

Reaching the Remote: Astronomy Outreach in Rural Mexico

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Summary

This article reports on a visit to Victoria, a small village in central Mexico, and the star party conducted there. We wanted to share our experience of the outreach programme because this was one of the most remote places we have ever visited. We emphasise in particular the importance of respecting local culture and traditions, a respect highlighted by making a visit to a ritual centre in the region.

Introduction

A couple of kids share the dusty soccer field with the astronomy students from the University of Guanajuato. It is five in the afternoon, and the Sun is about to set. A few eight-inch telescopes are lined up in front of a small mountain while curious people begin to appear expecting a good show. It has been two years since the staff from the Astronomy Department last came to this town. Two years that the people of Victoria have had to wait to see through a telescope again.

A tradition of star parties in Mexico began during the International Year of Astronomy in 2009, including the nationwide *Noche de las Estrellas*¹. These events include naked eye and telescope observations of the night sky, lectures, open-sky talks to describe the constellations and activities designed for children. Together with the Cultural Institute of the State of Guanajuato, the Astronomy Department of the University of Guanajuato hosts around ten travelling astronomy events per year in different towns across the state. These events take place in archaeological sites or in what are called *Pueblos Mágicos* (Magic Villages) — towns with special historical value. The

average event reaches 2000 people unless it is a particularly remote community that is visited on demand, in which case it would be only a few hundred.

In December 2013 the village of Victoria, formerly known as Xichú de Indios became the host of a travelling astronomy event. Located 144 kilometres east of the capital Guanajuato, in a highly underdeveloped region away from the federal roads, Victoria has 2564 inhabitants² and was an important place for the Chichimeca people, a hunter-gatherer group who refused to surrender to the Spanish colony. In this particular case, the local authorities of the municipality contacted the staff from the Astronomy Department requesting an event that was called *Noche de Estrellas en Victoria* (see Figure 1).

The facilities in the town are basic and the events were carried out in a local sport complex composed of an open football field, a basketball court and a small gym. Six eight-inch aperture telescopes were erected along the field with two people in charge of each one. In this way one person moves the telescope while the other explains to the people in the queue what they are about to see. Most of this work is

conducted by postgraduate students from the Astronomy Department (see Figure 2).



Figure 1. Poster of the event in the town of Victoria.



Figure 2. People looking through the telescope. The big light in the background is the Moon.

Other activities

- Two talks were presented; one on comets and the other on space travel.
- There was a children's activity called *icosaedros de los planetas* where the children trim off and assemble a mosaic of pictures of a planet surface and glue it back to get a 3D representation.
- Another two activities undertaken were to create mobiles to show different orbits. The first — *móvil de la Tierra y de la Luna* — showed the orbit of the Moon around the Earth, and the second — *móvil de Marte y sus lunas* — which shows Mars and its moons.
- 300 people, most of them adults over 40 and children below ten years old, took part in these activities.

Respecting regional cultures

Staying with the local community, eating with them and drinking with them helps to strengthen the relationship with the community and the outreach with it. In addition it is important to engage with local traditions. In Victoria the team visited a rock painting site known as Arroyo Seco³, a place that used to be a ritual centre and still hosts ceremonies during the solstice when the Sun rises between the rocks.

Visiting the site required understanding and respect for local customs by asking permission of the guardians, which are impressive rock formations that look like standing people, and leaving tributes in the cavities of rock that represent the nursing Mother Earth.

The paintings themselves included representations of astronomical icons such as the Sun (Figure 3).

Lessons learnt

When visiting remote places the people are always grateful and hospitable. The events usually take place in open facilities, like stadiums or town squares and include archaeological sites and marginalised neighbourhoods. Because of the variety of locations, technical difficulties are common so relying on only a projector or computer for presentation slides is not advised.



Figure 3. Rock paint representing the Sun.

One of the main challenges is light pollution. Even in Victoria, where the location had reasonably low light pollution, the lights from passing cars and buildings complicated the night-sky observations.

Planning lectures for these events is a difficult task as attendees range from children to elders. Slow or technical talks lose children's attention and a child's level of talk would bore adults and send elders to sleep. A fast-paced talk with more figures than text is usually a good start.

In Victoria and places like it, despite a very basic educational background, there is always an eagerness to learn. So, it is very important to give enough time for questions and to reward this curiosity. The children received glowing stars for raising their hands, building confidence and encouraging questions to the point that the supply of rewards ran dry.

Telescopes get most of the attention, but with unpredictable weather, alternatives are essential. These can include organised activities, board games with astronomical themes — astronomy bingo and memory card matching game for example — or just taking advantage of the time to ask for questions or discuss a particular topic.

In general events are more likely to succeed during the dry season, but sometimes if invited to festivals right in the middle of the hurricane season, this is not possible. These offers must be considered carefully. A few University of Guanajuato events have been cancelled because of heavy rain.

Collaboration

Victoria was first visited in 2011 as part of an ongoing development project from professors of the Faculty of Social Sciences, University of Guanajuato. During this collaboration a good relationship was formed with the local authorities of the communities visited, including Victoria. Our project benefited from these pre-existing contact as less effort was needed to develop the project.

Trading knowledge

It is important for communication not to present ourselves as wise scientists bringing wisdom to the ignorant, but as humble human beings who are eager to learn; breaking down the educational barrier and showing that our own knowledge is limited in many other fields.



Figure 4. The group hikes to the sacred mountain in Arroyo Seco.

Opening a dialogue creates a bond, enriches interactions and creates more awareness about progress in science and technology. For some people, this will ameliorate any ingrained feeling of unease about a form of progress which they may see as a threat to ancient myths, traditions and belief systems.

Showing respect for these local traditions supports the cultural heritage, improves the relationships needed to engage with a community and can enrich our own lives.

We went to Victoria thinking we had something to teach, but we came back with a better understanding of our own roots, knowing we still have so much to learn.

Acknowledgements

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Notes

- ¹ Noche de las Estrellas <http://www.nochedelasestrellas.org.mx/>
- ² Instituto Nacional de Estadística y Geografía (<http://www.inegi.org.mx/>)
- ³ An article about the rock paintings in the magazine *México Desconocido*. <http://www.mexicodesconocido.com.mx/los-ciclos-del-sol.-pinturas-sobre-roca-en-arroyo-seco-victoria-guanajuato.html>

Biographies

Alma Ruiz-Velasco graduated from the astrophysics postgraduate programme from the University of Guanajuato, collaborates with the Astronomy Department's outreach activities. She writes an astronomy blog, available online at <http://elespinazodelanoche.com>.

René Ortega Minakata was born in the city of Guadalajara and is a current PhD student at the Astronomy Department of the University of Guanajuato. He is interested in the statistical properties of galaxies, active galactic nuclei, galaxies in different environments and astronomical databases as well as the Virtual Observatory.

Juan Pablo Torres Papaqui teaches at the Astronomy Department of the University of Guanajuato. His research focuses on the extragalactic astronomy, starburst-active galactic nuclei connection and he is also interested in the Virtual Observatory.