



COMMUNICATING SCIENCE ACROSS CULTURES, COMMENTARIES FROM SESSIONS  
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## **RAS200 — engaging citizens with astronomy across cultural divides**

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### **Abstract**

The night skies and the planet on which we live can be inspirational to young and old alike. In the run up to its 200th anniversary in 2020, the U.K.'s Royal Astronomical Society has put together a £1 million scheme to fund outreach and engagement activities for groups that are less well served in terms of access to astronomy and geophysics. This article outlines the projects funded and the impact they are starting to have.

### **Keywords**

Popularization of science and technology; Public engagement with science and technology; Representations of science and technology

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The ancient Babylonians knew them as mulmul, to the Hawai'ians they are the makali'i, for the Japanese they are subaru, to Māori they are Matariki, and in western astronomy they are the Pleiades, to list but a few. The little formation of seven closely grouped stars in the constellation of Taurus has clearly excited note and interest for thousands of years and across many cultures. After all, anyone wherever they are, rich or poor, can look up at the stars and wonder.

But as it approaches its 200<sup>th</sup> anniversary in 2020, Great Britain's Royal Astronomical Society, which covers the United Kingdom and Ireland, and has members across the world, has become acutely aware that it actually has less appeal across cultural boundaries in the British Isles and elsewhere than its subject warrants, despite the efforts of its own Fellows and many thousands of amateur and professional astronomers. And that is a failure of duty to communicate with its fellow citizens that was placed on the scientific community as a whole over 30 years ago [Royal Society of London, 1985].

RAS200 is one of the Society's programmes designed to address this. Set up in 2014 [A&G editorial, 2014] and run by its own Steering Group, the scheme involves a £1 million investment from RAS reserves to fund grass roots projects to reach less well-served groups in society than the "usual suspects" who attend public lectures or visit museums and planetaria. The widest community input to the scheme was encouraged right from the start [see Bowler, 2014]. "If the things we are doing for

outreach worked across society, we wouldn't need to be here today," explained Steering Group member Helen Fraser, at the scheme's 2014 launch event [Bowler, 2014]. At its heart, RAS200 had ambitious aims to break down cultural barriers to understanding, appreciating and engaging with the sciences of astronomy and geophysics, and the Society realized that it needed help to achieve these ends.

One of the cultural barriers that had to be breached was that — for a Society with aspirations to understand the entire universe — the RAS was heavily based in London. So Steering Group members attended meetings right across the British Isles — Scotland, Wales, the Isle of Man and the various English regions away from the English capital, as well as Ireland. To open up to new groups, the Society deliberately set out to work with partner organisations that already worked with young people who have dropped out of the education and training systems, with adults whose education at school left a lot to be desired or whose lives have led them to get on the wrong side of the judicial system, and with people whose lives are so occupied by caring duties that they have little-to-no time to call their own.

RAS200 has run two rounds of funding — in 2014–15 and 2016–17 — attracting some 150 proposals from across the British Isles and abroad. As a result, the RAS is working with 10 British partners, one Irish and one from South Africa to ensure the sciences we support — astronomy and geophysics — are accessible [Bowler, 2015; Bowler, 2017].

Education — or the lack of it — is one of the main cultural barriers in western societies. So one of the first groups with which RAS200 was able to engage was the community served by the Prince's Trust, set up in 1976 by the U.K.'s heir to the throne to help young people who felt society had turned its back on them. Liz Avery of the Royal Observatory Greenwich helped to train Prince's Trust leaders so that they could deliver courses in astronomy and geophysics that would really engage young people who had rejected (or been rejected by) their schools and colleges: "They were enthusiastic, but nervous of talking about science and of the questions they might be asked — 'What's inside of a Black Hole?' or 'What will happen when the Sun dies?' — as well as the moral and ethical side of science and how religion fits in." [Avery cited by Bowler, 2018a].

As a result of that RAS200 supported training for its own trainers, astronomy is now a regular part of the camping-based courses the Trust runs, has its own dedicated "get started" course, and has been an inspiration for young film-makers breaking into the profession. The young film-makers course made use of the RAS headquarters in Burlington House, Piccadilly, for great location shots. One of the more unexpected outcomes of the Trust's observing activities is that some of their hardest-to-reach young people open up about their personal problems and concerns whilst they are looking at the stars.

If school and college education did not provide quite what you wanted or needed from your education, the Workers' Education Association (WEA) may help to fill in the gaps in later life. Now RAS200 funding is helping the WEA make a major turn towards providing courses in science, technology, engineering and medicine (STEM). The Association is concentrating its first courses in astronomy in the north of England, but plans to roll them out nationwide over the next few years.

Bounce Back is an organization that works with serving prisoners, attempting to equip them with additional skills to help them after their release. “We were excited by the idea of enabling prisoners to ‘look at the skies’ and contemplate their place in the vast universe from inside the confined prison walls,” says Bounce Back’s Joanne Black. Now an RAS200 project is using astronomy as an inspiration for one of the wallpaper design courses the charity runs in Brixton prison. And astronomy books are featuring in schemes that enable prison dads to read with their children, helping to ensure that they do not lose touch with their families whilst serving their sentences.

Steven Gray has a small business running planetarium shows in Scotland. In 2014, he met Ruth MacLennan at an RAS200 “town hall” meeting in Glasgow. MacLennan is the manager for the charity “Care for Carers”, that organizes holidays for carers from rural Scotland, people who are usually too busy looking after their relatives to get any time for themselves. Gray and MacLennan’s project involves giving carers breaks on the Island of Coll in the Inner Hebrides, where the dark skies make it ideal for astronomy — so long as the weather holds. “When it’s clear, we are outside observing the Sun, Moon, planets and deep sky objects. When it’s cloudy, we’re in the planetarium. The feedback has been extremely positive,” Gray says. For some of the carers, the breaks are vital to overcome the sense of isolation that they feel. For others, they contribute enormously to their health and well-being: “Events connected with space and the stars apart from being fun and interesting have helped me through the night to get back to sleep on many occasions since I find looking for and at the stars comforting and extremely pleasurable when I find them. I did not have this tool prior to these events,” explained one of the participants.

If the four projects outlined above try to overcome the cultural barriers caused by missing out on educational opportunities, the RAS has also been keen to ensure that the historic cultural diversity of the British Isles is as well-served as possible. Two new projects, starting this year, are set in Celtic regions. Galway, on the west coast of Ireland has an annual cultural festival to which RAS200 funding will add astronomy and geophysics. Galway’s festival, as well as appealing to its settled community also reaches out to travellers and asylum seekers. According to Andy Shearer of the National University of Ireland, involvement in the Arts Festival this will help astronomers to “learn different ways of communicating”. Cornwall, in the extreme south-west of England is a largely rural county with poor town-to-town communication routes. “Cornwall Sea to Skies” emphasizes the rich fishing and navigation heritage of the region and its link both to the impressive Cornish geology and its dark skies. [A&G news, 2018]. As part of the RAS200 project they have acquired and equipped a travelling laboratory so as to be able to reach some of the most isolated communities in the country.

Another major cultural divide is between the arts and humanities, on the one side, and the sciences (broadly understood), on the other, a divide immortalized by C.P. Snow’s much-contested 1959 lecture to Cambridge academics [Snow, 2012 [1959]]. Whilst all of the RAS200 projects have elements of tackling this issue, two are very explicitly focused on it. Welsh astronomer Geraint Jones explains: “I am sure there are many in the arts and humanities who are not naturally attracted to the sciences, and this was a fantastic idea to weave astronomy and geophysics with cultural activities.” So the project he is involved with in Wales links with the national and

youth Eisteddfodau — annual cultural festivals that deliver their events using the Welsh language and Welsh artistic forms — to bring astronomy to arts-orientated audiences in the Principality through poetry and dance: a “planet clog dance” wowed crowds at 2015 youth Eisteddfod.

When Gustav Holst composed *The Planet Suite* in 1916 he was more interested in the mythological aspects of our nearest space neighbours than the science. But in the century that has followed, numerous space missions and observations with ever-larger and better-equipped telescopes have transformed our understanding of these other worlds. The National Space Centre in Leicester has developed a suite of full-dome planetarium shows based on Holst’s original music but making use of the latest science, as well as versions based on the response of modern composers and artists to our planetary system. Reviewing the new shows, Stephen Sarjeant of the Open University applauds the daring and creativity of the NSC: “We humans are not just rational beings and science needs to engage on more than just an intellectual level.” [Serjeant, 2018].

For better or worse, the U.K. has had a long involvement with South Africa, including with the South African Astronomical Observatory (SAAO) in Cape Town, coincidentally celebrating its bicentenary in 2020 along with the RAS. SAAO scientist Sivuyile Manxoyi and his team will use this and the Iziko Museum and Planetarium to tell the story of astronomy in South Africa, including its latest phase as the country starts to host the massive Square Kilometre Array radio telescope. “We would love the public to be aware of what South Africa is contributing to science, as well as what the impact will be on our society and on our economic development,” Manxoyi says. [Bowler, 2018a].

The U.K. has a tradition of skills-building organisations outside of the formal education system of which scouting for young people has perhaps the greatest popularity. Girlguiding is the country’s girl-only youth organization, and it too is aiming to enhance its STEM provision for members from the ages of 5 to 25. Much of the organisation’s activity centres on its members achieving badges for demonstrating various life and societal skills. “We are passionate about giving girls opportunities that broaden their horizons, enable them to try new things and have adventures,” project leader Robyn McAllister explains. ““Reaching for the Stars” encapsulates this perfectly”. Partnering with the U.K.’s National Space Agency, as well as the RAS, Girlguiding has an ambitious programme to develop space and astronomy activities that will allow its members to achieve badge proficiency at various levels [Bowler, 2018b].

When Leicester City, one of football’s less glamorous teams, became champions of the English Premier League in 2016, most of their fans were unaware that events surrounding this achievement has — quite literally — caused the Earth to move. But while their team scored goals, geology students at the Leicester University had set up seismometers at a local school near the football ground and were measuring small earthquakes due to fans stomping their feet and otherwise applauding their team. This has inspired the Leicester-based National Youth Association and partners to work with RAS200 to create a “Geophysics in a Box” seismology set built out of Lego and other readily available components [Offer, 2018]. Although Leicester City do not seem likely to achieve the heights of the 2015–16 season this year, as “Geophysics in a Box” project rolls out, it is hoped to include many other

football clubs, and even to get the project onto BBC Television's popular "Match of the Day" programme.

Some of the people most marginalized by society can be on the autism spectrum so the National Autism Society is working alongside several of the RAS200 projects to see how best they can be adapted and carried out with the needs of autistic people in mind. All of the projects are also being carefully and developmentally evaluated as part of RAS200 by Jenesys Associates so that the lessons from this "experiment" in science communication and engagement can be learned and passed on to the community as a whole.

RAS200 projects will last until 2022, taking them through the Society's bicentennial. But it is hoped that each of them will create a more long-lasting legacy of outreach, engagement, education and training activities and understanding. And RAS200 is also working to change the culture within the RAS itself. In the end, the Society has to be more outward looking and socially engaged if it is to survive for the next 200 years.

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