A Refuge in the Stars: Outcomes from the Amanar Project

Column

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Amanar: 'Under the Same Sky', is a project that aims to use cultural aspects of astronomy to encourage common understanding and bridge two communities from the Canary Islands and Western Sahara. The Sahrawi people fled their country due to armed conflict more than four decades ago and continue to face harsh living conditions in refugee camps near Tindouf, Algeria. This project sought to empower and inspire these people, especially the youth. Amanar was selected as a special project for the centenary celebrations of the International Astronomical Union. The project was organised by GalileoMobile in collaboration with the Canarian Association of Friendship with the Sahrawi people and the Instituto de Astrofísica de Canarias as well as other astronomical institutions and volunteer associations. The success of this collaboration shows how both the scientific community and civil society can mobilise to promote the United Nations Sustainable Development Goals.

Introduction

Forty-four years after a failed process of decolonisation from Spain, the invasion of their country by Morocco, and the establishment of a peace plan by the United Nations, half of the Sahrawi population continue to be refugees *(Bárbulo, 2011)*, despite the promise of a self-determination referendum that never happened. According to the United Nations High Commissioner for Refugees1, 173 600 Sahrawis reside in the refugee camps, in territory provided by Algeria, in a situation that is both provisional and permanent. The five camps are named after the main Sahrawi cities under Moroccan occupation: Ayoun, Smara, Bojador, Auserd, and Dajla (see the map in Figure 1), and their management is administered by the Sahrawis themselves.

Fresh food, water, medical, and hygiene supplies are limited, and the Sahrawi families depend on international humanitarian aid to survive. In education, the Sahrawi schools face various challenges, such as the quality of teaching,

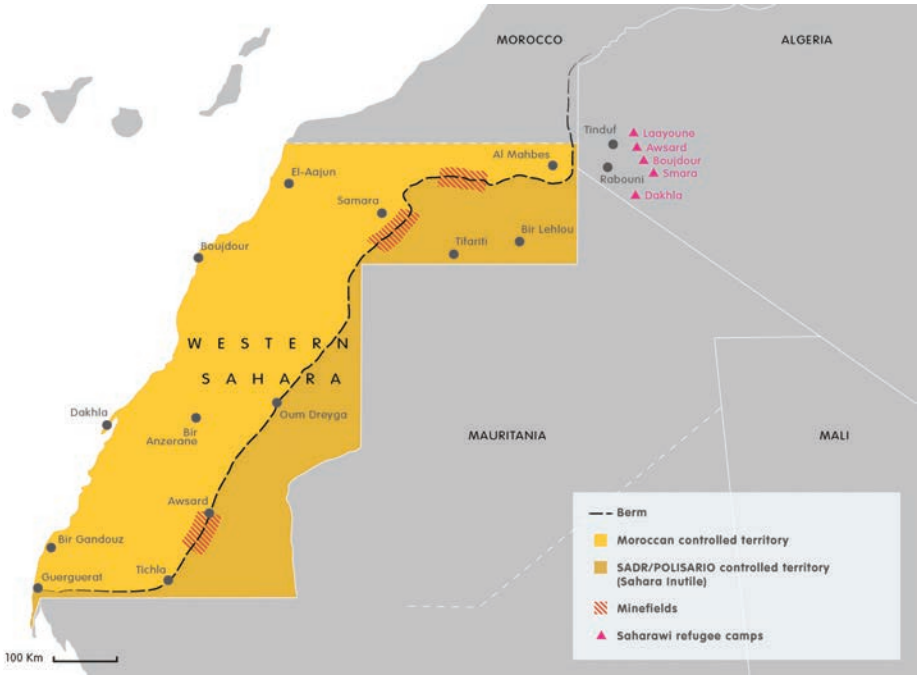

Figure 1. *Map of the Western Sahara region. Two-thirds of the country is currently under the occupation of Morocco and is divided from the Sahrawi-controlled area by a 2700 km wall. Credit: European Council of Foreign Relations.*

a shortage of educational materials, equipment, and infrastructure, and few training opportunities or incentives to retain skilled educators. Another worrying issue is the lack of motivation among the youth, who experience limited prospects and high levels of frustration resulting in high class absenteeism and unemployment rates.

The Amanar Project: Hope through Astronomy

Amanar is an outreach project that aims to empower and inspire the Sahrawi refugee community through astronomy and promote peace, guided by the Sustainable Development Goals defined by the United Nations2.

Special attention was given to children and young people through the project to awaken their interest in science, stimulate their imagination and critical thinking skills, and contribute to strengthening their resilience. This was done by organizing fun and memorable hands-on activities where the children learned about aspects of our universe. Of particular importance was the collaboration of participants in groups to find answers, with their teachers involved in the process. Outside group activities were also performed to familiarize the students with the Amanar team.

A fundamental aspect of the project was to support the teachers of the camps in their pedagogical practise by offering continuous training (face-to-face during the annual planned visits to the camps and, in 2020, online via WhatsApp) and donating telescopes and other necessary educational resources.

The project was divided into two stages, both carried out during 2019. The first part took place in July and August and consisted of astronomical outreach activities and observations with Sahrawi children, who visited the Canary Islands through the 'Holidays in Peace' programme *(Crivello et al., 2005)*.

Activities took place at the professional Teide and Roque de los Muchachos observatories in Tenerife and La Palma of the Canary Islands, Spain, and included visits to some of the largest telescopes in the world. At nightfall, the group gazed at one of the clearest skies in the northern hemisphere using amateur telescopes. In Gran Canaria, activities were carried out at the primary school in Arucas involving both Sahrawi and local children and their families to encourage solidarity between the two communities as they learned about the cosmos together (Figure 2).

Figure 2. *Sahrawi children and their Spanish host families visiting the Gran Telescopio de Canarias and the Large-Sized Telescope at the Roque de los Muchachos Observatory, La Palma. Credit: Antonio Gonzalez (Cielos de La Palma).*

In October, the Amanar team travelled to the camps near Tindouf, Algeria, for two weeks to work with local students and teachers and donate kits of educational materials. At the schools, the team presented astronomy-related talks and workshops, particularly focused on the Sun-Earth-Moon, Solar System, the constellations, and space missions. Previous experience in the Canary Islands helped with selecting activities to develop for the camps. 'The 'Voyager Mission'3 activity was particularly successful. Here, students built their own 'Golden Record' including aspects of the Sahrawi culture (e.g. their music, poetry or typical cuisine) and of their daily life in the camps (e.g. the appearance of their houses and animals)4 (Figure 3).

Figure 3. *A group of students during the Voyager-inspired 'Golden Record' activity. Credit: GalileoMobile.*

The team also performed inquiry-based learning workshops with the teachers, in which the teachers became acquainted with the GalileoMobile 'Handbook of Activities' and with donated materials such as telescopes and interferometers (Figure 4). Specific meetings with the teachers allowed for discussion about modern and traditional Sahrawi astronomy as well as their training needs.

The team also delivered a talk at a vocational training centre for women, and debated with students about the participation of women in STEM, particularly in astronomy.

The total audience reached during the different stages of the project in 2019 is presented in Table 1.

Figure 4. *A teacher learns how to use a donated telescope. Credit: GalileoMobile.*

Under the Same Sky

In addition to educational activities, the project had two further aims: to collect and record the oral tradition of ancestral astronomical knowledge of the Sahrawi people, and to preserve this knowledge for future generations.

Through the Sahrawi Oral History Department, the team interviewed four experts, three men and one woman (Figure 5), with knowledge about an ancestral astro-meteorological system called Anwas, which uses the visible rising and setting of specific stars and asterisms to predict rain or the hottest season. Within this system, dating back hundreds of years, specific stars are also used for orientation in the desert and for religious practises.

The interviews and recordings were not considered a mere case of study, but as living knowledge and a valuable worldview to be used to strengthen the Sahrawi collective memory and cultural identity, engaging the youth in the process.

In the beautiful words of the star expert interviewee, Alhaizza AlDih AlNah:
Science must expand to all of humanity and not be monopolised by a person or a group [...] I learned astronomy from my father[...] My father had a very good memory. When I heard something, I quickly memorised it [...] I'm trying to take care of that knowledge. When someone comes to ask, I try to teach what I know [...] My children know and are learning. 5

Throughout, it was evident that, for the Sahrawis, the scientific subject could not be disconnected from political issues. As one of the most protracted refugee situations worldwide, many aspects of their nomadic culture and lifestyle are lost or seriously threatened. Quoting Salec Mohamed Omar, a Sahrawi sage, and another interviewee,
Surely, we all see this sky, but we have different perceptions, different interpretations of it. Everything that leads to finding us, bringing us closer is important. And the best tool for that is science. [...] It is a difficult topic to deal with in a situation like ours in a refugee camp, where people have in mind other things, which they consider to be of primary need. But there is no doubt that there are people who are very interested.6

The results of all interviews and data collection will be presented at the annual meeting of the European Society for Astronomy in Culture in 2021. In addition, we are applying for two grants to further

Audience	Nº of participants
Schools	6 high schools, 1 vocational training centre for women, 1 teacher training centre
Students at the camps	550
Teachers at the camps	66
General public at the camps	60
Sahrawi children in the Canary Islands	45
Spanish public in the Canary Islands (host families, monitors, volunteers, etc...)	103
TOTAL	824

Table 1. *The audience reached during the Amanar project activities in 2019.*

Figure 5. *Amanar team members learn from one of the Sahrawi sages about their knowledge of the sky. Credit: GalileoMobile.*

support the research and allow the Sahrawi to become the real agents of it.
In preparation for the project, the Amanar team trained with experts in immigration and refugee phenomena and in ethnoastronomy. A literature review was also conducted, in which the sociologist Abdelmalek Sayad *(Sayad, 1998)* was the main reference. In addition, a search for previous experience of science engagement with refugees was carried out, and team members were updated on the subject of worldwide forced migration by following the most recent statistics[7].

This training enabled the team to develop a methodology for working in the camps based on empathy, participant observation and listening, and critical hope *(Martin, 2018)*. The training will continue as new actions are developed under the Amanar framework.

Audiovisual Products

As highlighted by Omah Ahmed, director of the Abidin Kaid Saleh Audiovisual School of the Sahrawi Arab Democratic Republic, 'In the Sahara, all forms of artistic expression have been transformed, evolving and enriching the cultural identity of the Sahrawi people' *(Real Bollero, 2011)*.

Cinema has been one of these expressions, consolidated through the establishment of the Sahara International Film Festival (FiSahara)[8], which is the only film festival in the world held in a refugee camp. The Amanar team had the opportunity to attend the festival and meet some of the organisers and local artists, an experience that enhanced the project's audiovisual products.
These products include a linear feature film, an interactive documentary (i-doc) and a virtual reality piece (Figure 6). The audiovisual products aim to denounce the long-standing conditions of the Sahrawi people through the dissemination of their culture and worldview, approaching their own scientific knowledge from a decolonial perspective *(Castro-Gomez & Grosfoguel, 2007)*. We hope to present these films at FiSahara, 2021.
Moreover, based on the principles of co-creation *(Cizek et al., 2009)* and research-creation *(Owen & Sawchuk, 2012)*, the ethnographic recordings and interviews will be returned to the Sahrawi community so that this material can be used, reinterpreted, and adapted for cultural and educational purposes.

Conclusions

Amanar is essentially an attempt to bring hope to a sometimes forgotten place and people by stimulating their imagination and critical thinking skills through science. Built on experience acquired from previous GalileoMobile projects, it moves a step further by empowering and providing the Sahrawi people living in refugee camps an opportunity to wonder about the universe and share their traditional knowledge of the sky.

A key element was the study of their cultural practises, with the aim of preserving them and facilitating their dissemination through the recording of audiovisual materials. This encouraged the direct participation of local people in the production process so that they are the real protagonists in their story of hope through astronomy.

Figure 6. *A child looks through a VR device. One of the audiovisual products will be a virtual reality piece about the Sahrawi astronomical tradition. Credit: GalileoMobile.*

The project is committed to continuing the summer activities in the Canary Islands and expanding them to other regions in Spain and Italy next year as well as continuing teacher training online and in-person, and visits to the camps in the following years.

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[2] United Nations Sustainable Development Goals: https://sustainabledevelopment.un.org/?menu=1300

[3] GalileoMobile, 2019, 'Handbook of activities', version 1.42. https://docs.google.com/presentation/d/14WR0n-e85y2eJoefgepMad-SWbVmAFiYBKexVfGBvxo/edit?usp=sharing

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[7] United Nations High Commissioner for Refugees. 2017, 'Global Trends: Forced displacement 2018' https://www.unhcr.org/statistics/unhcrstats/5d08d7ee7/unhcr-global-trends-2018.html

[8] FiSahara website: https://fisahara.es

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Biographies

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