Sound Anthology: Program Notes

EcoSono Environmental Computer Music and Sound Art Compilation: Matthew Burtner, Curator

About the Music

I am thrilled to share a selection of music from the EcoSono Institute and from the first EcoSono Festival of Environmental Music and Sound Art in Anchorage, Alaska, 2017. The music here celebrates the beautiful soundscape of Alaska and world ecoacoustics with a focus on computationally driven and computer-mediated approaches. The EcoSono philosophy and methodology emphasizes close collaboration with the sounds and energies of the natural world that we can hear or feel, but that rarely become part of human music. We do this using a combination of computer-aided techniques, including digital transduction technology; interactive mediation based on the performance of natural materials, and sonification (the computational mapping of environmental data into sound). Some of this music is made in collaboration with scientists who help interpret the data for music and whose discoveries are interpreted into music by composers. Some of the music features unedited field recordings, set in counterpoint with computer-generated sound. In addition, some of this ecoacoustic science/technology music is performed by human musicians who bring expressivity, emotion, and humanistic interpretation.

EcoSono is proud of the diverse international composers and sound artists we present. Many of these artists attended the EcoSono Institutes in past years. Daniel Blinkhorn (Australia), Nashim Ximena Gargari (Mexico), Stephanie Cheng Smith (California), Siyang Sophia Shen (China), D. Edward Davis (Connecticut), and Yingjia (Lemon) Guo (China) are just some of the featured artists who joined the EcoSono Institute in past years and have gone on to innovate in the emerging field of ecoacoustic music.

Through creative human/nature interaction, EcoSono pursues a philosophy of sustainability and nonconformity. In some ways, our approach to music is as old as music itself: The first music likely imitated sounds of nature, and rocks and sticks were certainly among the first musical instruments. Around the world, the history of music is also a history of environmental music. In other ways, ecoacoustic music is quite new and revolutionary, not only because the tools we use to create it (such as portable computational systems, real-time interactive technology, and sensitive measurement instruments) did not exist until relatively recently, but also because music made in collaboration with the environment takes on new meaning in a time of human-caused climate change, mass extinctions, and global warming. The human–nature dialectic embodied in environmental music questions the current relationship between humans and the environment, seeking a new music that reclaims fundamental human values of cohabitation with the natural world of which we are but one part.

For listeners curious to learn more and become involved with the activities of EcoSono, the summer festival, and other concerts around the world, please visit us at http://www.ecosono.org, or contact Burtner at burtner@ecosono.org.

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1. *Golden Sparrow*—Matthew Burtner

Performed by Glen Whitehead, trumpet

Golden Sparrow (2012) for trumpet, computer, and container of light, is based on the call of a sparrow family living in Alaska's Chugach State Park who sing in the midnight sun. The computer sound is made out of a single bird call, expanded into a harmonic framework that supports an original trumpet melody. As the trumpet plays, a second performer gradually opens a container of light, releasing it into the concert space. Golden Sparrow was composed for Whitehead and premiered in Anchorage at Alaska Pacific University on 23 June 23 2012.

Track Duration: 7:24

Matthew Burtner (http://www.matthewburtner.com) is an Alaskan-born composer and sound artist whose music explores embodiment, ecoacoustics, polymetrics and noise, and human–environment–computer interaction through music. Burtner has won the Musica Nova International competition (first prize), an NEA Art Works award, and an IDEA Award, and his music has received honors and prizes from Bourges (France), Gaudeamus (Netherlands), Darmstadt (Germany), and The Russolo (Italy) international competitions. His music has been performed in festivals and venues throughout the world and commissioned by ensembles such as NOISE (USA), Integrales (Germany), Peak FreQuency (USA), MiN (Norway), Musikene (Spain), Spiza (Greece), CrossSound (Alaska), and others. Burtner works closely with politicians, scientists, artists, and musicians, creating music in support of free imagination and sustainability. In 2014, he was invited to Brazil to work with former Vice President Al Gore on the Climate Reality Project, and in 2015 he was invited by the U.S. State Department to create the music for President Barack Obama's visit to Alaska. He teaches composition and computer music at the University of Virginia, chairs the University of Virginia Music Department, and directs the environmental arts nonprofit organization, EcoSono (www.ecosono.org).

Figure 1. Matthew Burtner.

Figure 2. Nashim Ximena Gargari.

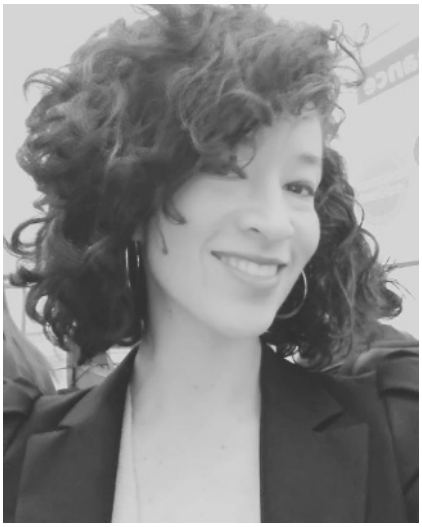

Figure 3. Daniel Blinkhorn.

2. *Baleines Spectrales*—Nashim Ximena Gargari

Baleines spectrales was composed in Nice, France, using sounds of humpback whales in the Gulf of Alaska recorded at the EcoSono Institute recorded at the EcoSono Institute Alaska in 2012. A spectral wash of sound submerges the voices of these great marine mammals inside a deep electroacoustic mass, resembling their beautiful and endangered existence in the oceans.

Track Duration: 7:54

Nashim Ximena Gargari studied piano, painting, biology, and graphic design before joining the Electroacoustic Composition program at the National Conservatory of Nice, France. Her work focuses on environmental composition with piano, and often involves video, theatrical rituals, and live electroacoustic improvisation. She collaborates with biochemists, geneticists, and environmental activists. Gargari's works have been performed and commissioned for sound installations, photography and architecture expositions, museums, concerts, collective meditations, and many other contexts. She pursued research in ecoacoustics with EcoSono, and contributed to EcoSono's World Electroacoustic Listening Room at CalState Fullerton in Los Angeles in 2014, and the EcoSono Festival in Anchorage, Alaska, in 2017. Her music has also been performed in Montreal, Quebec; Querétaro and San Miguel de Allende, Mexico; Nice, France; Toronto, Canada; La Pampa, Argentina; and Brussels, Belgium.

3. *frostbYte–CO2*—Daniel Blinkhorn

Performed by Matthew Burtner, soprano saxophone

The work *frostbYte–CO2* is from the *frostbYte* cycle, a collection of ongoing pieces central to which are location-based field recordings I made while exploring the Arctic, a part of the world that continues to inspire awe and fascination, and is often at the heart of our collective consciousness for its ecological and climatic sensitivity. The *frostbYte* cycle of works seeks to portray some of these sonorities in a highly abstracted, yet clearly discernible way. *CO2* is a playful (if not eccentric) ecoacoustic audiovisual musing that situates two outspoken environmental commentators together. Former U.S. Vice President Al Gore has been sampled alongside Christopher Monkton, former finance adviser to Margret Thatcher.

Track Duration: 11:29

Daniel Blinkhorn is a multi-international award-winning composer and sound and digital media artist whose music gravitates around a synchronicity of frequency, texture, gesture, space, location, and motion, all of which form (often metaphorical) frameworks within a given piece. Although often working in the electroacoustic, videophonic, and ecoacoustic domains, Blinkhorn's output includes chamber, symphonic and wind orchestra works, sound installations, music for film, dance, radiophonic composition, and various hybrid/intermedia environments. Blinkhorn's works are performed, exhibited, and presented internationally, and his compositions have received nearly 30 international and national composition awards including winner of the prestigious Giga-Hertz-Prize (Germany). He is a Scholarly Teaching Fellow in Composition and Music Technology at the Sydney Conservatorium of Music.

Figure 4. Sophia Chakri.

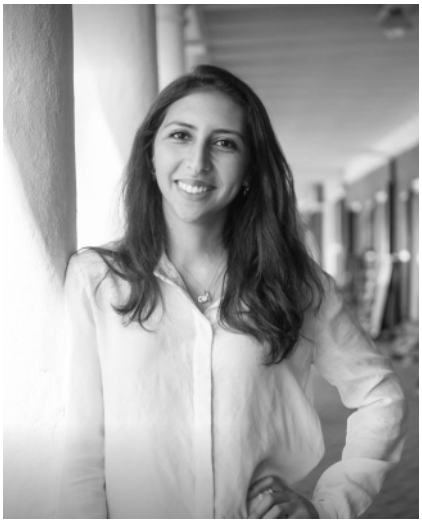

Figure 5. Yingjia (Lemon) Guo.

4. *Bee Population Decline Sonification*—Sophia Chakri

Bee populations are declining dramatically in the United States because of disease, parasites, loss of habitat, and pesticide use. Beekeepers lost 44 percent of bees in the 12-month period that ended in April 2017. This comes on the heels of annual 10 percent declines since the 1990s. The decline in bee population has a significant impact on human lives and the environment around us. As pollinators, bees provide an important function for humans, affecting about 75 percent of our food. This sonification was created as part of the Ecoacoustics STAGE Project at the University of Virginia, working with the Blandy Experimental Farm. The piece sonifies the decreasing bee population in Virginia, tracking the percentage of bees lost in the state of Virginia every three months from January 2015 to March 2016. The data comes from the United States Department of Agriculture's *Honey Bee Colonies* report that can be found here: https://www.usda.gov/nass/PUBS/TODAYRPT/hcny0516.pdf.

Track Duration: 0:56

Originally from Casablanca, Morocco, **Sophia Chakri** studies Music and Media Studies at the University of Virginia. She studied Technosonics and Ecoacoustics with Matthew Burtner.

5. *Into Silence They Appeared*—Yingjia (Lemon) Guo

Human ears cannot hear frequencies under 20 Hz or above 20 kHz. Orcas can produce sound waves that are wider than that range. I wonder what is in there in those ranges that we cannot hear. I filtered out all the frequencies between 20 Hz and 20 kHz in an orca whale recording. I sped up the low end and slowed down the high end, at different rates, into an audible range for the human ear. No other signal processing was applied to the audio source. Incredible things happened quickly. Chords and melodies emerged. There is an entire sound world in those frequencies that we as humans cannot hear—what we hear as silence is not silent. I then simply layered these altered frequencies, hoping to convey the sense of wonder that struck me when I first heard that melody.

The title is a play on Wei Yingwu's poem, *On Sound:*

Ten thousand things are heard when born,
But the highest heaven's always still.
Yet everything must begin in silence,
And into silence it vanishes.

(Translated by Irving Y. L)

The orca song was recorded as a group effort (EcoSono Institute) in 2013 in Alaska, using a hydrophone and a Zoom H4N portable recorder. The higher frequency in this recording is limited by the sample rate (48 kHz). Orcas can vocalize up to 40 kHz, but the highest frequency this recording was able to capture was 24 kHz. Although my intention was to explore the songs of orcas, in reality the original recording also captured many other environmental sounds, such as boat engines and water movements. What resulted in this piece was a transposed version of the entire inaudible underwater sound world as captured by that hydrophone.

Track Duration: 3:05

Yingjia (Lemon) Guo is an interdisciplinary artist from China. With a background in Chinese folk music, Guo graduated from the University of Virginia in 2015 with a distinguished major in music composition (BA), and is currently a second-year MFA student in Sound Art at Columbia University. Bringing together music, sound arts, visual arts, fashion, theatre, dance, and technology, her recent solo and ensemble works

create intimate yet distant listening situations for evocative and subtle vocal performances. Her recent work often creates intimate yet distant listening situations for evocative and subtle vocal performances. She pursued studies in ecoacoustics with the EcoSono Institute and Matthew Burtner.

Figure 6. Glen Whitehead.

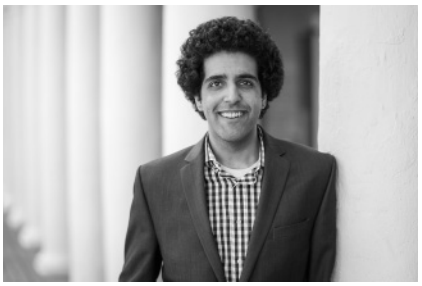

Figure 7. Anant Das.

6. *Mysticeti*—Glen Whitehead

Performed by Glen Whitehead, trumpet

Mysticeti is an improvisation piece for instruments and a soundscape recorded on the ocean in Stewart Bay, Alaska, in 2012, rendered from hydrophone recordings of humpback whales "bubblenet feeding" amid the sounds of glacial melt, strong currents, and background tapestries of faraway human activity. The push and pull of forces beyond our control is paramount to the aesthetic of this piece. Thus, this is a performance for the imagination. The improviser should adopt the mindset as a pod performing a sound-dance ritual, as if transducing the phenomena of this oceanic experience: humans peering into portals far beyond our comprehension, the hints of unimaginable depths, uniquely alien sounds, unsustainable thresholds, sound-beams of astral inversions, sub-aqua sonic projections confronting a fast melting geo-plasma, and calling to living bio-mountains who carve earnest tone-shaped glissandos encoded with time, memory, and action.

Track Duration: 7:48

Glen Whitehead explores environmental collaboration and improvisational phenomena between living cultures, technologies, and the natural world. As a trumpeter, interdisciplinary artist, and improviser, he seeks in his work to expand instrumental and vocal music creation into new media, platforms, and interdisciplinary contexts across the arts and sciences. His work with the EcoSono Institute as the Director of Performance has taken him across the United States, Canada, Alaska, Australia, Tasmania, and New Zealand as well as a soloist and guest artist in Mexico, Europe, and Korea. His group Psychoangelo's disc *panauromni* was on *Time Out Chicago*'s list of top ten CDs of the year. Awards include the Innovations in Teaching with Technology at the University of Colorado Colorado Springs (UCCS) and multiple awards from Pikes Peak Arts Council. Whitehead is artistic director of the Peak FreQuency Creative Arts Series, principal trumpet in the Chamber Orchestra of the Springs (Colorado Springs), codirector of the Bachelor of Innovation program, a Conn-Selmer trumpet artist, and associate professor at UCCS. He received his BMus in Performance from the New England Conservatory of Music, and MA and DMA degrees from the University of California, San Diego.

7. *Landfill Audification*—Anant Das

Americans throw away approximately 1,500 to 2,000 pounds of municipal solid waste every year, almost four times more than in 1960, and according to the World Bank this number is supposed to double by 2025. Landfills are already closing at an alarming rate as they fill up with trash, forcing states to transport trash further, at ever-increasing cost. The ratio of closing of landfills to opening new landfills reveals how we are running out of space to put our trash. This piece sonifies the closing of landfills and the applications for new landfills in Virginia from 1900 to the present.

Track Duration: 0:41

Anant Das studies Commerce and Computer Science at the University of Virginia, where he pursues an interest in sustainable business practices. Music has played a significant role in his life, including learning the double bass, drums, and singing in choir at a young age in Washington, DC. Combining his interests in sustainability, computer science, and music, his ecoacoustic works focus

Figure 8. Tom Sobolik.

primarily on the alarming increase in human waste and the negative effects of landfills on the planet. He hopes to tackle some of the nation's housing development and sustainability issues through a business or real estate career while continuing his passion for music. He studied Ecoacoustics at the University of Virginia with Matthew Burtner.

8. *Trespass*—Tom Sobolik

With free improvisation performed by Kevin Davis, cello

Trespass is about energy infrastructure trespassing on natural space. The piece uses natural field-recording source sounds to make all the materials, applying resonance, rhythm generation, spatialization and chaining effects of overdrive, saturation, and dynamics and frequency processing to model the insidious creep of pipeline infrastructure and the permanent threat of damage it brings to an ecosystem. The sounds were recorded in Shenandoah National Park.

Track Duration: 6:35

Tom Sobolik studies music and computer science at the University of Virginia, and hopes to pursue a career in music technology. Whether playing, composing, programming, or collaborating with others, he believes music brings people together and enriches life. He has worked at the University of Virginia's radio station WTJU and at Atlas Music Publishing, and he is a staff writer for the *Cavalier Daily*. He studied Ecoacoustics at the University of Virginia with Matthew Burtner.

Kevin Davis is an improviser, composer, and cellist. Originally from Appalachian Tennessee, he has at various times been based out of Memphis, Chicago, New York, and Istanbul, where he has played in and composed for a large variety of musical situations across a wide spectrum of contemporary music. He has recorded and performed in the United States, Europe, and the Middle East. He has degrees in music composition from the University of Memphis (BMus) and the Centre for Advanced Musical Studies in Istanbul (MA). This spring he completed a PhD in Composition and Computer Technologies at the University of Virginia.

9. *Ensifera Ventum 1*—Nashim Ximena Gargari

Ensifera Ventum 1 evokes the ancient and small forms of life that dominate the desert—scorpions, bats, snakes, crickets, woodpeckers, thousands of different insect varieties, and even ancient bacteria called cyanobacteria that date back to as early as 3.5 billion years ago. The piece features prepared field recordings made in Cuatrocienegas Desert, Coahuila, Mexico. We placed local crickets inside a box with food and recorded the tiny noises of their legs moving. The music starts with low frequencies, representing human sound for insects, then moves to the sounds of metal interacting with the wind at night where we camped in an open field at the remarkable white Dunas de Yeso (Gypsum Dunes).

Track Duration: 6:15

10. *Sands That Move*—Glen Whitehead

Sands That Move is based in the Great Sand Dunes National Monument, highlighting the long history of this site and the people who, from age to age, have stood in awe and wonder of this geographical phenomenon at the northern edge of the San Luis Valley in southern Colorado. These constantly shifting sands have gone by many names; the Navajo called them *Saa waap maa nache* [Sand That Moves], and the Apaches who settled in New Mexico called them *Sei-anyedi* (It Goes Up and Down). This fixed-media piece was created using samples made by an ensemble of "performers" playing the sand dunes as a sonic membrane. The trumpet-based computer accompaniment emulates these efforts and starts gathering its own momentum, much like a dune fueling its own energy once it is engaged.

Track Duration: 5:02

11. *Atrazine Soil Sonification*—Abigail Johnson

Atrazine is a herbicide, banned in the European Union because of health risks and its devastating effects on macroinvertebrates, amphibians, and fish. Atrazine is widely used in U.S. agriculture, including in 75 percent of all U.S. corn, and annual

Figure 9. Abigail Johnson.

Figure 10. Siyang Sophia Shen.

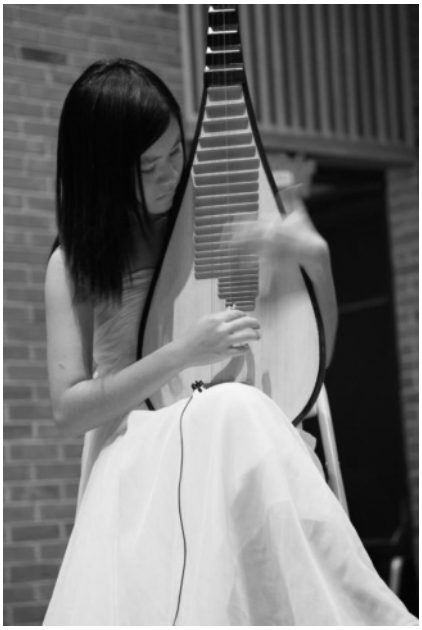

Figure 11. Cory Ryan.

use of the chemical is recorded as 76.4 million pounds, making it the most commonly used herbicide in the country. Although atrazine is difficult to remove from water, current research explores methods of using aquatic plants to filter it from the water table. This piece sonifies one study involving atrazine in soil: The concentrations of atrazine in the soil over time were converted into frequencies and used to filter the sound of water.

Track Duration: 2:52

Abigail Johnson is a student of English and Environmental Thought and Practice at the University of Virginia. Her current research focuses on the digital humanities and their applications in investigating the intersection of science, politics, and literature in the 19th century. In her spare time, she enjoys composing music and identifying moss. She studied Ecoacoustics with Matthew Burtner at the University of Virginia.

12. *Membrane*—Siyang Sophia Shen

Membrane captures a most unforgettable experience during a recording session in the middle of the ocean on the Kenai Peninsula in Alaska: the sonic waves traveling between the land and the underwater space. Under the peaceful appearance of the surface was an incredibly dynamic world that I had never before encountered, and everything was vividly unveiled in my headphones. When I put down my headphones, everything seemed to disappear suddenly—only the world that I live in was left.

Track Duration: 3:07

Born in Zhangzhou, a small city in southeast China, **Siyang Sophia Shen** is a composer, sound artist, pipa performer/improviser, and pianist who believes in the subjective, evocative, conceptual, and ineffable nature of music and sound. She makes intangible connections with performers and listeners by creating music that evokes memory and imagination. She is interested in bridging the divide between cultures by using instruments to disassemble and synthesize new sounds. Shen is currently based in the San Francisco Bay Area. She holds an MFA in Electronic Music and Recording Media from Mills College, where she also studied composition and improvisation. She received a BA degree in Music and a BA degree in German from the University of Virginia.

13. *Eagle River Study*—Cory Ryan

Eagle River Study investigates the sonic potential of sounds within Chugach State Park in Alaska and beyond. The salient elements of these environments are explored, highlighting their underlying sonic potential. Timbral connections drive the work, yet interconnectivity is acknowledged in an aural environment of equality. The piece was created during EcoSono Institute Alaska 2013.

Track Duration: 1:57

Cory Ryan is a New York-based composer praised for music that is

"timbrally striking" (*HurdAudio*) and "full of wind, height, and velocity" (*Baltimore City Paper*). Working in phonography, in free improvisation, and with saxophone and electronics, he engages in found composition: relinquishing most musical decisions to observed environments. Deeply informed by his life as a vegan, his work explores themes of perception, time, sustainability, and the interconnectivity of our fragile planet. His work has garnered performance credits including Carnegie Hall, Lincoln Center, Steinway Hall, the Experimental Media and Performing Arts Center, and others throughout North and South America, Europe, Asia, and Australia. Ryan's music can be heard on New Focus Recordings and SEAMUS. He has written for *Computer Music Journal* and has given a TEDx talk. Ryan is a former faculty member of Morgan State University, Bluefield College, and Mansfield University.

14. *Light Pollution Sonification*—Jack Patton-Smith

There are 9,096 stars visible with the naked eye. At any given location, we can see an average of 2,500 stars. In the suburbs of New York City, one can only see 250 stars. Within New York City, only 15 stars are visible. This project expresses the loss of our night sky to human-made light pollution. The base texture of the piece is composed with sonified data from the constellation Orion. The stars are mapped into notes. Harmonies and melodies are crafted from the most luminous stars in the constellation. Field recordings of the night are incorporated in the beginning. As the piece progresses, field recordings

Figure 12. Jack Patton-Smith.

of electrical equipment impede upon the sound. These electrical sounds overtake the stars' texture. This represents the loss of our stars to light pollution.

Track Duration: 3:55

Jack Patton-Smith grew up in up in rural Appalachia and studied Music and Astronomy at the University of Virginia, where he studied Ecoacoustics, was active at the University of Virginia's WTJU, and performed as a member of the New Music Ensemble.

15. *Imago Hymns*—D. Edward Davis

Imago Hymns was created for the EcoSono Environmental Music and Sound Art Festival in the summer of 2017. It draws on field recordings made by the composer in a pair of "sky islands" that soar above high deserts: the Chisos Mountains in the Big Bend region of Texas and the Santa Rita Mountains in southern Arizona. These recordings, featuring singing grasshoppers and katydids, are abstracted and layered into a massive shimmering chorus.

D. Edward Davis is a composer whose work engages with the sounds of the environment, exploring processes, patterns, and systems inspired by

Figure 13. D. Edward Davis.

nature. His pieces have recently been presented in Massachusetts, California, Alaska, North Carolina, Maryland, Arizona, and Nebraska. Davis holds degrees in composition from Duke University, Brooklyn College, and Northwestern University. Davis currently lives in New Haven, Connecticut, and he teaches at the University of New Haven.

16. *Gull Island*—Stephanie Cheng Smith

Featuring recordings made on Gull Island in the Gulf of Alaska.

Track Duration: 7:59

Stephanie Cheng Smith is a composer, performer, and programmer who creates interactive pieces, installations, improvisations, and through-composed works. She often uses electronics, violin, and light, and her latest explorations with motor arrays have been featured in the 2016 issue of *Experimental Music Yearbook*. Smith has conducted residencies with the Studio for Electro-Instrumental Music (Amsterdam), the PACT Zollverein (Essen), liebig12 (Berlin), the Re-New Digital Arts Festival (Copenhagen), and EcoSono (the Caribbean).

Figure 14. Stephanie Cheng Smith.

She has also made appearances on Webcasts such as EarMeal, Experimental Half-Hour, and dublab. Smith frequently performs electronic music under the name Stephie's Castle, is a member of networked music ensemble bitpanic, and has composed for and performed as a member of the Dog Star Orchestra. Serving on the wulf.'s Artistic Advisory Board, she also curates and produces experimental music concerts in the Los Angeles area.

17. *Stones Touch the Sky*—Matthew Burtner

At the Sera Monastery near Lhasa, Tibet, a monk was shaping rocks with a hammer and chisel to make stones for the temple walls. His sound of tapping stones mixed with the wind, flapping prayer flags, and distant chanting. He let me stay and listen to his work. It took a long time for him to make one stone. Built on the face of the mountain from countless similar stones, the temple stretches into the sky. The mountain rises in staggering verticality behind the temple. This man's work embodied a vertiginous sense of time, where the human and geologic scales meet. In the piece, these field recordings are set in counterpoint with digital noise and dynamic computer resonators, tracking the wind and the roughness of stones.

Track Duration: 5:52

About EcoSono

EcoSono (www.ecosono.org) is a nonprofit organization pursuing commonalities between innovative musical creation and ecological sustainability. Through education, engagement, and artistic production, EcoSono defines a unique methodology for environmentalism and the arts. Matthew Burtner formed EcoSono as a nexus for work in ecoacoustics. National Geographic News Watch called EcoSono Ensemble's performance of *Auksalaq* "a significant cultural event that marries science as the brain, art as the heart, and culture as the soul in our search for awareness and sustainability." EcoSono has organized concerts from Alaska to Namibia and venues in between.

The EcoSono Ensemble is a music collective combining chamber music performance, improvisation, new technologies, and the environment. The group gave its debut performance at the 2012 premiere of the *Auksalaq* telematic opera performed simultaneously in Bergen, Norway; Montreal; Indianapolis, Indiana; Fairbanks, Alaska; Washington, DC; New York; and Charlottesville, Virginia. Since then, EcoSono Ensemble has given concerts in Alaska; Washington, DC; Colorado; California; and Canada. Director of Performance Glen Whitehead spearheaded a tour of California in 2016 and a tour of Australia, Tasmania, and New Zealand in 2017. The EcoSono Ensemble recently performed *The Ceiling Floats Away*, a new work of poetry music by Matthew Burtner and Rita Dove, at the Smithsonian American History Museum Accelerate Festival. EcoSono is currently in residence at the Center for Energy and Environmental Research in the Human Sciences (CENHS) and performing at the Moody Center of Rice University in Houston.