



OBITUARY

Brad Smith obituary

Visionary astronomer who headed Nasa's photographic team and compared moons of Saturn and Jupiter to a burger and a pizza

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Brad Smith at the Nasa Jet Propulsion Laboratory in 1979, announcing that Voyager 1 had discovered rings around Jupiter

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Nasa set its sights on more distant realms after landing men on the moon, and astronomers as well as astronauts found themselves making headlines.

In 1971 *Mariner 9* became the first spacecraft to orbit another planet, Mars, and transmitted more than 7,000 images. Later in the decade the US space agency sent *Viking 1* and *2* to Mars to conduct soil sample experiments that offered ambiguous evidence for life on the red

planet. This helped stoke global intrigue in what robotic probes could discover far beyond the reach of any manned spacecraft.

Voyager 1 and *2* launched in 1977, each loaded with a time capsule for alien attention: 12-in golden records with images, natural sounds, music and spoken greetings from Earth.

As the probes spent years hustling from planet to planet Nasa experts pored over the extraordinary images sent to Earth.

Sometimes they woke in the middle of the night to examine the latest missives from deep space, transmitted via radio waves over billions of miles by probes with a fraction of the computing capacity of one of today's smartphones, using transmitters no more powerful than a household refrigerator's light bulb.

They held press events to bring their analysis to a mainstream audience, conveying the wonder behind the data as the Voyagers picked up surprising levels of activity that gave clues about the origins of the solar system.

As head of the Voyager photographic image team at the Nasa Jet Propulsion Laboratory in California, Brad Smith brought personality to the task and was often quoted when news

outlets carried stories about the latest discovery. The moustached and bespectacled Smith showed a passion for the project that was occasionally laced with a sardonic sense of humour. At a 1979 press conference that depicted Io, a moon of Jupiter, as speckled red, yellow and black, he remarked: “That’s better looking than a lot of pizzas I’ve seen.” Hyperion, an irregular moon of Saturn, he declared two years later, was akin to a “thick hamburger patty”.

Popularising Nasa’s adventures delivered political as well as scientific dividends at a time when planetary exploration faced budget cuts. Smith was convinced that the long journeys were some of the most important scientific experiments ever undertaken, and for the relative bargain price of \$865 million (£2.8 billion today).

The Voyager programme provided profiles of the atmospheres of Saturn, Uranus and Neptune and previously unknown details about the rings of Saturn. New moons and the rings of Jupiter were discovered as were active volcanoes on Io, the first to be found beyond Earth. Sometimes Smith just had to concede that certain revelations only added to the puzzle.

Bradford Adelbert Smith was born in

Cambridge, Massachusetts, in 1931, to Percival Smith, who had a leather tanning business, and his wife, Mary (née Jennings). He took chemical engineering at Northeastern University in Boston, graduating in 1954.

He married Tamara Ushakoff, a fellow student, in the year that he graduated. The couple had three children, Randall, who is an engineer; Kari, who has held a variety of jobs; and Hillary, who runs a telecommunications company, but the relationship did not last. His second marriage, to Susan Armstrong, also ended in divorce. He is survived by his third wife, Diane McGregor, an artist. They were together for 34 years.

It was hard to pursue his interest in astronomy beneath the cloudy, light-polluted skies of New England, but during a stint as a military astronomer at the White Sands Missile Range in New Mexico he met Clyde Tombaugh, who discovered Pluto, and infected Smith “with a passion for planets”. After being awarded a PhD in astronomy in 1973 he became a professor of planetary sciences and astronomy at the University of Arizona and a research astronomer at the University of Hawaii.

He was involved in the design of the Voyager cameras and was a pioneer in the use of

electronic imaging in astronomy. In 1976 Smith and his colleagues were the first to use a charge-coupled device light detector to produce high-resolution infrared images of Uranus and Neptune. This technology became the basis for modern digital cameras.

With Richard Terrile he made the first image of a dust debris disk around the Beta Pictoris star in 1984, a significant advancement in the study of protoplanetary discs, which surround newly formed stars and become planets. It won them a Nasa medal for exceptional scientific achievement.

He also promoted co-operation between American and Soviet scientists during the Cold War. The Russians did not share Smith's commitment to public transparency but there was a hotline between the Jet Propulsion Laboratory and the Soviet Academy of Sciences. With cautious approval from the US government he worked on a Russian-led flyby of Halley's Comet in the mid-Eighties and lived in Budapest near a well-armed Soviet listening post.

In retirement Smith and his wife worked in the intensive care unit of a wildlife centre in Santa Fe, where he proved adept at helping birds of prey. They also rehabilitated orphaned raccoons and skunks.

In 2006 Smith and the French astrophysicist André Brahic (obituary, May 31, 2016) visited Niger to witness a total eclipse of the sun in the Sahara desert with the Tuareg people.

The Voyager probes are still flying and have enough power to continue for several more years. In 2012 *Voyager 1*, Nasa's fastest spacecraft, became the first manmade object to enter interstellar space, travelling at 11 miles a second, 11 billion miles from the sun. But the Voyagers have not taken a photograph since 1990, their cameras switched off to save power and memory, and are unlikely to ever capture another celestial image.

Bradford Smith, astronomer, was born on September 22, 1931. He died from an autoimmune disorder on July 3, 2018, aged 86

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