM SHOW?

Today's planetariums and star theatres give a variety of presentations. They can be defined in three general categories:

1. Live "What's Up Tonight?" lectures are very popular and give audience and presenter a chance to interact. These programs are useful for teaching the sky and presenting the latest news from the field of astronomy.
2. Pre-recorded documentary-style programs presented with images, narration and soundtrack. These generally use slides and video coordinated with a soundtrack. More recent shows created for the full dome video community feature complete video presentations (including animations and other material).
3. Laser shows, concerts, weddings, and other assorted presentations.

Information from research institutions is often a vital part of many planetarium presentations. In this sense, planetarium theatres can function as a media outlet for education and public outreach offices at research facilities. In addition, these theatres are an effective magnet for the "motivated, interested public" that education and public outreach offices seek to reach.

HOW DO PLANETARIUMS USE MATERIALS FROM RESEARCH INSTITUTES AND AGENCIES?

Science education and public outreach offices make a wide variety of materials available to the public and educational institutions. These include:

- activity guides
- curriculum materials
- images and animations
- web-based materials
- posters
- printed material (press releases, images, newsletters, etc.)

These materials influence planetarium lectures and multi-media/image presentations in many ways. The most obvious is in content. Press releases, images with background interpretation, images and animations, and web-based material are the most useful to planetarians. They enhance the scripts and visual inventories of any given presentation. Planetarium professionals can choose material from these offerings for live lectures or for later use in pre-recorded presentations. Curriculum materials and activity guides are obviously most useful to planetarians who are associated with schools and must make much of their programming conform to classroom lectures and wider curricula. Posters are not useful for presentations, but may be useful for decorative or demonstration purposes.

The author is conducting a year-long survey of planetarium professionals to deter-

mine the usefulness of E/PO materials in the community. As reported at the CAP 2005 meeting in Garching, about 100 planetarians had responded by mid-June 2005. The survey form can be viewed at: http://www.lochness.com/cap_survey.html until the end of 2005. A final report will be posted on the same page in early 2006.

Early results point to some “best practices” for E/PO professionals to consider as they create materials for planetarium use. They are presented here binned into the categories that the survey covers:

Activity guides: most planetarians found them useful for student visitors.

Curriculum materials: most planetarians felt these were NOT targeted specifically for planetarium use and that they had to do some work to make them useful. The most often requested change was that E/PO products be more specifically targeted for planetarium use.

Animations: Free images are popular! However, most are not targeted directly for use in planetarium applications. Animations, in particular, are often criticized because many are created for TV use, which is not appropriate for the dome. As an example, a video clip of a spacecraft that goes out of frame does not work well on a dome against a backdrop of stars where the planetarian wants to have the spacecraft fly against the starfield. The result is often a grey, or blinding video rectangle blotting out the stars, with the spacecraft abruptly disappearing. However, some planetarium professionals will accept them anyway, and find a way to use them in certain applications. The most often-suggested “fix” for this problem is for E/PO producers to consider making two versions of particularly useful animations—one for broadcast and one that is more “dome-friendly”. Most respondents to the survey have also suggested that E/PO’s ask a local video-savvy planetarian for advice on what works best in the dome. Others have suggested that E/PO groups find experienced planetarium show producers and vendors to help create and distribute useful animations.

Images: For many planetariums, 35mm slides are still the visual distribution medium of choice. However, these are also getting harder to make as major film companies like Kodak scale back their film product lines and stop manufacturing slide projector systems. To replace slide projectors, planetaria are starting to use video projectors, with varying results.

This suggests a best practice from the digital realm: making high resolution, high quality visual material available in slide and/or digital format when possible, or CD

SURVEYING PLANETARIUM USAGE OF E/PO MATERIALS

and DVD for those who have the capability of transforming digital files to slide film. However, keep in mind that not all planetarium facilities have made the leap into the digital age and some cannot take digital images from CDs and DVDs and make slides from the data they contain.

Many survey respondents acknowledge specific vendors for their efforts to make materials available in both slide and digital format, and stressed again that maybe E/PO professionals should work more closely with such program producers at both planetarium and for-profit production companies to create packages useful to a wide variety of users.

Web sites: These are very popular and many E/PO sites (such as Space Telescope Science Institute's "Hubblesite" and ESO's outreach pages) are cited as outstanding examples of web-based outreach. The main complaints about many E/PO sites ranged from "not easy to access or navigate" to "not all sites make broadcast quality or high-resolution imagery available". The general suggestion was that web administrators need to make materials easier to find, and give more science background on the material they provide. Many planetarians have sufficient background to read technical background information (although most were not interested in reading academic papers) on events and discoveries described on E/PO Web sites.

Personal interaction: Many planetarians suggested that E/PO organizations make a personal point of contact available for planetarians. They cited such examples as John Stoke at STScI and various scientists at ESO and NASA who make themselves available to discuss discoveries. The Solar System Ambassador program was cited as an excellent outreach effort, as well as JPL's Museum Alliance.

This brief overview gives some insights into planetarium facilities, the professionals who work in them and the presentations they deliver. Planetaria are excellent outlets for education and public outreach professionals looking to leverage their "product" beyond the traditional classroom and media outlets. Planetarians are incredibly gifted lecturers and presenters, and the advice they can give you on reaching new audiences is valuable. This paper closes with a few quotes from survey participants:

"The most useful materials for planetarium presentation arise from awareness that a planetarium's "frame" is not rectilinear but hemispheric."

"As a full dome digital facility with three astronomers on staff and 200 volunteer interpreters, we need the best, latest, most scientifically accurate information that we can get."

CLOSING THOUGHTS AND COMMENTS FROM PLANETARIANS

“Kudos to: The ESA Hubble Anniversary Event organized by ST-ECF.”

“Loch Ness Productions showed others how to use images and information from STScI best in their “Hubble Vision 2” show”.

“We love using the ESO web pages!”

“The Space Telescope Institute and JPL “get it” when it comes to dealing with planetarians.”

For more information about planetarians and planetarium practice, the International Planetarium Society journal, **The Planetarian** is a useful resource. It can be found in university libraries and at many planetarium facilities. The main website for the publication is: <http://www.griffithobs.org/IPSPланetarian.html>

The main page of the International Planetarium Society
<http://www.ips-planetarium.org/>

For references on planetarium show production and practices
<http://www.lochness.com/pltref/pltref.html>

The ongoing planetarium usage survey page:
http://www.lochness.com/cap_survey.html