

Sunday, May 1, 2016, 7pm
Zellerbach Hall



Kronos Quartet

Sun Rings

Composed by Terry Riley

Kronos Quartet

David Harrington, *violin*

John Sherba, *violin*

Hank Dutt, *viola*

Sunny Yang, *cello*

With special guest

Volti

Robert Geary, *conductor*

Willie Williams, *visual designer*

Laurence Neff, *lighting designer*

Mark Grey, *sound designer*

Brian H. Scott, *lighting supervisor*

Brian Mohr, *audio engineer*

PROGRAM

Terry RILEY (b. 1935) *Sun Rings* (2002)
for string quartet, chorus and pre-recorded
spacescapes
Sun Rings Overture
Hero Danger
Beebopterismo
Planet Elf Sindoori
Earth Whistlers
Earth/Jupiter Kiss
The Electron Cyclotron Frequency Parlour
Prayer Central
Venus Upstream
One Earth, One People, One Love

Kronos Performing Arts Association, *production management*

Janet Cowperthwaite, *producer*

Laird Rodet, *project development*

Don Gurnett, *project advisor*

David Dvorin, *recorded sound transformation*

Mark Logue, *associate video director*

Sidney Chen, *artistic administrator/chorus liaison*

Sun Rings runs approximately 90 minutes with no intermission.

Sun Rings was commissioned for the Kronos Quartet by the NASA Art Program, the National Endowment for the Arts, The Rockefeller Foundation's Multi-Arts Production Fund, Hancher Auditorium/University of Iowa, Society for the Performing Arts, Eclectic Orange Festival/Philharmonic Society of Orange County, SFJAZZ, Barbican, London, UK, University of Texas Performing Arts Center, Austin (with the support of the Topfer Endowment for Performing Arts), and the Brooklyn Academy of Music. Additional contributions from Stephen K. Cassidy, Margaret Lyon, Greg G. Minshall, and David A. and Evelyne T. Lennette made this work possible.

<p><i>Cal Performances' 2015-2016 season is sponsored by Wells Fargo.</i></p>

About *Sun Rings*

The 10 “spacescapes” that comprise *Sun Rings* were begun in August of 2001 and finished in July of 2002. They were written as separate musical atmospheres with the intention to let the sounds of space influence the string quartet writing and then to let there be an interplay between live “string” and recorded “space” sound.

In some movements, the intention was to place the quartet in such a way that it felt like they were traveling through spatial atmospheres, as a symbolic representation of the wanderings of space probes Voyager and Galileo as they moved through what must have been the incredible atmospheres of our solar system. In some cases, fragments of melody that I observed in these sounds became the basis for themes that were developed in the quartet writing. The addition of the two movements with the choirs was to further emphasize that this work is largely about humans as they reach out from earth to gain an awareness of their solar system neighborhood.

When Dr. Donald Gurnett handed me these original NASA recordings, which were to be the point of departure for this challenging adventure, my thoughts became filled with images stimulated by locales as distant as Jupiter and Uranus. I could almost feel myself propelled through space as one atmosphere gave way to another.

Space is surely the realm of dreams and imagination and a fertile feeding ground for poets and musicians. Ancient astrologers were aware of the significant influences of planetary movements on our lives. I feel these influences are somehow responsible for this amazing collaboration, which has been so enthusiastically undertaken by all the participants responsible for its outcome.

Do the stars welcome us into their realms? I think so or we would not have made it this far. Do they wish us to come in peace? I am sure of it. If only we let the stars mirror back to us the big picture of the universe and the tiny precious speck of it we inhabit that we call Earth, maybe we will be given the humility and insight to love and appreciate all life and living forms wherever our journeys take us.

I dedicate *Sun Rings* to Dr. Donald Gurnett, whose brilliant mind has wandered the solar system and beyond for a lifetime, who inspired and launched all of us *Sun Rings* collaborators with his twinkle and the depth of his understanding, and who generously shared with us some of the Universe’s secrets.

—Terry Riley, August 2002

Overwhelming as it was to be given the NASA archive as a starting point for a visual piece, it was clear to me that the performance environment for *Sun Rings* had to be more than just a planetarium experience or a physics lecture. The spectacular photographs from Hubble and Voyager have become so very well known that I was keen to find something less discovered, less familiar, so often what we are seeing during the performance is an abstraction based more loosely on the mood of the composition as a whole.

Nevertheless, an amount of space imagery was naturally going to make up part of the design and spending time with Don Gurnett at the University of Iowa led me to sources of rare moving footage sent back to earth from spacecraft via a 1970s version of digital video. Next to the imagined visions of space that we have seen in science fiction movies, the raw images are extremely rough in quality, but their authenticity conveys enormous emotional power.

Further inspiration for the visuals came quite directly from the Voyager missions. I discovered that there is informational material on board the spacecraft called “The Golden Record,” which is addressed for the attention of anyone they happen to run into along the way. The extraordinary optimism of providing such material is only outweighed by the confidence of including diagrammatic instructions for said aliens as to how to playback videotape and vinyl recordings. The information package includes drawings of what human beings are and where our planet is located. Along with this there are photographs of everyday scenes from around the world—people, houses, roads, cars, animals, musical instruments—presenting the world as it was in 1977. (Several of the actual images from the Golden Record appear in the final

movement of *Sun Rings*.) The two Voyagers have now traveled far beyond our solar system, so I began to think of them as eccentric emissaries from our world, carrying information about us into deep space, not knowing that they have already become an anachronism; like senior citizens carrying school photographs of their grandchildren unaware that those they hold so dear have already grown up and changed beyond recognition.

I've had a lifelong fascination with astronomy, both in the very practical sense of spending nights stargazing and in a more personal sense, building my own picture of a relationship between cosmology and theology. Facing the enormity of the universe produces emotions that range from comforting awe to hopeless insignificance and Terry Riley's composition speaks to both these extremes. The nature of the subject matter always indicated that *Sun Rings* would be a contemplative work, but combined with Terry's response to 9/11, the piece walks the line between supplication and mourning, perhaps even verging on despair, whilst somewhere in space there is a permanent memory of more comfortable, more innocent times.

—Willie Williams, August 2002

Sun Rings

by Blake Marie Bullock

Shattering the confines of the familiar and comfortable, pursuing an innovative idea alone and sometimes in darkness, the explorer leaves the world we know behind in search of new sounds, sights, and discoveries. This spirit thrives in both space exploration and the works of the Kronos Quartet, Terry Riley, and Willie Williams, and they merge on stage in *Sun Rings*.

The NASA Art Program contacted Kronos in spring 2000 with an open invitation to take sounds of space and weave them into music. The sounds of space came from plasma wave receivers built by physicist Don Gurnett and flown on a variety of Earth-orbiting and planetary spacecraft over a period of 40 years.

Listening for the first time to these eerie whistles, sirens, and booms collected from hundreds of millions of miles away, Kronos artistic director David Harrington recalls they

"sounded like part of nature, but not like any sounds I had ever heard before."

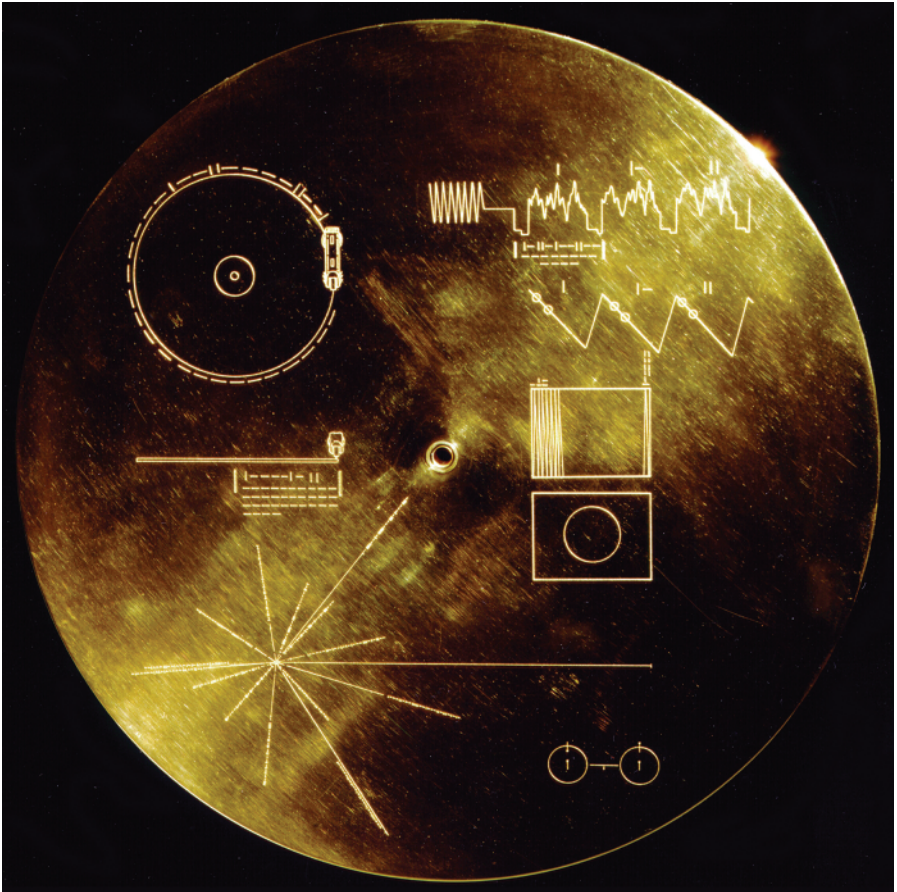
Harrington knew right away that the composer to best bring these sounds into the work of Kronos would be longtime collaborator Terry Riley. When it came time for Riley to hear the sounds firsthand, Harrington says, "I wanted to see the expression on his face." He soon realized they were about to embark upon a fascinating project, something unlike anything they had done before.

Among the sounds that Harrington and Riley listened to from Gurnett's collection were those from the plasma wave receivers on the twin Voyager spacecraft that carried out the historic 12-year exploration of the outer planets: Jupiter, Saturn, Uranus, and Neptune. Many are familiar with the breathtaking pictures of Jupiter's moons and Saturn's rings taken by Voyager; however, the plasma wave sounds, and even the existence of such sounds, are not widely known.

It is common to think of space as a silent black vacuum. Since sound waves need air in order to propagate and there is no air in space, it seems to make sense that space is totally soundless. However, the space around and between the planets is *not* a total vacuum; it is filled with an ionized gas called plasma—a gas so hot that its individual atoms are separated into their constituent electrically charged particles. The "plasma waves" that can propagate in this medium have characteristics similar to both sound waves and radio waves.

Although a sensitive microphone could in principle be used to detect these waves, the best way is to use an electrical antenna and a simple radio receiver. Reflecting on his early pioneering work, Gurnett says, "When we first launched a plasma wave receiver into Earth orbit in 1962 we were astonished to find that space was filled with such a rich variety of fascinating sounds."

"What really got me going was when I met with Professor Gurnett and he told me about how he developed these devices and what these sounds actually were," says composer Terry Riley. "It gave me a very visceral feeling. I started to look at space a little differently."



The visuals for the final movement of Sun Rings were inspired by The Golden Record, an information package carried into space by the Voyager spacecrafts, which includes photographs of everyday scenes from around the world—as it was in 1977.

A variety of phenomena in space can be detected via the plasma waves they make: whistling sounds made by lightning; birdlike sounds called “Chorus” that are spontaneously produced by electrons trapped in the magnetic fields that surround planets such as Earth and Jupiter; whistling sounds from the charged particles that cause the Northern Lights; and at Jupiter, a roaring boom from a turbulent shock wave that forms upstream of the planet in the high-velocity plasma streaming away from the Sun called the solar wind, somewhat analogous to a sonic boom from an airplane.

The plasma waves recorded by Prof. Gurnett were not adjusted to accommodate our musical taste or the limited capability of our ears—the sounds represent the true frequency at which the signals were detected in space. This means that theoretically, if humans could somehow live out where these space probes were, and if we had sensitive enough ears, we could hear these very sounds. Luckily, we have spacecraft to go where no human ear ever has gone.

Visual designer Willie Williams reflects, “It was an arresting experience to hear the vast range of audio material collected from the different spacecraft.” He describes the noises as

“ranging from piercing, strident white noise to the beautiful birdsong-like sounds of Chorus.”

He was also touched upon learning what else, besides the instruments, was included on the spacecraft. “When exploring the Voyager archive I discovered that there is a package of informational material on board in case the craft is discovered by alien life forms some time in the distant future. There are drawings and pictures of what human beings are and where we live, plus everyday scenes from around the world. Naturally these images were collected prior to the Voyager launches so they describe a world in a very different mood to our own. They seem so innocent and optimistic, especially when contrasted with images from the present day.”

Of course, the world has changed dramatically since the launch of the Voyager spacecraft in 1977. Riley’s work on *Sun Rings* took a definitive turn after the unforgettable attacks of September 11, 2001.

“I saw how the country was changing, and I knew the meaning had to be motivated by peaceful intentions—not revenge or patriotism, but real meaning about where we are as human beings, and where we should be going,” Riley reflects.

Though he contends he is not making a political statement in this composition, Riley notes that some of the wording accompanying *Sun Rings* contains messages about humanity and compassion. In what may be the most introspective of all the movements, “Prayer Central” serves as the opportunity to reflect in what Riley calls a “polyphony of prayers that goes drifting up.”

Certain sounds from the original Voyager recordings surface throughout the performance where Riley isolated what he found to be a mu-

sical phrase. However, at other times the instruments take over in melodies the space sounds only subtly suggested, and in other places the piece moves in an all-together new direction.

“I conceived the 10 movements of *Sun Rings* to be a variety of spacescapes,” Riley says. “I pictured an imaginary audience traveling with Kronos in and around the planets, hearing the quartet and choir as they journeyed through the distant sounds of exotic atmospheres.”

“The space sounds are embedded in our sounds,” Harrington says. The end product is an 85-minute experience—a layering of different sounds and human voices.

Similarly, the visual design makes direct references to the original space sounds only occasionally. “Sometimes I have used imagery specific to the source sounds,” Williams says, “but more often what we are seeing during the performance is an abstraction based more loosely on the mood of the composition as a whole.”

Today the Voyager spacecraft are further away from Earth than any human-made object has ever been, and they climb deeper into space everyday dutifully carrying out their mission, and quietly carrying their messages from Earth. Inspired by and intermixed with the visions and spirit of Voyager, *Sun Rings* hopes to take both its creators and its audience to a place where we’ve never been.

Blake Marie Bullock lives in Southern California. She earned her bachelor’s degree in astrophysics from the University of California, Berkeley, and a master’s degree in astronomy from Wesleyan University. She writes both science journalism and fiction, and is currently working on a novel. Her fiction has appeared in VerbSap magazine.

Kronos Quartet

For more than 40 years, the Kronos Quartet—David Harrington, John Sherba, Hank Dutt, and Sunny Yang—has pursued a singular artistic vision, combining a spirit of fearless exploration with a commitment to continually re-imagining the string quartet experience. In the process, Kronos has become one of the most celebrated and influential groups of our time, performing thousands of concerts worldwide, releasing more than 50 recordings of extraordinary breadth and creativity, collaborating with many of the world's most intriguing and accomplished composers and performers, and commissioning more than 850 works and arrangements for string quartet. A Grammy winner, Kronos is also the only recipient of both the Polar Music Prize and the Avery Fisher Prize.

Since 1973, Kronos has built a compellingly eclectic repertoire for string quartet, performing and recording works by 20th-century masters (Bartók, Webern, Schnittke), contemporary composers (John Adams, Osvaldo Golijov, Aleksandra Vrebalov), jazz legends (Ornette Coleman, Maria Schneider, Thelonious Monk), rock artists (guitar legend Jimi Hendrix, Brazilian electronica artist Amon Tobin, Icelandic group Sigur Rós), and artists who defy genre (performance artist Laurie Anderson, composer/sound sculptor/inventor Trimpin, and singer-songwriter/poet Patti Smith).

Integral to Kronos' work is a series of long-running, in-depth collaborations with many of the world's foremost composers, including: "Father of Minimalism" Terry Riley, on projects such as the NASA-commissioned *Sun Rings* (2002) and *The Serquent Risadome* (2014); Philip Glass, including an all-Glass CD in 1995 and the premiere of String Quartet No. 6 in 2013; Azerbaijan's Franghiz Ali-Zadeh, featured on the 2005 CD *Mugam Sayagi*; Steve Reich, including Kronos' recording of the Grammy-winning composition *Different Trains* (1989) and *WTC 9/11* (2011); and many more.

Kronos has also collaborated with performers from around the world, including the Chinese pipa virtuoso Wu Man; Azeri vocalist Alim Qasimov, legendary Bollywood "playback

singer" Asha Bhosle; Inuit throat singer Tanya Tagaq; and the Romanian gypsy band Taraf de Haïdouks. Kronos has also performed live and/or recorded with artists such as Paul McCartney, Allen Ginsberg, Zakir Hussain, Rokia Traoré, Tom Waits, Rhiannon Giddens, Howard Zinn, Betty Carter, David Bowie, and rock bands The National, Nine Inch Nails, and Sigur Rós. In dance, the famed choreographers Merce Cunningham, Paul Taylor, Twyla Tharp, Eiko & Koma, and Paul Lightfoot and Sol León (Nederlands Dans Theater) have created pieces with Kronos' music.

Kronos' work has been featured prominently in film, including two recent Academy Award-nominated documentaries: the AIDS-themed *How to Survive a Plague* (2012) and *Dirty Wars* (2013), an exposé of covert warfare. Kronos also recorded full scores by Philip Glass (for *Mishima* and *Dracula*) and by Clint Mansell (*Noah*, *The Fountain*, and *Requiem for a Dream*) and has contributed music to *21 Grams*, *Heat*, and other films.

The quartet tours extensively each year, appearing in concert halls, clubs, and festivals including Carnegie Hall, Lincoln Center Out of Doors, Big Ears, BAM Next Wave Festival, the Barbican in London, WOMAD, UCLA's Royce Hall, Amsterdam's Concertgebouw, Shanghai Concert Hall, and the Sydney Opera House. Kronos is equally prolific and wide-ranging on recordings, including the Nonesuch releases *Pieces of Africa* (1992), a showcase of African-born composers that simultaneously topped *Billboard's* Classical and World Music charts; *Nuevo* (2002), a Grammy- and Latin Grammy-nominated celebration of Mexican culture; and the 2004 Grammy winner, Alban Berg's *Lyric Suite*, featuring renowned soprano Dawn Upshaw. Among the group's recent releases are *Aheym: Kronos Quartet Plays Music by Bryce Dessner* (Anti-, 2013) and two 2014 Nonesuch releases: *Kronos Explorer Series*, a five-CD retrospective boxed set; and the single-disc *A Thousand Thoughts*, featuring mostly unreleased recordings from throughout Kronos' career. Last year brought the release of *Tundra Songs* by Derek Charke as well as a boxed set of Terry Riley's music written for and performed

by Kronos. Music publishers Boosey & Hawkes and Kronos have released two editions of *Kronos Collection* sheet music: *Volume 1* (2006) and the new *Volume 2* (2014), featuring six Kronos-commissioned arrangements by composer Osvaldo Golijov.

With a staff of 11 based in San Francisco, the nonprofit Kronos Performing Arts Association (KPAA) manages all aspects of Kronos' work, including the commissioning of new works, concert tours and home-season performances, and educational program. KPAA's *Kronos: Under 30 Project* features a unique commissioning and residency program for composers under age 30. *KRONOS PRESENTS* is a new presenting program showcasing Kronos' commissioned works, artistic projects, and musical collaborations through an annual festival, education and community activities, and other events in the Bay Area and beyond.

In 2015 KPAA launched a new commissioning and education initiative—*Fifty for the Future: The Kronos Learning Repertoire*. With Carnegie Hall as lead partner, KPAA is commissioning 50 new works—by five women and five men each year for five years—devoted to contemporary approaches to the quartet and designed expressly for the training of students and emerging professionals. Kronos will premiere each piece and create companion materials, including scores and parts, recordings, videos, performance notes, and composer interviews, to be distributed online for free. Through this model, Kronos' *Fifty for the Future* will provide young musicians with both an indispensable library of learning and a blueprint for their own future collaborations with composers. Kronos, Carnegie Hall, and an adventurous list of project partners that includes presenters, academic institutions, foundations, and individuals, have joined forces to support this exciting new initiative of unprecedented scope and potential impact. Cal Performances is proud to be a Legacy Partner of Kronos' *Fifty for the Future* initiative.

Terry Riley (composer) first came to prominence in 1964 when he subverted the world of tightly organized atonal composition then in

fashion. With the groundbreaking *In C*—a work built upon steady pulse throughout; short, simple repeated melodic motives; and static harmonies—Riley achieved an elegant and non-nostalgic return to tonality. In demonstrating the hypnotic allure of complex musical patterns made of basic means, he produced the seminal work of the so-called “minimal” school.

Riley's facility for complex pattern-making is the product of his virtuosity as a keyboard improviser. He quit formal composition following *In C* in order to concentrate on improvisation, and in the late 1960s and early '70s he became known for weaving dazzlingly intricate skeins of music from improvisations on organ and synthesizer. At this time, Riley also devoted himself to studying North Indian vocal techniques under the legendary Pandit Pran Nath, and a new element entered his music: long-limbed melody. From his work in Indian music, moreover, he became interested in the subtle distinctions of tuning that would be hard to achieve with a traditional classical ensemble.

Riley began notating music again in 1979 when both he and the Kronos Quartet were on the faculty at Mills College in Oakland. By collaborating with Kronos, he discovered that his various musical passions could be integrated, not as pastiche, but as different sides of similar musical impulses that still maintained something of the oral performing traditions of India and jazz. Riley's first quartets were inspired by his keyboard improvisations, but his knowledge of string quartets became more sophisticated through his work with Kronos, combining rigorous compositional ideas with a more performance-oriented approach.

This three-decade-long relationship has yielded 25 works for string quartet, including a concerto for string quartet, *The Sands*, which was the Salzburg Festival's first-ever new music commission; *Sun Rings*, a multimedia piece for choir, visuals, and space sounds, commissioned by NASA; and *The Cusp of Magic*, for string quartet and pipa. Kronos' album *Cadenza on the Night Plain*, a collection of music by Riley, was selected by both *Time* and *Newsweek* as one of the 10 Best Classical Albums of the Year

in 1988. The epic five-quartet cycle, *Salome Dances for Peace*, was selected as the top classical album of the year by *USA Today* and was nominated for a Grammy in 1989.

Willie Williams (*visual designer*) works with light and visual media to create performance environments and installations. He is best known for his 30-year working relationship with rock group U2, where his combination of hi-tech media and lo-tech eccentricity has received much acclaim, particularly in their *Zoo TV* and *360* tours. Williams' work with George Michael, R.E.M., and David Bowie has also been praised as being both conceptually and technologically groundbreaking.

Performing arts projects have included collaborating with Laurie Anderson, Marianne Faithfull, and the Montreal dance company La La La Human Steps. He has an ongoing relationship with Kronos Quartet that includes the design of *Music from Four Fences* as well as *Sun Rings*.

Williams has been honored by his peers with numerous industry awards, and his work has been profiled in *Time* magazine, *Creative Review*, and *Wired*.

Laurence Neff's (*lighting designer*) work as the Kronos Quartet's lighting designer was synonymous and inseparable from Kronos performances for decades. From 1986 until his death in 2014, Neff designed many of Kronos' productions, including *Live Video* (the group's first fully staged concert), George Crumb's *Black Angels*, Tan Dun's *Ghost Opera*, and Gabriela Ortiz's *Altar de Muertos*. Neff, who also acted as Kronos' production director, was responsible for the unique visual aspects of the quartet's concerts, having worked with the group on more than 1,000 concerts throughout the world.

Neff also worked with the Paul Dresher Ensemble (designing *Slow Fire*, *Power Failure*, and *Pioneer*), George Coates Performance Works (designing *RareArea*, *Actual Sho*, and *Right Mind* at the Geary Theater), and various other theater and dance companies including ODC San Francisco, *Beach Blanket Babylon*, and Rinde Eckert.

Mark Grey (*sound designer*) made history as the first sound designer for the New York Philharmonic at Avery Fisher Hall (*On the Transmigration of Souls*, 2002) and the Metropolitan Opera (*Doctor Atomic*, 2008; *Nixon in China*, 2011; *The Death of Klinghoffer*, 2014; and several other productions). For over two decades, professional sound design relationships have led Grey to premiere works by such artists and organizations as John Adams, Steve Reich, Philip Glass, Terry Riley, Kronos Quartet, and Boosey & Hawkes Music Publishers. He designed and toured extensively with Kronos Quartet for many years and has been a close collaborator of composer John Adams for more than two decades. In 2008, Grey was composer-in-residence with the Phoenix Symphony, whose recording of his oratorio, *Enemy Slayer: A Navajo Oratorio*, was released the following year on Naxos Records. In 2011, two large-scale works by Grey received their world premieres: *Mugunghwa* (at Walt Disney Concert Hall in Los Angeles) and *Fire Angels* (at Carnegie Hall). He has undertaken commissions for the Atlanta Symphony Orchestra and the Los Angeles Philharmonic, and is writing an evening-length opera *FRANKENSTEIN* for the Théâtre Royal de la Monnaie in Brussels. In 2016, commissions will be premiered by the Atlanta Symphony and Berkeley Symphony, and at the New York Philharmonic's Biennial festival.

Don Gurnett (*project advisor*) started his engineering and science career by working on spacecraft electronics design as a student engineering employee in the University of Iowa Physics department in 1958, shortly after the launch of Explorer 1. After completing his BS in electrical engineering, he switched to physics, where he received his MS and PhD degrees. He spent one year as a NASA trainee at Stanford University, and was hired as an assistant professor in the Department of Physics and Astronomy at the University of Iowa in 1965, with promotions to associate professor in 1968, and to professor in 1972.

In 1962, he pioneered the study of space plasma waves and radio emissions with the

launch of a very-low-frequency radio receiver on the Injun III spacecraft. Since then he has flown similar instruments to most of the planets in the solar system, most notably on the Voyager 1 and 2 flights to the outer planets, the Galileo mission to Jupiter, and the Cassini mission to Saturn. He is currently working on a spacecraft-borne radar to search for sub-surface water on Mars. He is author of over 370 scientific publications and has received numerous awards for his research. In 1998, he was elected to the National Academy of Sciences. He regularly teaches both undergraduate and graduate courses in physics and astronomy, and has supervised 50 graduate thesis projects.

David Dvorin (*recorded sound transformation*), an Emmy-nominated composer, author, and educator, has had his music performed in numerous new music and multimedia festivals around the United States and Europe, including the Carmel Performing Arts Festival, Big Sur Experimental Music Festival, Wet Ink, Palais Idéal, Sound & Vision Festival, SEAMUS, Kansas City Electronic Music Arts and Alliance, 60x60 Project, FirstWorks/Pixilerations, and the Macedonian SOCOM Festival. His multimedia piece *As Alice*, written for the California E.A.R. Unit, was featured in the ensemble's 2011–2012 concert touring season. Dvorin is active as a performer on both guitar and electronics. Some of his current performance projects include his chamber-jazz duo Pull-String, with violinist Matej Seda, and the electro-acoustic duo Zap!, with multi-reeds player Randy McKean. Regarded internationally as an

expert on Apple's Logic Pro software, his textbook, *Logic Pro 9: Advanced Music Production*, now in its third edition, has been adopted by educational institutions worldwide and is the basis for Apple Computer's certified training. Dvorin is currently a professor of music composition and electronic music at California State University, Chico.

Volti is a professional new music ensemble under the direction of founder and artistic director Robert Geary, dedicated to the discovery, creation, and performance of new vocal music. The ensemble's mission is to foster and showcase contemporary American music and composers, and to introduce audiences to contemporary vocal music from around the world. The group has commissioned nearly 100 new works by emerging as well as established composers. Boasting a 36-year track record of some of the most imaginative and innovative repertoire yet composed, Volti's dedication to fresh American music has earned six ASCAP awards for adventurous programming. Learn more at VoltiSF.org.

Robert Geary, founder and artistic director of Volti, the Piedmont East Bay Children's Choir, and the Golden Gate International Choral Festival, also directs the San Francisco Choral Society. Geary's dedication to today's choral music has fostered the careers of several leading composers and has led to nearly 200 new works. He has conducted in dozens of countries and has served as a clinician and guest conductor in the US, Finland, Denmark, and Singapore.

Volti

Kelly Ballou
Yuhi Aizawa Combatti
Elisabeth Eliassen
Shauna Fallihee
Monica Frame
Cecilia Lam
Sharmila G. Lash
Sara LeMesh

Diana Pray
Cary Ann Rosko
Rachel Rush
Colby Smith
Ben Barr
Jeff Bennett
William Betts
Joel Chapman

Sidney Chen
Samuel Faustine
Julian Kusunadi
Roderick Lowe
Peter Dennis Mautner
Philip Saunders
Tim Silva
Cole Thomason-Redus

Production Credits

Sounds sourced courtesy of Dr. Donald A. Gurnett, Dept. of Physics and Astronomy, University of Iowa.

Voice "One Earth, One People, One Love": Alice Walker.

Video sequences created at Punk Films, London, by Willie Williams, Mark Logue, and Marina Fiorato; additional editing by Tim Zraggen, San Francisco.

Imagery sourced courtesy of NASA; Jet Propulsion Laboratory; Jon Lomberg; Dr. Donald A. Gurnett; Punk Films, London; Willie Williams; Dave D. Sentman and Daniel L. Osborne of the Geophysical Institute University of Alaska; Alan Title, Lockheed (TRACE is a NASA Goddard Small Explored Mission (SMEX); the TRACE science instrument was developed by the Stanford-Lockheed Institute for Space Research); David Keleel; US National Oceanic and Atmospheric Administration; US Fish & Wildlife Service.

John Lobel, Light & Sound Design, *stage set construction*

Special thanks for support and assistance to Don Gurnett, Bert Ulrich, Jurrie J. van der Woude, Mark Logue, Wally Chappell, Kathy Kurth, Van Jarvis, Stage Electrics/London, Judy

Hurtig, Chuck Swanson, Jon Lomberg, Daniel Osborne, Dave Sentman, and Alan Title.

Terry Riley extends special thanks to Kronos, Janet Cowperthwaite, Don Gurnett, Mark Grey, David Dvorin, Bert Ulrich, Willie Williams, Larry Neff, Alice Walker, and Ann Riley.

For the Kronos Quartet/**Kronos Performing Arts Association**

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Sidney Chen, *artistic administrator*

Mason Dille, *development manager*

Scott Fraser, *sound designer*

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Reshena Liao, *communications and marketing associate*

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The Kronos Quartet records for Nonesuch Records.