

Communicating Astronomy with a Mass Audience — BBC's *Stargazing Live* goes Dutch

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Summary

Following on from the hugely successful airing of *Heel Nederland Kijkt Sterren* — a Dutch stargazing event modelled on the BBC's programme *Stargazing Live* — this article explores some of the issues involved in communicating astronomy directly to a mass audience. This includes the production process, co-sponsorship, content, the reach and lessons learned.

Introduction

On a cold and cloudy night in early December 2014, the Dutch public broadcaster Omroep Max aired a 1.5-hour live stargazing event on its Channel 1, modelled on the popular BBC series *Stargazing Live*. It was the first time the BBC format had travelled abroad. Despite the disappoint-

ing overcast weather, the prime-time show, dubbed *Heel Nederland Kijkt Sterren* (HNKS; The Netherlands are Gazing at the Stars) was a huge success. Three million people — 18.8% of the market share — watched the show, #HNKS was trending on Twitter within half an hour, and over five hundred people posed questions on a dedicated website.

The astronomy community in the Netherlands was closely involved in this production as co-sponsor of the TV show.

Public broadcasting

The public broadcasting system in the Netherlands is quite different from that of



Figure 1. Still from HNKS. Joeri van Leeuwen (middle) comments to the co-hosts of HNKS Jeroen Latijnhouwers (right) and Govert Schilling (left). Credit: Tuvalu Media

the United Kingdom and other European countries. There are many commercial stations and three national public television channels, each with their own profile. Over twenty public broadcast organisations, some with a statutory role, others with a sufficient number of members, receive broadcast time on these three channels. Every channel has an independent channel manager, who is responsible for the programming and protects the profile of the channel. The profile of Channel 1 (NPO1) dictates that the programmes should attract a broad audience, so typically consists of shows, games, series, drama and comedy. It is not the first channel you would think of to air astronomy or stargazing.

So how did *Heel Nederland Kijkt Sterren* get a prime-time slot on this popular channel?

External production companies are usually the producers of big live shows like *HNKS*. In this case the production company Tuvalu Media¹ obtained the BBC *Stargazing Live* format and got the broadcaster Omroep MAX interested in airing a ninety-minute local version of *Stargazing*

Live. Tuvalu Media's executive producer Dannis Kramers said of the programme: "We have brought BBC formats to Dutch television before and they were all successful, but the BBC's *Stargazing Live* exceeded all of our expectations. The unexpectedly high ratings were a pleasant surprise for us."

Omroep MAX

Omroep MAX² is a broadcasting company skewed to an older demographic and not immediately self-evident as a broadcaster for a popular science programme on national television. Whereas the BBC has a rich history with respect to science programmes in general, and astronomy and stargazing programmes in particular, this tradition exists to a much lesser extent in the Netherlands. However, the director of Omroep MAX, Jan Slagter, was convinced of the potential of the *Stargazing Live* format and facilitated the allocation of a prime-time slot. "We were almost certain the format would be successful", explained Slagter. "The cosmos captures the imagination, not just for our 50+ age group

target audience, but basically everyone. Who does not gaze at the night sky during their vacation, wondering what is happening out there?"

The Dutch Broadcast Magazine voted Slagter Broadcaster of the Year 2014 on the grounds that the MAX programmes "seamlessly connect to the wishes and needs of their target group". Slagter does not want to admit that he has a knack for predicting what's hot and what's not, but at its peak 1 478 000 people were watching *HNKS*. The overall market share was 18.8% (for ages six and up) and in the target 50+ age group the market share was 25.4%. Kramers aptly described these figures as "very convincing".

Co-sponsorship

In the current world of television, at least in Europe, the financing of shows like *HNKS* is no longer feasible on the basis of public money and commercial adverts alone. Big live programmes need external co-funders to make them possible. Co-sponsorship faces some stringent rules, and direct visibility of the co-sponsor in the programme is forbidden. Right from the start of the project in early 2013 Tuvalu Media involved the academic astronomical institutes in the Netherlands, as well as the amateurs, and gauged the mood of the community for a programme like *HNKS* and for co-financing. Kramers succeeded in bringing on board the Netherlands Organisation for Scientific Research (NWO)³, the Netherlands Research School for Astronomy (NOVA)⁴ and the NWO organisations, the Netherlands Institute for Radio Astronomy (ASTRON)⁵ and the Netherlands Institute for Space Research (SRON)⁶.

Although this collaboration worked out very well, there were difficulties on both sides and the co-financers occasionally found it challenging to accept that the broadcasters had final say on the programme content. Two completely different worlds (science and TV) had to get used to each other," explained Kramers. "Transforming fundamental science into a programme that attracts a broad audience is really difficult, but we received great input from our co-financers. We were very happy with this collaboration."



Figure 2. Still from *HNKS*. ESA astronaut André Kuipers with amateur astronomers in front of a public observatory. Credit: Tuvalu Media

Despite the challenges, the astronomy community also considers the collaboration to have been a success. The chair of the NOVA Committee for Outreach, Alex de Koter (University of Amsterdam), puts it this way: “For scientists it is sometimes difficult to let the TV producers do what they are good at. They have different rules and customs, and a different perspective. But, with our input and with balance added by experts in outreach and popularisation, you get the best of both worlds.”

The co-sponsors were important for Tuvalu Media both for the funding and as a resource for the content of *HNKS*. They also provided fact and data checking during the production process.

Heel Nederland Kijkt Sterren

In late spring 2014 Tuvalu Media came up with the first outline for the live show. After that a team was appointed to develop this further into a final script. The script contained a central live presentation, cross talks with live stargazers at two locations, and items and reports that were produced in advance, to air throughout the programme.

The original BBC show was first broadcast in the United Kingdom on BBC 2 in 2011 and has now run to five seasons, the last of which was aired in April 2015. It is presented by the popular physicist Brian Cox and stand-up comedian and television presenter Dara O’Briain. The local Dutch version can be regarded as a modest copy of the original: only one show — instead of three consecutive evenings — and no foreign reports from observatories around the world. All of the elements were produced within the Netherlands. The popular Dutch astronomy writer Govert Schilling and former news host and TV presenter Jeroen Latijnhouwers acted as the co-hosts. Astronomer Joeri van Leeuwen and planetary scientist Sebastiaan de Vet were introduced as experts on some topics, as well as the European Space Agency astronaut André Kuipers.

The event was broadcast live from the control room of the Westerbork Synthesis Radio Telescope⁷ in the north east of the Netherlands, operated by ASTRON. André Kuipers reported live from one of the many public observatories in the country.

Sebastiaan de Vet was standing outside the control room at the base of one of the Westerbork telescope dishes.

For Govert Schilling it was the first time he had been a presenter on such a large live event. He said of the experience: “Although I’ve often talked about astronomy on TV programmes before, I was pretty nervous! But everything went smoothly, and doing the presentation together with the Dutch TV personality Jeroen Latijnhouwers (who doesn’t know too much about astronomy) worked very well: the audience could easily identify with him and his questions, and I didn’t have to talk to an anonymous TV camera.”

In this first *HNKS* edition almost all aspects of astronomy were covered, from simple stargazing and Solar System studies to extrasolar planets, black holes and the Big Bang. Schilling commented on the content of the show by saying: “I think the content covered, and how this was approached was very successful. It’s like your very first visit to Paris: you want to see all the major highlights! As a result, TV viewers didn’t really get a chance to become bored or lose their initial interest. I believe the fast pace of the show was one of its strengths. I was less enthusiastic about some of the demonstrations that we did during the show.”

Kramers added: “The programme was an excellent introduction to astronomy and stargazing for a wide audience. We had many topics and the pace was fast. For a second edition I would like to see fewer items but more depth.”

Conclusion

On 3 December 2014 — the night of the live show — the skies were overcast, but this did not make much difference to the success of the event. Schilling explained that: “It is completely unthinkable that over a million people would have stepped outside onto their balcony or into their garden when they were sitting comfortably on their couch watching TV, even if the sky had been completely clear. So in the end, despite the title, the programme was much more about getting across basic knowledge and enthusiasm about astronomy, than about turning people into active amateur astronomers.”⁸

During the live broadcast, the BBC was present at Westerbork. For them it was a first as well. The Netherlands is the first country outside the UK to have brought the *Stargazing Live* format to national TV. “They are very pleased with the success of *HNKS*,” says Kramers, who is already working on funding a second edition of *Heel Nederland Kijkt Sterren*. Will there be a sequel? Kramers is confident that there will be, but emphasises that a decision has not yet been taken. MAX director Jan Slagter is positive as well: “Yes, we are developing the programme right now. I can’t give any details yet, but there will definitely be a second edition of *HNKS*.”

Notes

- ¹ More about Tuvalu Media: <http://www.tuvalu.nl/en/>
- ² More about Omroep Max (in Dutch): <http://www.omroepmax.nl/home/>
- ³ More about Netherlands Organisation for Scientific Research: <http://www.nwo.nl/en>
- ⁴ More about the Netherlands Research School for Astronomy: <http://www.nova-astronomy.nl/>
- ⁵ More about Netherlands Institute for Radio Astronomy: <https://www.astron.nl/>
- ⁶ More about the Netherlands Institute for Space Research: <https://home.sron.nl/>
- ⁷ More about the Westerbork Synthesis Radio Telescope: <http://www.astron.nl/radio-observatory/public/public-0>
- ⁸ Netherlands Research School for Astronomy Dutch astronomy website for the general public: <http://www.astronomie.nl>

Biography

Marieke Baan is head of communication at the Netherlands Research School for Astronomy (NOVA) and was involved in that capacity in the realisation of *HNKS*. The four university astronomy institutes in the Netherlands work together in the top research school NOVA.

Artist's Impressions in Astronomy and Planetary Science

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Summary

The visual impact of images taken with telescopes like the Hubble Space Telescope is comparable with any of the most beautiful conventional works of art. These images are not only art in their own right, they also inspire space artists to create new pieces of art. This article explores the role of space art in astronomy outreach.

Introduction

Astronomy and space science receive a great deal of attention in the media, fueling public interest. Space agencies and astronomical associations realise the strategic importance of communication and produce press releases. However, the general public often perceive science as difficult and disconnected from everyday life and it remains difficult to stand out in the explosion of online media.

As science communicators we can use the artistic appeal of images to give scientific results more newsworthiness, a broader appeal and, in some cases, to help to better explain the discoveries.

Images from some telescopes, of some objects, can grab headlines by themselves, but when these images are not available, an artist's impression can catch the attention of the media, who more often than not will need a good visual to support a story, no matter how interesting the science.

The history of art and science

Both science and art involve structural representation, imagination and curiosity. These similarities are represented in the work of the great scientists and inventors of the Renaissance. The Italian polymath Leonardo da Vinci (1452–1519) is famous for his beautiful yet scientifically accurate drawings of the human body, animal anatomy and of the machines of his own

invention. As is the Dutch anatomist and physician Andreas Vesalius (1514–1564)¹.

The illustrations of da Vinci and Vesalius were an effective way of recording, publishing and spreading scientific findings to other scholars. Astronomy too has a very long tradition of translating observational data into visual representations in order to leave a record for future generations. Chinese astronomers depicted stars and appearances of comets on oracle bones and ox scapula for millennia².

The history of illustration in astronomy

The introduction of the telescope in 1608 vastly improved astronomical observations. Four centuries later we can compare

the scientific data embedded in early illustrations made before the invention of the telescope with those that came afterwards.

While the informational content in the Moon drawings of Galileo Galilei (1564–1642) was limited to revealing the mountainous topography, the splendid illustrations made by Thomas Harriot (1560–1621) plotted the locations of lunar features precisely, culminating in a cartographic map of the near side of the Moon. As telescopes grew bigger, astronomers such as William Parsons (1800–1867) were able to produce detailed representations of spiral galaxies and planetary nebulae^{3, 4}.

With the advent of astrophotography in the mid-nineteenth century and radio astronomy in the mid-twentieth century it seemed that there might come an end to astronomical sketching. However, new discoveries and beautiful imagery from the telescopes themselves have boosted the creativity of a new generation of space artists.

The modern space artist

In the 1960s, new astronomical discoveries and the emergence of spaceflight inspired illustrators such as the Czech Ludek Pesek (1919–1999), the American Chesley Bonestell (1888–1986) and the Russian Andrei Sokolov (b. 1931). Their paintings, which depict rocket ships, meteors, lunar and Martian landscapes, binary stars and galaxies, strived to show the wonders of the Universe in a different light⁵.

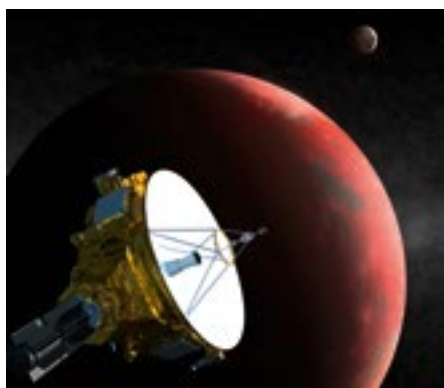


Figure 1. NASA's artist's illustration depicted New Horizons' flyby of the Pluto–Charon system. The icy dwarf planet is covered by a red carbon-rich residue caused by the breakup of solid methane due to ultraviolet radiation from the distant Sun. Credit: NASA



Figure 2. Artist's impression by the Dutch space artist Ed Hengeveld showing the dwarf planet Pluto and its largest moon Charon lit by the faint illumination from a distant Sun. Hengeveld explicitly depicted Pluto as a classic icy small Solar System body. Credit: Philip Corneille/Ed Hengeveld

Space artists have worked closely with scientists to help them visualise scientific concepts and communicate astronomical discoveries to the general public. In 1982, the International Association of Astronomical Artists was founded to bring space artists together⁶. Their creations, from traditional paintings to digital creations, have graced numerous magazine covers, provided movie effects and illustrated scientific articles in a unique manner.

Astronomy illustrations and the media

Since the new millennium, illustrative space art has become an inescapable element of scientific publications and contemporary media. Contemporary artist's impressions make articles aesthetically more appealing and more inviting to read. Artist's impressions are often created to represent concepts and objects that cannot be seen with

the naked eye, that are very big, very small, in the past, in the future, fictional, or otherwise abstract. Herein lies the strength of an illustration, which can give an audience an impression of the nature of hostile objects like pulsars and black holes.

My experience with astronomy illustration

In the winter of 2007, after a decade of illustrating my articles with the well-known drawings created or commissioned by space agencies and observatory press offices, I commissioned the Dutch space artist Ed Hengeveld (b. 1956) to create a few paintings to embellish my articles on the unmanned exploration of the outer Solar System. Hengeveld is famous for his depictions of astronauts on the Moon during the *Apollo* projects of the 1970s, but he also creates artworks on the subject of astronomical discoveries. So, he

seemed to me the obvious choice to illustrate the exciting and distant Pluto–Charon encounter in the Kuiper Belt by NASA's *New Horizons* spacecraft^{7,8}.

As there is no direct observational image of these Trans-Neptunian objects, NASA released an artist's concept, shown in Figure 1, of the spacecraft approaching Pluto and its largest moon Charon⁸. This was based on observations by the Hubble Space Telescope, which showed the red carbon-rich residue left behind as the ultraviolet radiation from the distant Sun broke up methane on Pluto's surface.

I explicitly asked Hengeveld to depict a more classic small astronomical body showing white–brown surface frost, seen in Figure 2. By using both NASA's and Hengeveld's depictions in a single article, readers were encouraged to think about how Pluto might look. Most Kuiper Belt objects may have a reddish colour,



Figure 3. Dutch space artist Ed Hengeveld created an informative artwork full of symbolism to celebrate the 125th anniversary of astronomer Edwin Powell Hubble and the 25th anniversary of the Hubble Space Telescope. Both the astronomer and the eponymous space telescope played an important role in discovering the accelerating expansion of the Universe. Credit: Philip Corneille/Ed Hengeveld

whereas scattered-disc objects, which have more eccentric orbits as a result of gravitational interactions, might look whiter. We will soon know as *New Horizons*, zipping through the outer Solar System at nearly 1.5 million kilometres per day, is due to arrive at Pluto this year.

Illustrations for Edwin Hubble's 125th anniversary and the Hubble Space Telescope's 25th anniversary

In November 2014, the astronomical community celebrated the 125th anniversary of the American astronomer Edwin Powell Hubble (1889–1953) who discovered the expansion of the Universe using the 2.50-metre telescope at Mount Wilson Observatory in California, USA⁹. In April 2015, the Space Telescope Science Institute in Baltimore, USA, together with the European Southern Observatory (ESO) and the American (NASA) and European (ESA) space agencies celebrated 25 years of Hubble's namesake telescope, the Hubble Space Telescope (HST).

I commissioned Ed Hengeveld again to create a painting combining both anniversaries in a single informative artist's impression, shown in Figure 3. The result was an amazing artwork showing the astronomer together with the 2.50-metre telescope and the Hubble Space Telescope observing the spiral Andromeda Galaxy, also known as Messier 31.

Beauty is in the eye of the beholder, but Hengeveld's painting is full of symbolism, and effectively combined history and science in a unique way. The meaning and subject are immediately apparent, crossing language barriers so that the painting can be used to popularise science worldwide.

To commemorate a quarter century of the HST's success in engineering, science and outreach, the general public participated in the celebrations by creating their own Hubble-inspired video artworks. The winning videos from the competition can be found on the ESA/Hubble website¹⁰.

Conclusion

Sharing the wonders of the Universe is one of the most enjoyable and rewarding aspects of astronomy. Moreover, by pairing our natural love of art with exciting science, we can create an engaged public and capture their imaginations. It is one of the most exciting ways of bringing astronomical science closer to the people.

Notes

- ¹ For more information on Leonardo da Vinci and Andreas Vesalius: https://en.wikipedia.org/wiki/Leonardo_da_Vinci
https://en.wikipedia.org/wiki/Andreas_Vesalius
- ² For more information on astronomy in ancient China: http://en.wikipedia.org/wiki/Chinese_astronomy
- ³ For more information on selenography and lunar mapping: <http://en.wikipedia.org/wiki/Selenography>
- ⁴ For more information on deep sky observations using large reflectors in the 19th century: <http://www.klima-luft.de/steinicke/ngcic/persons/rosse3.htm>
- ⁵ For more information on space art and a list of space artists: http://en.wikipedia.org/wiki/Space_art
- ⁶ For more information on the International Association of Astro-Artists: <http://iaaa.org/>
- ⁷ For more background on Dutch space artist Ed Hengeveld: <https://www.hq.nasa.gov/alsj/hengeveld.html>
- ⁸ For the latest on NASA's *New Horizons* mission to Pluto-Charon: http://www.nasa.gov/mission_pages/newhorizons/main/
- ⁹ For more information on the history of the Mount Wilson Observatory: <http://www.mtwilson.edu/>
- ¹⁰ For more information on 25 years of the Hubble Space Telescope: <https://www.spacetelescope.org/projects/Hubble25/>

Biography

Philip Corneille is an amateur astronomer who works as a distance e-learning & ICT consultant with a keen interest in remote robotic technologies. As a Fellow of the Royal Astronomical Society, he documents the history, telescopes and instruments of professional astronomical observatories. Philip is member of Astronomers Without Borders and so far, he has visited 160 observatories in 33 countries.