

T H E F A R T H E S T

1 2 B I L L I O N M I L E S A N D C O U N T I N G



THE FARTHEST ELECTRONIC PRESS KIT

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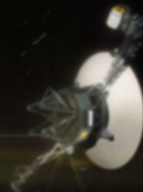
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Crossing the Line
Productions



SYNOPSIS

Logline:

12 billion miles and counting...

Synopsis:

It is one of humankind's greatest achievements. More than 12 billion miles away a tiny spaceship is leaving our Solar System and entering the void of deep space - the first human-made object ever to do so. Slowly dying within its heart is a nuclear generator that will beat for perhaps another decade before the lights on Voyager finally go out. But this little craft will travel on for millions of years, carrying a Golden Record bearing recordings and images of life on Earth. In all likelihood Voyager will outlive humanity. THE FARTHEST will celebrate these magnificent machines, the men and women who built them and the vision that propelled them farther than anyone could ever have hoped.

Longer Synopsis:

Is it humankind's greatest achievement? 12 billion miles away a tiny spaceship is leaving our Solar System and entering the void of deep space. It is the first human-made object ever to do so. Slowly dying within its heart is a plutonium generator that will beat for perhaps another decade before the lights on Voyager finally go out. But this little craft will travel on for millions of years, carrying a Golden Record bearing recordings and images of life on Earth. In all likelihood Voyager will outlive humanity and all our creations. It could be the only thing to mark our existence. Perhaps some day an alien will find it and wonder.

The story of Voyager is an epic of human achievement, personal drama and almost miraculous success. Launched 16 days apart in Autumn 1977, the twin Voyager space probes have defied all the odds, survived countless near misses and almost 40 years later continue to beam revolutionary information across unimaginable distances. With less computing power than a modern hearing aid, they have unlocked the stunning secrets of our Solar System on a journey as revolutionary as the first circumnavigation of the globe and humankind's first footprint on the moon.

In this powerful, poetic and cinematic feature documentary, THE FARTHEST celebrates these magnificent machines, the men and women who built them and the vision that propelled them farther than anyone could ever have hoped. Launched from a fractious planet, these pioneers sail on serenely in the darkness - an enduring testament to the ingenuity of humankind and the untapped limits of the human imagination.

Passionate organic storytelling with people, images, archive and opinion woven with daring and brio makes THE FARTHEST a genuinely cinema-scale adventure.

CREW BIOGRAPHIES

Emer Reynolds **Director**

Director Emer Reynolds is an Emmy nominated multi-award winning documentary director and feature film editor based in Dublin, Ireland. THE FARTHEST, her feature documentary on the trail-blazing Voyager spacecraft, described by Screen Daily as “cathartic and moving .. the right film at the right time”, made its debut at the Audi Dublin International Film Festival, where it picked up three awards including the Audience Award and Best Irish Documentary, and has just had its International Premiere at the Tribeca Film Festival in New York. Emer most recently directed HERE WAS CUBA, a feature documentary on the Cuban Missile Crisis described by the Hollywood Reporter as “a real-life end-of-the-world-thriller”. The film was commissioned by US Public Broadcaster PBS as their landmark documentary to mark the 50th anniversary of the crisis – the closest humankind has come to nuclear destruction. In the UK, the film premiered at the prestigious Sheffield Film Festival, was broadcast by Channel 4, nominated for a Grierson Award – the UK’s top documentary prize before going on to feature in film festivals worldwide garnering widespread acclaim for its riveting storytelling. Emer also edited 'Here Was Cuba' winning Best Editing at the 2014 Irish Film & Television Awards (IFTAs) for the film. She again won the IFTA for Best Editing in 2015 for another feature documentary, 'One Million Dubliners' to add to her three previous Best Editing IFTAs for the feature films 'Timbuktu', 'My Brothers' and Channel 4's groundbreaking drama series 'Shameless'. Over the last two decades, Emer's work has spanned feature films, TV Drama and documentary including editing one of the most successful Irish feature films of all time 'I Went Down'. Documentaries Emer has worked on include the multi award winning, twice Emmy nominated wildlife feature 'Broken Tail' and the three times Emmy nominated 'On a River in Ireland' made for the BBC & PBS and notable as the most awarded wildlife film in the world of the past two years. Emer has also written and directed four short dramas and directed a 6 part drama series 'Trouble in Paradise' for RTE. Emer studied Physics & Maths at Trinity College Dublin and has a lifelong passion for space exploration.

"In the 4.5 billion years of Planet Earth, modern humans have been around for barely 200,000 years, have developed technology in the last few hundred and have just now reached interstellar space. The story of Voyager thrills me to the core"

Emer Reynolds

CREW BIOGRAPHIES

John Murray

Producer

In the last twenty years, John Murray has produced over 70 films for some of the world's leading broadcasters and won numerous national and international awards including IFTAs for Best Documentary Series on three occasions, two Emmy nominations and Best of Festival two years running at the world's leading natural history film competition in the USA beating all comers from the BBC's Frozen Planet to National Geographic specials. John has also directed more than 30 films and is MD of Crossing the Line Productions, one of Ireland's leading documentary producers for the international market. Specializing in films of the very highest quality, CTL were the first Irish documentary company to produce in HD and now have moved to 4K. John produces for a wide range of Irish and international broadcasters including RTÉ, TG4, BBC, Channel 4, PBS, France TV and many others, and his films have broadcast in over 150 countries. In 1991 John started his career filming the first Irish expedition to Mount Everest and has since produced films from the North & South Poles, through the Northwest & Northeast Passages, across Siberia and the Sahara amongst many other locations. Career highlights would include the award winning cinema documentary on Liam Clancy and the Clancy Brothers, the BAI supported and IFTA winning series – 'Blood of the Irish', 'Broken Tail' an internationally recognised film on the fate of India's tigers and 'The Secret Life of the Shannon' the recent multi-award winning BAI supported series on the wildlife of Ireland's great river.

Clare Stronge

Producer

Clare Stronge is a Dublin-based specialist factual producer and director. She has produced and directed documentaries for channels such as BBC2, BBC4, Channel 4, National Geographic and Discovery Channel. She produced Solar Superstorm for Discovery's prestigious Curiosity strand in 2012, winning a Cine Gold Eagle for Science & Technology. In 2014 she produced and directed the feature-length documentary Spider House for BBC4, which uniquely saw a house filled with thousands of the most common spider species allowing scientists to understand, for the first time, spider behaviour in the human home. Clare has also produced and directed on subjects as diverse as evolutionary canine biology, urban foxes, engineering geology, archaeology and human remains analysis and the comparative world of the reproductive egg.

CREW BIOGRAPHIES

Tony Cranstoun **Editor**

Tony is a multi-award winning editor. His craft has received recognition from The British Academy of Film and Television Arts (BAFTA), The American Cinema Editors (ACE) and The Royal Television Society (RTS). His television credits include Cracker, Queer As Folk, The Royle Family, The Dinner Party and Wallander. His cinema credits include Mr. Bean's Holiday, A Film With Me In It, I Give It A Year, Love Rosie, and In A House That Ceased To Be. "The Farthest" is his fourth feature documentary and his first collaboration with director Emer Reynolds.

Kate McCullough **Director of Photography**

Kate McCullough is an Irish cinematographer based in Dublin. She is a winner of the World Cinema Cinematography for Documentary Award for at the Sundance Film Festival 2010 for the documentary 'His & Hers'. Her work in both drama and documentary filmmaking has won awards at the Aspen Film Festival, Rhode Island Film Festival, Irish Film and Television Awards, and has been screened at numerous festivals such as Tribeca Film Festival, Berlin Film Festival and many others. She has recently filmed Ken Wardrop's latest film "Mom and Me" as well as the acclaimed documentary "Queen of Ireland".

Ian Benjamin Kenny **CGI Visual Effects**

Ian Benjamin Kenny is an award winning visual effect artist who has been working the film and television industry for the last 15 years. Based in Dublin, Ireland Ian has a diverse portfolio and has worked with clients such as Facebook, BBC, RTÉ and numerous other television broadcasters and production companies. Recently he directed an award winning series call 'Brain Freeze', a children's science show for the BBC where he created the effects, animation and also physically built the puppets that perform in the show. Previously he worked with Boulder Media as a lead key animator on Cartoon Network's 'Fosters Home For Imaginary Friends', Nickelodeon's 'El Tigre', and several Disney shorts.

COMPANY BIOGRAPHY

Crossing the Line Productions

Crossing the Line is one of Ireland's leading documentary producers making crafted films featuring powerful stories on subjects ranging from wildlife to science to history. In recent years we have won best wildlife film in the world at the 'Oscars' of the genre – the Jackson Hole Wildlife Film Festival in 2011 and Best of Festival again at both Jackson Hole and Wildscreen Film Festivals in 2013. Nominated for three Emmy awards in 2015, two in 2012 and for a Grierson Award in 2014, we are also triple winners of best documentary series at the Irish Film & TV Awards. We currently have production contracts with leading broadcasters and funders including BAI, IFB, BBC, PBS, ZDF/Arte, ORF, SVT, SBS, RTÉ, TG4 & France TV. We constantly strive to explore new horizons developing and producing ambitious documentaries for the domestic and international markets.



CONTRIBUTOR BIOGRAPHIES

Fran Bagenal

Co-Investigator Plasma Science

Fran Bagenal is a Professor of Astrophysical and Planetary Sciences at the University of Colorado Boulder and a researcher in the fields of space plasmas and planetary magnetospheres. She has participated in many of NASA's planetary exploration missions, including Galileo, Deep Space 1 and the Voyager mission to Jupiter, Saturn, Uranus and Neptune. On the Voyager mission, Bagenal worked on the science team for the MIT Voyager plasma instrument. Bagenal is currently Co-investigator on the New Horizons missions to Pluto as well as the chair of the Magnetospheres working group for the Juno mission to Jupiter. Prof Bagenal also currently chairs NASA's Outer Planet Assessment Group that provides input from the scientific community on exploration of the outer solar system.

Jim Bell

Author "The Interstellar Age"

Jim Bell is a planetary scientist, educator, author, public speaker, and president of the board of The Planetary Society. He works at Arizona State University and is heavily involved in NASA solar system exploration missions like those of the Mars rovers Spirit, Opportunity, and Curiosity. In 2011 he received the Carl Sagan Medal for Excellence in Public Communication from the American Astronomical Society. He is an avid writer for space-related magazines and blogs. His popular science and space photography books include Postcards from Mars (Dutton, 2006), Mars 3-D (Sterling, 2008), Moon 3-D (Sterling, 2009), The Space Book (Sterling, 2013) and most recently, The Interstellar Age (Dutton, 2015). Jim is a Professor in the School of Earth and Space Exploration at ASU and is also an Adjunct Professor in the Department of Astronomy at Cornell University.

John Casani

Voyager Project Manager

John Casani's work can be found at the farthest reaches of our solar system. He began his career at JPL in the mid-1950s, working on the lab's Jupiter and Sergeant rocket programs. He went on to become an engineer on the early Pioneer moon missions and led the design team for both the Ranger and Mariner spacecraft. Casani held senior project positions on many of the Mariner missions to Mars and Venus, and in 1970 became project manager of Mariner 6 and Mariner 7. Later, Casani became project manager of NASA's Voyager mission to the outer planets, Galileo mission to Jupiter, and the Cassini mission to Saturn. Casani has been honored with several NASA awards, including the Distinguished Service Medal (NASA's highest award), the American Institute of Aeronautics and Astronautics (AIAA) Space System Award, the von Karman Lectureship, and the American Astronomical Society's Space Flight Award. In 2009, he was recognized by the Smithsonian Air and Space Museum with a Lifetime Achievement Award. Today he provides mission engineering expertise around the globe on new and innovative aerospace projects.

CONTRIBUTOR BIOGRAPHIES

Suzanne Dodd

Current Voyager Project Manager

Suzanne Dodd is the current project manager for NASA's Voyager spacecraft. She first worked on Voyager in 1984, sequencing science and engineering commands for the Voyager 1 and 2 spacecraft in 1984. After leaving Voyager in October 1989, Dodd moved on to other JPL projects, including NASA's Cassini mission to Saturn before leaving JPL in 1999 to work at the Spitzer Science Center, which processes data from NASA's Spitzer Space Telescope. She later moved to the Infrared Processing and Analysis Center, which archives infrared astronomy data from many international sources. Dodd eventually managed both those centers for several years before rejoining the Voyager program in 2010 and leading the current team of engineers who care for the ageing spacecraft today.

Amahl Drake

Golden Record Pictures of Earth & Greeting

Amahl Drake worked at Cornell in 1977 with her husband astrophysicist Frank Drake, on the photo section of Voyager's Golden Record. Originally from the Lebanon, Amahl was additionally drafted in by Linda Sagan, who was organising the greetings on the Golden Record, to record a greeting in Arabic. Amahl wanted to say something significant, something warm and something that projects friendship and a longing to make the connection. She chose the Arabic words that translate as: "Greetings to our friends in the stars. How we long to meet you some day."

Frank Drake

Golden Record Technical Director & Pictures of Earth Director

Frank Drake is an American astronomer and astrophysicist. He is a key pioneer in the search for extraterrestrial intelligence, notably by mounting the first observational attempts at detecting extraterrestrial communications in Project Ozma in 1960. Professor Drake also developed the Drake equation, a probabilistic argument used to estimate the number of active and communicative civilisations in the Milky Way galaxy. Professor Drake also created the Arecibo Message, a digital encoding of an astronomical and biological description of the Earth which was beamed into the cosmos from South America. In 1972, he was the natural choice to co-design the Pioneer plaque with Carl Sagan, which was the first 'physical' message sent into space and which was fixed to the side of the Pioneer 10 & 11 spacecraft. On the Voyager Golden Record, he acted as both Technical Director and Director of Images, leading the technical production of the record as well as the content of the encoded images. Currently he serves as Emeritus Professor of Astronomy and Astrophysics at the University of California at Santa Cruz where he also served as Dean of Natural Sciences (1984–88). He serves on the Board of Trustees of the SETI Institute.

CONTRIBUTOR BIOGRAPHIES

Timothy Ferris

Golden Record Producer

Timothy Ferris is a science writer and the best-selling author of twelve books, including *The Science of Liberty* (2010) and *Coming of Age in the Milky Way* (1988), for which he was awarded the American Institute of Physics Prize and was nominated for the Pulitzer Prize. He also wrote *The Whole Shebang: A State-of-the-Universe(s) Report* (1997), a popular science book on the study of the universe. After starting his career as a newspaper reporter, Ferris became an editor at *Rolling Stone* magazine. Ferris was instrumental in producing the Voyager Golden Record, an artefact of human civilization containing music, sounds of Earth and encoded photographs which was fastened to the side of the twin Voyager spacecraft. He has also served as a consultant to NASA on long-term space exploration policy, and was among the journalists selected as candidates to fly aboard the Space Shuttle in 1986. He was also a collaborator with, and friend of, the late American astronomer Carl Sagan.

Don Gurnett

Principal Investigator Plasma Wave Science

Don Gurnett's career has spanned more than half a century, from a low-energy particle detector he built on a rocket launched in March 1960 to his collaboration on NASA's Juno mission which reached Jupiter on July 4, 2016. He has been part of 41 space missions, nearly two-thirds of the 67 spacecraft projects that the University of Iowa has been involved in and he still considers the plasma wave instrument aboard the twin Voyager spacecraft his crowning achievement. In 2012, it was Gurnett's instrument on board the craft that provided the concrete evidence that the Voyager 1 spacecraft had indeed crossed the heliopause—the plasma boundary of the solar system—and was travelling in interstellar plasma, becoming the first human-made object ever to leave our solar system.

Heidi Hammel

Planetary Science

Heidi Hammel is a planetary astronomer who has extensively studied Neptune and Uranus. She is Executive Vice President of the Association of Universities for Research in Astronomy and the 2002 recipient of the Carl Sagan Medal for planetary science communication. On the Voyager mission, she was a member of the Imaging Science Team for the encounter with the planet Neptune. In fact her prior research on Neptune informed much of the science objectives of that encounter. In 1994, she led the team that investigated Jupiter's visible wavelength response to the impact of comet Shoemaker-Levy 9 using the Hubble Space Telescope while simultaneously acting as NASA's public face, explaining the unfolding complex science to enormous television audiences worldwide.

CONTRIBUTOR BIOGRAPHIES

Candy Hansen-Koharcheck

Imaging Science Representative

Dr. Hansen-Koharcheck began work at JPL in 1977, joining the Voyager Imaging Team as an Experiment Representative. Her task was to design the camera image acquisition sequences for every satellite flyby that occurred during Voyagers' encounters with Jupiter, Saturn, Uranus and Neptune. She went on to become the liaison between the scientists and mission engineers for anything to do with Voyager's cameras – and was central to the execution of the "Pale Blue Dot" photograph, a series of images of our solar system seen from Voyager 1's unique vantage point of 3.8 billion miles away. Aside from subsequent roles on Cassini, Mars Polar Lander, Mars Reconnaissance Orbiter and currently on Juno, Dr. Hansen works as a Senior Scientist at the Planetary Science Institute where she studies climate and seasonal processes on Mars, Triton and Pluto. In 2009, she was awarded the NASA Exceptional Scientific Achievement Medal for her research into the plumes on Enceladus.

Andrew Ingersoll

Atmospheric Science

Andrew Perry Ingersoll is a professor of planetary sciences at the California Institute of Technology. He has been a leader in the investigation of planetary weather and climate for nearly five decades. His research has included studies of the so-called runaway greenhouse effect that is thought to have boiled away Venus's oceans, the presence of liquid water on Mars, the supersonic winds on Jupiter's moon Io, and the atmospheric dynamics of Jupiter, Saturn, Uranus, and Neptune. He has been a key player on the instrument teams for many NASA/JPL missions, including Pioneer Venus, Pioneer Saturn, Mars Global Surveyor, Galileo, Cassini and crucially, Voyager.

Charley Kohlhase

Mission Design and Navigation

Charley Kohlhase is one of the most accomplished and revered figures in uncrewed spaceflight and solar system exploration. He worked for forty years at NASA's Jet Propulsion Laboratory (JPL), leading the mission design and management of many of their greatest successes, from the early days of Ranger and Mariner missions, through Viking, the Voyager 'Grand Tour' and Cassini. Since 'retiring' in 1998 he has continued to advise JPL until 2014, serving as a technical consultant for the Cassini, Mars Sample Return and other future Mars missions, Genesis, Kepler and the planned Jupiter Europa Orbiter. Charley is a specialist in navigation trajectories, mission design and management. He serves on the Advisory Council of the Planetary Society as well as being an accomplished writer, speaker, digital artist, photographer and committed environmentalist.

CONTRIBUTOR BIOGRAPHIES

Lawrence Krauss

Theoretical Physicist & Cosmologist

Lawrence Krauss is an American theoretical physicist and cosmologist who is also Foundation Professor of the School of Earth and Space Exploration at Arizona State University, and director of its Origins Project. He is known as an advocate of the public understanding of science, of public policy based on sound empirical data, and of scientific skepticism and science education. He works to reduce the influence of what he opines as superstitious and religious dogma in popular culture. Krauss is the author of several bestselling books, including *The Physics of Star Trek* (1995) and *A Universe from Nothing* (2012), and chairs the Bulletin of the Atomic Scientists Board of Sponsors.

Stamatios “Tom” Krimigis

Principal Investigator Particle Science

Stamatios “Tom” Krimigis is a Greek-American scientist and recognized as an innovative leader in space-program development. He has led or participated in space physics experiments deployed to all eight major planets, as well as Pluto, the only scientist in the world to do so. He has also made valuable discoveries in the physics of the solar wind and the magnetosphere of the solar system. In 1999, the International Astronomical Union named the asteroid 8323 Krimigis (previously 1979 UH) in his honour. Professor Krimigis is currently Head Emeritus of the Space Department Applied Physics Laboratory at Johns Hopkins University, Maryland, and he is Chair of Science and Space at the Academy of Athens, Greece and President of the Greek National Council for Research and Technology. On the Voyager mission Professor Krimigis designed, and is still the current Principal Investigator of, the Low Energy Charged Particle instrument still operating aboard both Voyager spacecraft. In 2015, Professor Krimigis was awarded the National Air and Space Museum Lifetime Achievement trophy for his contribution to space science.

Dave Linick

Sequence Team Chief

Dave Linick has worked for NASA and the Jet Propulsion Laboratory for the past 35 years. He has had a variety of engineering and management roles, principally involving systems engineering, and has extensive experience with mission operations and ground system development. On the Voyager mission, Dave worked as Sequence Team Chief with overall responsibility for all sequences of commands sent to the twin spacecraft. Dave is currently the Program Manager for NASA's Advanced Multimission Operations System (AMMOS), which provides multimission ground system tools and services to over 30 NASA missions. Dave is also a founder of the International Committee on Technical Interchange for Space Mission Operations and Ground Data Systems (SpaceOps).

CONTRIBUTOR BIOGRAPHIES

Frank Locatell

Project Engineer Mechanical Systems

Frank Locatell was a senior mechanical engineer at JPL from 1967 – 1991 accumulating twenty-four years of spacecraft hardware experience. As Project Engineer on the Voyager spacecraft from 1972 to 1977 he was responsible for the flight readiness of all division hardware. An exceptionally talented spacecraft engineer, Dr Locatell was fully in charge of the launch vehicle adaptor and the separation system between spacecraft and launch vehicle. He went on to be a consultant in spacecraft configuration, structure, and mechanical systems for numerous JPL projects and is also an accomplished artist and sculptor specialising in varieties of stone.

Jon Lomborg

Golden Record Design Director

Jon Lomborg is an American space artist and science journalist and has been commissioned by many notable institutes including by the Smithsonian Institution in the 1990s for an artistic but scientifically accurate depiction of the Milky Way Galaxy. He was Carl Sagan's principal artistic collaborator for more than twenty years on many projects from 1972 through 1996. On the Voyager Golden Record, Mr Lomborg acted as Design Director and was principally responsible for the gathering and curation of many of the images on the record. Post-Voyager Lomborg co-designed the MarsDial aboard the Mars Exploration Rovers Spirit and Opportunity and was the project director and editor-in-chief for the Visions of Mars CD-ROM and mini-DVD aboard the spacecraft Phoenix, which landed on Mars in May 2008. Currently living in Hawaii, Mr Lomborg is a founding member of the International Association of Astronomical Artists, a member of the Planetary Society advisory council. In 1998, the International Astronomical Union officially named Asteroid Lomborg in recognition of his achievements in science communication.

Linda Morabito

Navigation Engineer

Linda Morabito joined Jet Propulsion Laboratory in 1973 as a temporary summer employee and then again in 1974 after securing her undergraduate degree in Astronomy. Linda worked as a senior engineer in the Outer Planet and Navigation Section until 1981. In 1979, Linda discovered that the moon of Jupiter moon called Io was geologically alive, far more volcanically active than even the Earth. For her work in space exploration and discovering the volcanic plume emanating from an active volcano on Io, Linda was awarded three NASA Group Achievement Awards, for Voyager Flight Operations, Navigation Team; Voyager Mission Operations System Design, Ground Data Systems Development; Voyager Mission Design, Ephemeris Development, and NASA's Certificate of Appreciation. Her discovery is considered by some planetary scientists as the largest discovery of the planetary exploration program that has come out of Jet Propulsion Laboratory. Morabito is currently an Associate Professor of Astronomy at Victor Valley College. She is also the author of a memoir, Parallel Universes, a Memoir from the Edges of Space and Time.

CONTRIBUTOR BIOGRAPHIES

Fernando Peralta **Spacecraft Engineer**

Fernando Peralta is one of the engineers currently caring for the Voyager spacecraft from the official Voyager office on Woodbury Road, Pasadena, California. Peralta works as both Mission Controller - the individual that receives the telemetry or communication signals from the Voyager spacecrafts - while also being the systems engineer responsible for monitoring the spacecraft's operational health and that of all the onboard subsystems. Peralta has been on the Voyager team since 2008 and works closely with the other engineers, some of whom have been on the Voyager mission in various capacities for over 25 years.

Carolyn Porco **Imaging Science**

Carolyn Porco is an American planetary scientist known for her work in the exploration of the outer solar system, beginning with her imaging work on the Voyager missions to Jupiter, Saturn, Uranus and Neptune in the 1980s. Carolyn played instrumental roles in the taking of three iconic photographs of planet Earth from the outer solar system including participating in the planning and execution of the 1990 "Portrait of the Planets" taken by the Voyager 1 spacecraft, which included the famous Pale Blue Dot image of Earth. As the imaging science team lead on the Cassini mission, she is an expert on planetary rings and the Saturnian moon, Enceladus. She has co-authored more than 110 scientific papers on subjects ranging from the spectroscopy of Uranus and Neptune, the interstellar medium, the photometry of planetary rings, satellite/ring interactions, computer simulations of planetary rings, the thermal balance of Triton's polar caps, heat flow in the interior of Jupiter, and a suite of results on the atmosphere, satellites, and rings of Saturn from the Cassini imaging experiment. Porco has also won a number of awards and honors for her contributions to science and the public sphere including being named by the New Statesman as one of 'The 50 People Who Matter Today' in 2009. In 2010 she was awarded the Carl Sagan Medal for Excellence in the Communication of Science to the Public by the American Astronomical Society. In 2012, she was named one of the 25 most influential people in space by Time magazine.

Nick Sagan **Author and Screenwriter**

Nick Sagan is an American novelist and screenwriter. He is the author of several science fiction novels including *Idlewild*, *Edenborn*, and *Everfree*, and his screen credits include episodes of *Star Trek: The Next Generation* and *Star Trek: Voyager*. He is the son of astronomer Carl Sagan and artist and writer Linda Salzman who were both active in the planning and execution of Voyager's Golden Record. At age six, Nick Sagan's greeting, "Hello from the children of planet Earth," was recorded and placed aboard NASA's Voyager Golden Record becoming one of the most iconic and recognisable of the 55 greetings that went to the stars. Sagan went to The Mirman School as a child and received his bachelor's degree from the University of California, Los Angeles. He currently lives in Ithaca, New York, with his family.

CONTRIBUTOR BIOGRAPHIES

Brad Smith

Imaging Science Team Leader

Brad Smith had already worked on a number of missions before he became Imaging Science Team Leader on the Voyager mission at the age of 40 – one of the oldest members of the team at the time. Dr Smith was one of the few people with the foresight to realise that the satellites of the planets would be just as interesting to investigate as the planets themselves. Dr Smith also recognised that there needed to be a focus not just on astronomy but on atmospheres and geology and made the decision to change the optics of the cameras planned for Voyager to long range optics instead. He also famously insisted on hand-picking the members of his own team. Thanks to Dr Smith's visionary approach to the Imaging experiment, the photographs captured by Voyager at Jupiter and Saturn maximised all data available and the images taken at Uranus and Neptune by Voyager are yet to be bettered to this day.

Larry Soderblom

Imaging Science

Laurence A. Soderblom is a geophysicist with the United States Geological Survey based in Flagstaff, Arizona. In addition to his role as lead geologist for all the Voyager planetary encounters, Dr Soderblom has been involved in numerous JPL planetary missions including the Mariner 6, 7, and 9, Viking, Magellan, Galileo, Mars Global Surveyor, Mars Pathfinder, Deep Space 1, Cassini, and the Mars Exploration Rovers. From 1978 to 1996 Dr Soderblom twice served as Chief of the Branch of Astrogeology of the United States Geological Survey and in 1983 he was a Sherman Fairchild Distinguished Scholar at Caltech. Dr Soderblom has been engaged in a broad collection of planetary research tasks including theoretical modeling of planetary surface processes and ground-based and spacecraft instrument development. Currently he is heavily involved in the Mars Exploration Rover and the Cassini-Huygens Missions.

Linda Spilker

Infrared Science Representative

Dr. Linda Spilker is a NASA research scientist at the Jet Propulsion Laboratory in Pasadena, California. She is currently the Project Scientist for the Cassini mission and a Co-Investigator on the Cassini Composite Infrared Spectrometer team since 1988. On the Voyager mission, Dr Spilker acted as the Infrared Experiment Representative translating the wishes of the infrared science investigations into concrete engineering for the mission team. Since joining JPL in 1977 Dr Spilker has also conducted independent research on the origin and evolution of planetary ring systems. She has also famously maximised the scientific return from the Cassini end-of-life mission by executing an endgame trajectory for the spacecraft which will return never-previously-obtained data about the Saturnian atmosphere.

CONTRIBUTOR BIOGRAPHIES

Tom Spilker

Radio Science Team

Tom Spilker studied astronomy at Florida university but when the Apollo program wound down he was shocked to see spacecraft engineers working at gas stations and so went back to college to study geology and computer sciences. Later he saw Voyager's images beamed back the Jupiter encounter and they inspired him to change career and follow his childhood love of space. Spilker got work as a grad student at Stanford on the Voyager radio science team where he stayed from 1981 until after the Neptune encounter in 1989. As a member of the radio science experiment, Dr Spilker was on only team whose data came back in real time creating additional pressure to the planetary encounters. Dr Spilker met his wife Linda while working on the Voyager mission. Although they never worked directly together, they shared a bond over their involvement in the mission and later married.

Janet Sternberg

Golden Record Greeting

Janet Sternberg PhD is a media ecologist, multilingual linguist and author of the book *Misbehavior in Cyber Places*. Janet provides the voice of the Portuguese greeting on Voyager's Golden Record saying ""Paz e felicidade a todos" ("Peace and happiness to everyone"). She was a 23-year-old linguistic graduate student at Cornell when the languages department called her to say another professor at the University – Carl Sagan – was looking for the best speakers of foreign languages for a project but didn't give any more detail than that. She just showed up the next day and recorded her greeting, sending what she believes to be one of the universe's first "proto-tweets" to the stars.

Ed Stone

Voyager Chief Scientist

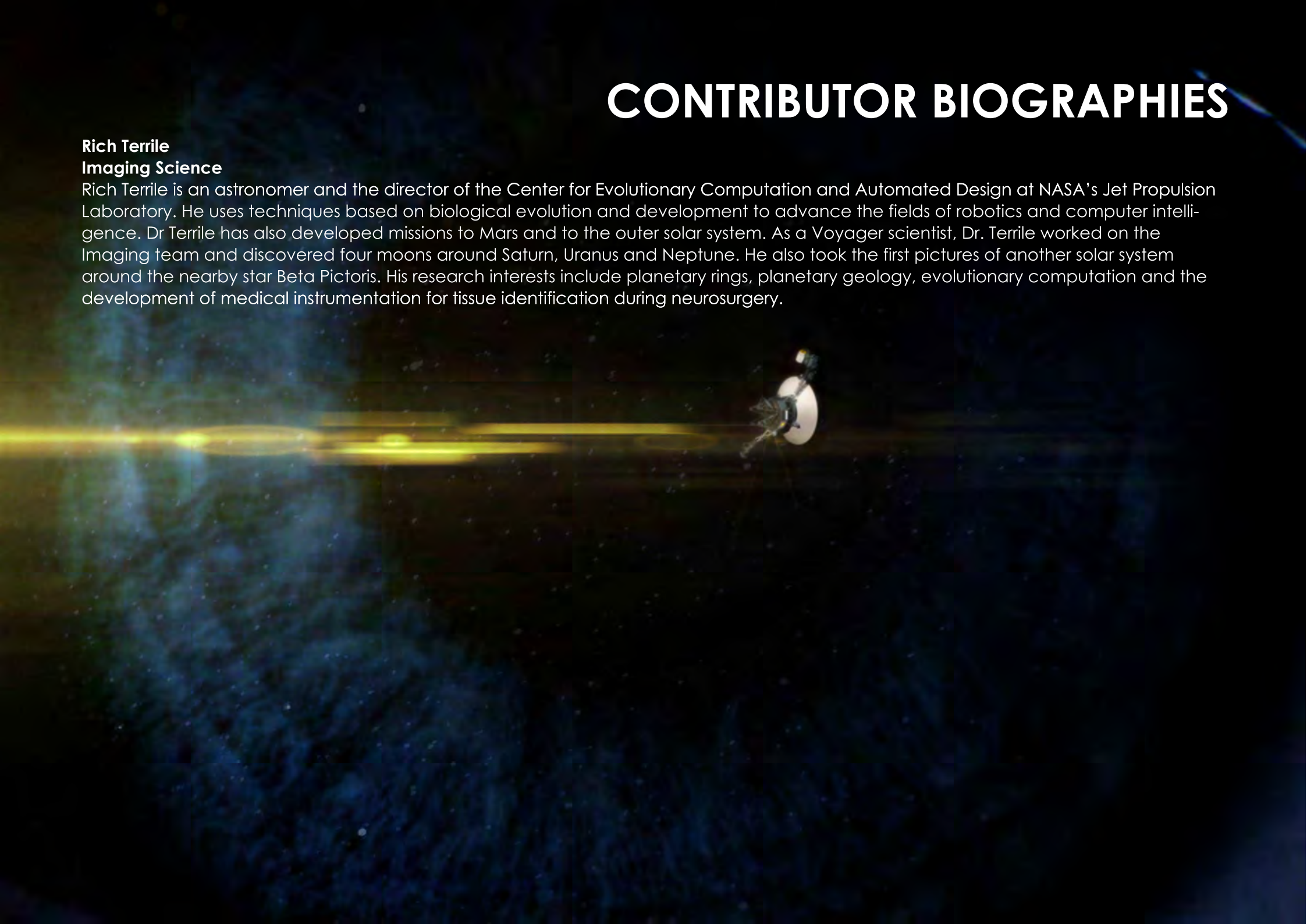
Ed Stone is an American space scientist, professor of physics at the California Institute of Technology, and former director of the NASA Jet Propulsion Laboratory (JPL). As project scientist for the uncrewed Voyager spacecraft missions to the outer Solar System since 1972, he is the longest serving NASA project scientist on any space mission to date. Aside from his role on Voyager, Professor Stone has since been principal investigator on nine NASA spacecraft missions and co-investigator on five more. Stone served as JPL director from 1991 to 2001, during which time a number of new missions were launched, all while Voyager 1 and 2 soared beyond planets and headed toward the boundary of the solar system. After stepping down as JPL director, Stone continued his leadership role with Voyager. He is currently active on several projects including acting as Vice-Chair of the Thirty Meter Telescope Board of Directors. In recognition for his unparalleled contribution to space exploration, Stone was awarded the NASA Distinguished Public Service Medal in 2013, and in 2014, the Howard Hughes Memorial Award.

CONTRIBUTOR BIOGRAPHIES

Rich Terrile

Imaging Science

Rich Terrile is an astronomer and the director of the Center for Evolutionary Computation and Automated Design at NASA's Jet Propulsion Laboratory. He uses techniques based on biological evolution and development to advance the fields of robotics and computer intelligence. Dr Terrile has also developed missions to Mars and to the outer solar system. As a Voyager scientist, Dr. Terrile worked on the Imaging team and discovered four moons around Saturn, Uranus and Neptune. He also took the first pictures of another solar system around the nearby star Beta Pictoris. His research interests include planetary rings, planetary geology, evolutionary computation and the development of medical instrumentation for tissue identification during neurosurgery.



CREDITS

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MUSIC TRACKS (IN ORDER OF APPEARANCE)

"ALIMA SONG"
FROM THE ALBUM MUSIC OF THE ITURI FOREST
COURTESY OF SMITHSONIAN FOLKWAYS RECORDINGS

J.S. BACH: "BRANDENBURG CONCERTO NO. 2 IN F MAJOR, BWV 1047"
PERFORMED BY ORCHESTRA MÜNCHENER BACH-ORCHESTER
CONDUCTOR: KARL RICHTER
(P) 1968 DEUTSCHE GRAMMOPHON GMBH, HAMBURG

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MUSIC TRACKS (IN ORDER OF APPEARANCE)

"MELANCHOLY BLUES"

PERFORMED BY LOUIS ARMSTRONG AND HIS HOT SEVEN
WRITTEN & COMPOSED BY MARTY BLOOM AND WALTER MELROSE
COURTESY OF SONY MUSIC ENTERTAINMENT INC
PUBLISHED BY EMI MUSIC PUBLISHING © 1927

"LIUSHUI " BY GUAN PINGHU

FROM THE ALBUM CHINA
COURTESY OF SMITHSONIAN FOLKWAYS RECORDINGS.

"WISHING ON A STAR"

PERFORMED BY ROSE ROYCE
WORDS AND MUSIC BY BILLIE RAE CALVIN
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BEETHOVEN: SYMPHONY NO. 5 IN C MINOR, OP. 67: I. ALLEGRO CON BRIO

PERFORMED BY OTTO KLEMPERER, THE PHILHARMONIA ORCHESTRA
LICENSED COURTESY OF WARNER MUSIC UK LTD

"TCHENHOUKOUMEN"

FROM THE ALBUM MUSIQUES DAHOMÉENNES OCR17
COURTESY OF OCORA RADIO FRANCE

"IZLEL JE DELYO HAGDUTIN"

PERFORMED BY VALYA BALKANSKA
KVZ MUSIC LTD. / BALKANTON / VALYA BALKANSKA

"RECORDER 4' CONSORT - THE FAIRIE ROUND"

PERFORMED BY DAVID MUNROW, THE EARLY MUSIC CONSORT OF LONDON
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MUSIC TRACKS (IN ORDER OF APPEARANCE)

"AZERBAIJAN S.S.R. - UGAM"
FROM THE ALBUM FOLK MUSIC OF THE U.S.S.R.
COURTESY OF SMITHSONIAN FOLKWAYS RECORDINGS

MOZART: "DIE ZAUBERFLÖTE – DER HÖLLE RACHE (QUEEN OF THE NIGHT'S ARIA)"
EDDA MOSER (SOPRANO)
BAYERISCHES STAATSORCHESTER CONDUCTED BY WOLFGANG SAWALLISCH
LICENSED COURTESY OF WARNER MUSIC UK LTD

"TSURU NO SUGOMORI"
PERFORMED BY VARIOUS ARTISTS/EXPLORER SERIES
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"KETAWANG: PUSPAWARNA"
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"JAAT KAHAN HO"
UNDER LICENSE FROM SAREGAMA INDIA LIMITED
SINGER: SURSHRI KESARBAI KERKAR

"KARCZMARZE POGRANICZE"
PERFORMED BY KARCZMARZE BAND

"BREAKAWAY"
WRITTEN AND PERFORMED BY GALLAGHER & LYLE
(P) 1976 A&M RECORDS LTD.
PUBLISHED BY IMAGEM MUSIC

"CALLING OCCUPANTS OF INTERPLANETARY CRAFT"
PERFORMED BY THE CARPENTERS
WORDS & MUSIC BY JOHN WOLOSCHUK & TERRY DRAPER
(P) 1977 A&M RECORDS

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"US AND THEM"

PERFORMED BY PINK FLOYD

WRITTEN BY ROGER WATERS AND RICHARD WRIGHT

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J. S. BACH "3. GAVOTTE EN RONDEAU [PARTITA FOR VIOLIN SOLO NO. 3 IN E, BWV 1006]"

MUSIC BY JOHANN SEBASTIAN BACH

VIOLIN: ARTHUR GRUMIAUX

(P) 1964 UNIVERSAL INTERNATIONAL MUSIC B.V.

"JOHNNY B. GOODE"

WRITTEN, COMPOSED AND PERFORMED BY CHUCK BERRY

(P) 1967 UMG RECORDINGS, INC.

PUBLISHED BY JEWEL MUSIC LTD.

"THE RACE"

WRITTEN AND PERFORMED BY ARCHER PREWITT

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REVIEWS / PRESS

What the critics are saying...

"Dazzling" **The New York Times**

"Exactly what the World needs right now" **The LA Times**

"Out of this World" **The Hollywood Reporter**

"Awe-inspiring..chills-inducing" **Variety**

"Cathartic and moving" **Screen Daily**

"Stunning" **The Irish Times**

"Irresistible" **The Seattle Times**

"The Ultimate Space Documentary" **The Hollywood News**

"Funny. Emotional. Mind Blowing" **Evening Herald**

"Hell Yeah Science!" **The Pantograph Punch**

"An intimate love letter to science and technology" **Escape into Film**

"Will make you marvel anew at the skies above" **Irish Independent**

REVIEWS / PRESS

"Dazzling" **The New York Times**

https://www.nytimes.com/2017/08/10/movies/review-a-true-life-journey-into-interstellar-space-in-the-farthest.html?_r=0

"The Farthest" is exactly what the world needs right now" **The LA Times**

<http://www.latimes.com/entertainment/movies/la-et-mn-capsule-farthest-voyager-in-space-review-20170809-story.html>

"Out of this World" **The Hollywood Reporter**

<http://www.hollywoodreporter.com/review/farthest-1028187>

"Stirring sense of awe about mankind's innate desire for adventure, discovery and communion with all that surrounds it." **Variety**

<http://variety.com/2017/film/reviews/the-farthest-review-1202522358/>

Screen Daily Review:

"In Reynolds' sympathetic hands, this becomes a reassuring message in troubled times for the human race"

<http://www.screendaily.com/5115403.article>

The Farthest wins audience award at Audi Dublin International Film Festival

<http://www.diff.ie/news/article/winners-celebrate-as-awards-announced-at-the-audi-dublin-international-film>

Irish Times: The Farthest wins audience award at Audi Dublin International Film Festival

<http://www.irishtimes.com/blogs/screenwriter/2017/02/26/the-dfcc-awards-at-the-audi-dublin-international-film-festival/>

Them0Vie Blog, Review

"The Farthest is a romantic and occasionally poetic tribute to the majesty of space and to the wonder of the sky."

<https://them0vieblog.com/2017/02/27/non-review-review-the-farthest/>

Scannain interview with Director, Emer Reynolds:

<http://scannain.com/interview/the-farthest-emer-reynolds/>

Joe.ie praise for The Farthest

<https://www.joe.ie/tech/new-irish-film-may-must-see-documentary-2017-577563>

Scannain Article: Round up of best at ADIFF

"Emer Reynolds' new film is simply stunning. More than merely a story about the Voyager space mission, it's about the team, the ambition and the dream" – **Gráinne Humphreys, ADIFF Director**

<http://scannain.com/irish/the-farthest-adiff17-preview/>

REVIEWS / PRESS

Hayes at the Movies Blog: Review

"Not only is there tons of information in the film that audiences may not have realised before, but there is a heart and soul to the film that is unexpected, but most welcome. Emer Reynolds has truly created something special here."

<https://hayesatthemovies.com/2017/02/26/adiff-review-the-farthest/>

Irish Examiner: Review

"Emer Reynolds' new documentary is set to be one of ADIFF's breakthrough smashes...The Farthest, set around the launch of the Voyager space probes, drew huge cheers from the audience and is already notching up plaudits and reviews."

<http://www.irishexaminer.com/lifestyle/artsfilmtv/eight-things-we-learned-at-the-audi-dublin-international-film-festival-443969.html>

Today FM Podcast Interview with Emer Reynolds, with Dermot & Dave:

<https://www.todayfm.com/DermotandDave/podcasts/67193/Dave's-World---A-Space-Special>

Film Ireland Podcast Interview with Emer Reynolds, by Jonathan Victory:

<http://filmireland.net/2017/02/19/podcast-interview-with-emer-reynolds-director-of-the-farthest/>

Star Talk Radio Podcast Interview: Emer Reynolds chats to Carolyn Porco, Sean Ono Lennon and Maeve Higgins

<https://www.startalkradio.net/all-access/celebrating-voyager-1-with-carolyn-porco/>

The Young Folks: Movie Reviews: Tribeca Review

"When a filmmaker takes the rawness and uncertainty of space and combines it with the power and emotions of a documentary, you get Emer Reynolds's The Farthest."

<https://www.theyoungfolks.com/film/102557/tribeca-review-the-farthest/>

Code C Prime: Blog Reviews: Tribeca Review

"This is simply an exceptional documentary. It is often visually spectacular, but its mind-expanding scope is even more impressive."

<https://codecprime.com/partner/content/2243892-film-review-farthest>

Film-Forward: 4 Documentary Quick Takes | Tribeca 2017

"The Farthest is the tonic we need for these unscientific times, an unabashed celebration of the ingenuity and inquisitiveness of scientists and engineers."

<http://film-forward.com/documentary/4-documentary-quick-takes-tribeca-2017>

Flavorwire: The Best and Worst Documentaries of the Tribeca Film Festival

There's a real sense of wonder here, and of playfulness; this is an important story, but one told with a sense of humor and style.

<http://flavorwire.com/604548/the-best-and-worst-documentaries-of-the-tribeca-film-festival-2>

REVIEWS / PRESS

Unseen Films: Blog Reviews: Tribeca Review

"Watching the film I was a kid again seeing the universe expand before my eyes."
<https://unseenfilms.blogspot.ie/2017/05/the-farthest-2017-tribeca-2017.html>

Quicksilber: Blog Reviews: Tribeca Review

"The film does an adept job at interweaving science communication, striking imagery and personal recollections, with narration provided by numerous interviews with project scientists, engineers and other participants."
<http://quicksilber.blogspot.ie/2017/04/review-farthest.html>

Filmmaker Magazine: Tribeca 2017 Critic's Notebook

<http://filmmakermagazine.com/102253-tribeca-2017-critics-notebook-performance-anxiety/#.WP5DCVPyuA8>

The Epoch Times: Film Review: 'The Farthest' (Tribeca 2017)

<http://www.theepochtimes.com/n3/2243892-film-review-the-farthest/>

J.B. Spins: Tribeca '17: The Farthest

<http://jbspins.blogspot.com/2017/04/tribeca-17-farthest.html>

Maven's Nest (Film Critic Nora Lee Mandel): Reel Life: Flick Pix: The Farthest

<http://mavensnest.net/TFF2017Prevwomen.html#farth>

The Slanted: Tribeca Film Festival: Feature Film Slate for 2017; The films headed to Tribeca this year

<https://theslanted.com/2017/03/26140/tribeca-film-festival-feature-film-slate-2017/>

Science and Film: Science at the 2017 Tribeca Film Festival

<http://scienceandfilm.org/articles/2877/science-at-the-2017-tribeca-film-festival>

Trend in Tech: The Farthest

<http://trendintech.com/2017/05/02/lowdown-on-the-farthest-nasas-documentary-about-the-first-interstellar-spacecraft/>

YRB: The Farthest- Trailer @TheFarthestFilm @tribeca @NASAVoyager #tribeca2017

<http://www.yrbmagazine.com/the-farthest-trailer-thefarthestfilm-tribeca-nasavoyager-tribeca2017/>

The Verge: Review:

<https://www.theverge.com/2017/4/25/15421104/the-farthest-review-voyager-probes-nasa-jet-propulsion-laboratories-science>

REVIEWS / PRESS

Voyager Documentary 'The Farthest' Premieres at Tribeca Film Festival

<https://www.space.com/36567-voyager-documentary-the-farthest-tribeca-premiere.htm>

Emer Reynolds and Frank Locatell KCTS9 Channel Seattle (video)

<https://kcts9.org/programs/siff/behind-scenes-farthest>

Twoosix: Blogspot. SIFF '17: The Farthest

"The Farthest is the closest you will ever get to being a part of the team that sent two tiny ships on a voyage of discovery that has literally changed how we view our place among the stars."

<http://www.twoosix.com/2017/05/twoosix-interviews-siff-2017-farthest.html>

Three Imaginary Girls: Blogspot. SIFF '17: The Farthest Review

<http://threeimaginarygirls.com/siff-preview-the-farthest-may-19-20-24/>

Escape into Film: SIFF '17: The Farthest Review

"A pure excitement and passion permeates the film."

<http://www.escapeintofilm.com/home/2017-seattle-international-film-festival-movie-review-the-farthest>

I should see it: Blogspot. SIFF '17: The Farthest review

<http://shouldiseeit.net/article/siff-2017-day-6>

FeelinFilm: Podcast. SIFF '17: The Farthest

<http://feelinfilm.com/2017/05/31/episode-2-siff-coverage-2/>

Seattle Times. SIFF Highlights '17: The Farthest

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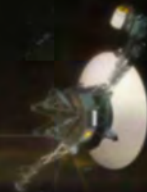
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SCREENINGS / AWARDS

Audi Dublin International Film Festival

Winner Audience Choice Award

Winner Dublin Film Critics' Award – Best Irish Documentary

Winner George Byrne Maverick Award

Tribeca Film Festival (International Premiere)

Seattle International Film Festival

Best of Festival

Audience Favourite

AFI Docs Washington

Edinburgh International Film Festival

Best of Festival

Nominated for Best Documentary Feature

Sydney Film Festival

Winner 'Foxtel Movie Awards' - Top 10 Documentaries

New Zealand International Film Festival

Marfa Film Festival, Texas

Galway Film Fleadh

Guth Gafa Film Festival

IFI Dark Skies Festival

Barcelona International Film Festival

Winner Golden Lion Award

AUGUST 2017

Ireland / UK Theatrical Release

US / Canada Theatrical Release

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