Visualising Astronomy: Playing Host

Ryan Wyatt
California Academy of Sciences
E-mail: rwyatt@calacademy.org

Key Words

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I recently had the opportunity to host the 2009 Astronomy Visualisation Workshop at the California Academy of Sciences in San Francisco, USA. No professional organisation of astronomy visualisers exists, alas, but we have gathered informally in different locations for the past several years. And the breadth of content has increased dramatically with each meeting. This time around, we tried to add a Bay Area twist.

As the hosting institution, the California Academy of Sciences fielded a large team, which took over the first morning's session in a lead-up to a showing of our opening planetarium production, *Fragile Planet*. Jeroen Lapré, the Senior Technical Director at the Academy, described the production process, while Jon Britton, Senior Systems Engineer, went into the nitty gritty about hardware and software requirements to support the Visualisation Studio. Tom Kennedy, producer of *Fragile Planet*, provided insight into some of the challenges that face a small studio — including resource management and scalability between projects. And I tried to provide a perspective on how visualisation fits into the Academy as a whole, making use of our spectacular venues in a way that allows for experimentation with different forms of visual storytelling.

One of the motivations for the Academy to host the workshop was to highlight some of the special venues at our institution. The Academy boasts the world's largest all-digital planetarium as well as a stereoscopic theatre that makes use of truly impressive Dolby 3D technology.

In the new Morrison Planetarium, workshop participants had the opportunity to enjoy the Academy's own production, *Fragile Planet*, as well as a special showing of *Cosmic Collisions* from the American Museum of Natural History. Mark Subbarao from Adler Planetarium also gave a live presentation with Sky-Skan's DigitalSky software, showing SDSS and other cosmological data. (One of Mark's collaborators, Miguel Angel Aragon Calvo from Johns Hopkins, gave a talk revealing some of the processes he uses to enhance structures in representations of large-scale structure data.) In the stereoscopic theatre, Michael Broxton of NASA's Ames Research Center demonstrated some of his work on neocartography, using SCISS Uniview software to showcase 3D reconstructions of the lunar surface from Apollo imagery.

Another motivation for hosting the conference in the Bay Area was to coincide with the California Symphony's performance of *Astronomical Pictures at an Exhibition*,

Figure 1. Shalini Venkataraman (left) from NVIDIA and Doug Roberts (right) from the Adler Planetarium pose in front of a roughly 4K tiled display on the floor of the California Academy of Sciences. Credit: Stuart Levy.

with 3D imagery assembled by the Adler Planetarium's own José Francisco Salgado. (Watch out for José Francisco on his globe trotting tour, too!) Also in the art vein, Kimberly Kowal Arcand from the Chandra X-Ray Center described her research into the aesthetics of astronomical imagery: an online survey reveals differences between responses from professionals and novices, offering some tantalising insights into people's perceptions of our work.

Some of the Bay Area participants represented local companies involved with work that touches on the visualisation and educational and public outreach communities. CoCo Studios' Barrett Fox introduced CoCo Deep, the company's video-game-styled interface to multimedia content and collaboration. Justin Boitano and Shalini Venkataraman, both from NVIDIA, used the Academy's "Science in Action" exhibit to demonstrate their Quadro Plex multi-GPU system, which allows tiled monitors to be treated as a single, continuous display (Figure 1). Craig Barron, whose company Matte World Digital recently shared an Academy Award® for historically accurate cityscapes in *The Curious Case of Benjamin Button*, ruminated on Hollywood's depictions of the Red Planet and how they might become better informed by current research.

Another Bay Area local, David Rees, Group Lead for Adobe Acrobat, previewed some spectacular features in Acrobat that support three-dimensional content. The talk dovetailed neatly with a presentation from Chris Fluke at Swinburne University, who introduced his team's *s2plot* software along with some spiffy ideas for incorporating three-dimensional content into research papers[1].

A sizeable team of students showed up from California State University at Los Angeles, led by Milan Mijic. The interdisciplinary group, called SciVi[2], brings together undergraduates and graduates from the Art and Computer Science departments as well as Physics and Astronomy to create short videos and games around the general topics of cosmology. They've produced a few pieces already, and I look forward to seeing more of the work that emerges from this programme.

I always appreciate talks that step back from the day-to-day deluge of projects to consider the quality of work that we produce. This time around, I particularly enjoyed Robert Hurt's reflection on "Visual and Narrative Synergy for Communicating Technical Concepts". Robert selected an example from his *Hidden Universe* podcast and invited workshop attendees to critique the density of information and the style of presentation (Figure 2). This kind of post mortem offers a critical opportunity to continue improving our work; in the planetarium field in particular, we need to do it more often.

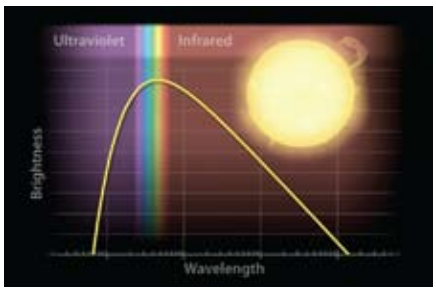

Figure 2. A frame grab from the Spitzer Space Telescope Hidden Universe *podcast showing a lot of information, but of course, lacking the context that a moving image and soundtrack provide. Credit: Spitzer Space Telescope/R. Hurt.*

Doug Roberts from the Adler Planetarium also gave a thoughtful talk on how to make "magic" happen for visitors to an exhibit — how to balance the technical and financial realities of a design in a way that still allows for a suspension of belief on the part of audiences.

The workshop closed with filmmaker Angela Christian presenting portions of and teasers for her work in progress about some of the folks in the astronomy visualisation community. Seeing ourselves (often, literally, ourselves) from an outsider's perspective made for a surprising and moving culmination to the workshop.

I wish I had space to describe the other delightful and insightful presentations at the workshop! Not to mention the intriguing side conversations and serendipitous moments that graced the event. Playing host provides an exhausting but rewarding opportunity to engage with one's colleagues, to show off a little, and to share a lot. I hope people enjoyed coming to San Francisco as much as I enjoyed having them here.

Notes

[1] http://astronomy.swin.edu.au/s2plot/
[2] http://sci-vi.calstatela.edu/

Biography

Ryan Wyatt is the Director of Morrison Planetarium and Science Visualization at the California Academy of Sciences in San Francisco, California, USA. He writes a somewhat regular blog, "Visualizing Science", available online at http://visualizingscience.ryanwyatt.net/