

UNC Festival on the Hill 2016 MUSIC, SCIENCE, & NATURE



April 1-April 3, 2016
UNC-Chapel Hill

Preface to Festival on the Hill 2016

Welcome to our 2016 Department of Music Festival on the Hill! Our biennial festivals, begun in 2002, are designed by music faculty to explore scholarly and creative research interests with members of our university, visiting scholars and our community. We look forward to three stimulating days of conversation with you during this year's festival which explores the intersection between music, science and nature.

Louise Toppin
Chair, Department of Music
University of North Carolina at Chapel Hill

Preface to Music, Science, and Nature

The study of music has long been closely intertwined with the natural sciences. It is well known that the early Greeks included music in their *quadrivium* of core scholarly subjects, along with arithmetic, geometry, and astronomy. From a musical perspective, scientific principles underlie nearly every step of the musical process, including the acoustic foundations of harmony and voice-leading, the mathematics of its structural organization, the construction of both acoustic and electronic instruments, and the physiology of hearing. Likewise, the study of music and sound is found in diverse scientific fields, such as animal communication and birdsong, soundscape ecology, seismology, and astronomy.

This festival will explore the many current and historical intersections and influences between music and the natural world. A host of local and visiting scholars, composers, scientists, and performers will be participating in this multi-disciplinary celebration. On behalf of the Department of Music at UNC-Chapel Hill, we welcome you to participate in the conversation and enjoy the music.

Conference Organizer
Lee Weisert
Assistant Professor of Music
University of North Carolina at Chapel Hill

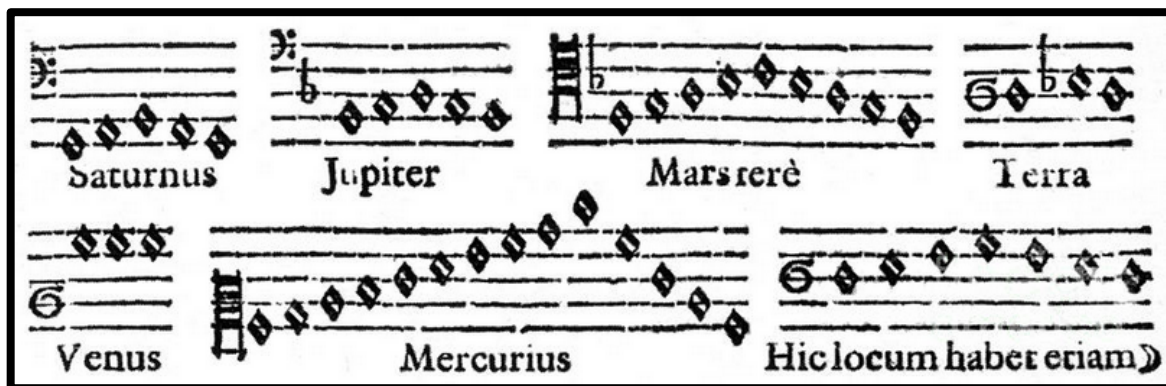
Acknowledgments

This festival could not take place without the generous support of the following persons: Louise Toppin, Professor of Music and Chair of the Department of Music; Terry Rhodes, Professor of Music and Senior Associate Dean for Fine Arts & Humanities; Mark Katz, Raul W. Tyson, Jr. Distinguished Professor of Humanities and Director of the Institute for Arts & Humanities. The organizers are also grateful for the generous support of the UNC College of Arts and Sciences, the Institute for the Arts and Humanities, and a grant from the UNC Performing Arts Special Activities Fund.

UNC Festival on the Hill 2016

MUSIC, SCIENCE, AND NATURE

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Johannes Kepler, *Harmonices Mundi* (1619)

Symposium Schedule

(ALL EVENTS IN PERSON RECITAL HALL)

Friday, April 1, 2016

7:30 p.m. • Welcome: Louise Toppin, chair of the UNC-CH Department of Music; Lee Weisert, UNC-CH, festival organizer

7:45-8:30 p.m. • Keynote Lecture: "Music and the Making of Modern Science" Peter Pesic, St. John's College, Santa Fe, NM

Saturday, April 2, 2016

9:00-11:45 a.m. • Session 1: Science and Nature as Compositional Tools

Allen Anderson, University of North Carolina at Chapel Hill, chair

Jonathon Kirk, North Central College, "Head Rhythm and Spatial Imagery"

John Supko, Duke University, "Listening in the Landscape of the Mind"

Hildegard Westerkamp, Simon Fraser University, "Experiences of Nature Through Environmental Sound and Music"

11:45 a.m.-2:00 p.m. • Break

2:00-4:45 p.m. • Session 2: Music and/as Science

Lee Weisert, University of North Carolina at Chapel Hill, chair

Laurie McNeil, University of North Carolina at Chapel Hill, "Does What You Hear Determine What You Create?"

Jeremy Marzuola, University of North Carolina at Chapel Hill, "Waves and Dynamics: Acoustics, Billiard Ball Dynamics and How They Are Connected"

Angus Forbes, University of Illinois at Chicago, "Cross-Disciplinary Concepts in Art and Research"

Romaneio Golphin, The Robeson Group, "The Art and Science of the Everyday"

Sunday, April 3, 2016

9:00-11:45 a.m. • Session 3: The Sounding Environment

Philip Vandermeer, University of North Carolina at Chapel Hill, chair

Rachel Mundy, Rutgers University, "The Music Hunter: Songs and Identity 1920-1935"

Andrea F. Bohlman and Amanda Black, University of North Carolina at Chapel Hill, "Resounding the Campus: Pedagogy, Race and the Environment"

Allison Portnow, Ackland Museum, "Arnold Schoenberg: America's Accidental Einstein of Music"

Joanna Helms, University of North Carolina at Chapel Hill, "The Electronic Music Research Studio as Sonic Laboratory"

Conference Abstracts

(IN ALPHABETICAL ORDER OF AUTHORS)

"RESOUNDING THE CAMPUS: PEDAGOGY, RACE AND THE ENVIRONMENT"

ANDREA F. BOHLMAN AND AMANDA BLACK
UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL

This talk reflects on the present-day relevance of the soundwalk as a pedagogical tool in the context of debates about presence, audibility/visibility, and race at the University of North Carolina. We explore a project developed to usher undergraduates out of the classroom to confront the inaudible and unknown histories of UNC. We frame the difficulties in implementation and evaluation that we encountered in practice with undergraduate students. In this context, we observed that the classroom demanded a shift from understanding this canonic exercise in listening as an experiential excursion to curating a critical collective action. Our discussion includes a reflection on how this shift reflects debates about the purpose of humanistic inquiry in sound studies.

"CROSS-DISCIPLINARY CONCEPTS IN ART AND RESEARCH"

ANGUS FORBES
UNIVERSITY OF ILLINOIS
AT CHICAGO

In this talk I present a range of works that investigate topics of complexity and emergence in computational art. I describe explorations of iterative synaesthetic composition, collaborative projects that make use of orchestrated feedback as an organizational theme to intermix aural and visual signals. I also present details about a new video processing technique that is inspired by granular synthesis, a popular sound synthesis method that operates on the microsound timescale. Finally, I discuss my current investigations into creative representations of complex scientific information, such as biological pathway databases and neuroimaging datasets. Each of these projects have creative and practical outputs, and point to the potential of integrating artistic and scientific approaches for interdisciplinary research.

"THE ART AND SCIENCE OF THE EVERYDAY"

ROMANIEO GOLPHIN
THE ROBESON GROUP
CEDAR GROVE, NORTH CAROLINA

Creativity and science, once thought to be separate endeavors, now travel hand and hand along the road we covet called the "Creative Scientist." As an educator, composer and linguist, I see music and science as one. Each indispensable in highlighting the beauty and complexity of the other. In describing 11 Dimension String Theory, Physicist and Science Presenter, Dr. Michio Kaku says, "Physics is nothing but the laws of harmony of these strings. Chemistry is nothing but the melodies we can play on these strings. The universe is a symphony of strings..." I will highlight some ways I've worked to simplify Dr. Kaku's statement into palatable and digestible bites. Nuggets that a 6 year old (Romanieo Jr. - who has developed perfect pitch, and who is currently studying college level chemistry) has come to understand.

The Art & Science of the Everyday is an up and coming YouTube Series that uses new media tools to convey complex science and arts concepts in digestible bites for the young learner and the young at heart. I will also examine the intersections of science and art via the topics covered in the series: The Science of Sound; The Electromagnetic Spectrum; Inside the Atom; and Chemistry and your Health.

"THE ELECTRONIC MUSIC RESEARCH STUDIO AS SONIC LABORATORY"

JOANNA HELMS
UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL

In the decades following the end of World War II, dozens of electronic music facilities were founded across the world, operated by various types of institutions including state-operated media networks, universities, private film companies, and industrial electronics facilities. These mid-century electronic music studios allude to scientific study in a number of ways—most obviously in their own description of their activities as “research” or “experimentation.” Promotional photographs and video footage featuring serious, academic composers and racks of imposing audio equipment strengthen this association, as do the ethereal sounds (closely related to, or even themselves used as, sound effects and scores in science fiction films at the time) that emerged from studio spaces. In addition to these surface traces of the scientific, electronic music studios often employed teams of engineers and, in some cases, scientists, who aided in the development of brand new types of equipment and musical instruments and the discovery of previously unheard sounds.

This presentation explores ways in which early electronic music research studios constructed themselves as semi-scientific, quantitative research spaces, and how they might—and might not—productively be understood as related to the scientific laboratory. I take as a case study of this process the Studio di Fonologia (1954–83), a music research studio affiliated with Italian state media network Radiotelevisione Italiana (RAI), discussing the relationships among figures such as the longtime technician, Marino Zuccheri; the in-house physicist who designed and maintained the studio’s earliest oscillators, Alfredo Lietti; RAI administrators; and the composers who moved in and out of the studio space. These actors effectively worked together as research teams to search for new technological possibilities, even as their research was fundamentally creatively generative, with a desired result of making available new forms of musical and sonic expression.

"HEAD RHYTHM AND SPATIAL IMAGERY"

JONATHON KIRK
NORTH CENTRAL COLLEGE
NAPERVILLE, ILLINOIS

The compositional exploration of spatial perception, auditory distortion, and image schemas in technological music has dramatically changed how we understand the ear as a passive receiver of sound and music as a psychoacoustic process. Tartini (1754) described and Helmholtz (1856) identified the experience of hearing or feeling third tones (combination tones) resulting from the pairing of two frequencies, but by the mid to late twentieth century, scientists had discovered their consistency with physical acoustic signals generated by the active components of the cochlea—what we now refer to as otoacoustic emissions (DPOAE) and physical auditory distortion products. In addition to the use of distortion products as compositional materials, developments in 3D sound, ambisonic spatialization, and the application of Head Related Transfer Functions (HTRF) in binaural synthesis have given composers new or alternative ways of reimagining the spatial sound-field. Many of these compositional tools are derived from what Maryanne Amacher referred to as “perceptual geographies,” or the listener’s ability to interact melodically, rhythmically, and spatially with their heads, bodies and the room. This presentation will look at a variety of specific compositional methods, primarily drawn from the science of perception, that deal with the real, virtual, and subliminal phenomena of auditory distortion, ambisonics and applied image schemas. Works by Amacher, Jakob Kierkegaard, Phill Niblock and the author will be discussed.

"WAVES AND DYNAMICS: ACOUSTICS, BILLIARD BALL DYNAMICS AND HOW THEY ARE
CONNECTED"

JEREMY MARZUOLA
UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL

We explore ideas from the mathematical topics of spectral and scattering theory and their implication for how waves behave in various settings. In particular we will discuss how billiard ball trajectories in certain domains can inform fundamental ways in which a domain could vibrate. These ideas have implications for topics like acoustics, quantum mechanics, General Relativity and more. For instance, one recent topic explored by fellow mathematician Jeffrey Galkowski in this area relates to a quantum version of Sabine Law, which was initially proposed relating to sound quality in concert halls. Loosely, one can see that this is related to the number of reflections a sound wave can experience in a space before losing most of its intensity. I will touch on these topics, relate them somewhat to my own work and try to highlight some of the essential connections between dynamics, wave packets, resonant modes of a material and applications. In addition, we will try to include video or audio demonstrations of many of the underlying ideas.

"DOES WHAT YOU HEAR DETERMINE WHAT YOU CREATE?"

LURIE MCNEIL
UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL

The scales and harmonies of Western music are based on the overtone series of a vibrating string (as in a violin) or air column (as in a flute), in which wavelengths of sound waves produced by the instrument are related according to the harmonic series: 1, 1/2, 1/3, 1/4, 1/5, ... (1, 0.50, 0.33, 0.25, 0.20, ...). Would our music be different if it had been based on the overtone series of some other vibrating object, for example a long rigid cylinder with two free ends? Such a cylinder has overtones related as 1, 0.36, 0.18, 0.12, ... and this inharmonic progression gives tubular bells (chimes) their haunting sound (not to mention their deceptive pitch). The music of some non-Western cultures is based on instruments (such as those in the gamelan) that have inharmonic overtones—does this determine the scales in which they are tuned? How might a 21st-century composer, who can use electronic means to create sounds with arbitrary sets of overtones, decide what sounds to use achieve particular musical goals?

"THE MUSIC HUNTER: SONGS AND IDENTITY 1920-1935"

RACHEL MUNDY
RUTGERS UNIVERSITY

Between 1900 and 1945, over one hundred collections of folk songs, exotic tunes, birdsong, and insect chirps were published in English, French, and German. Botanists and zoologists of the period situated identity in the physical body, represented by the specimens of the natural history museum. For experts in music, songs were the analogue of those animal bodies, specimens that represented identity in sound.

In this talk I turn to one of America's first professional song collectors, Laura Craytor Boulton. Laura, building on a background in eugenics, was an expert in the songs of south-west Africa. Love, hope, fear, and violence circulated through the scores and recordings that she collected. Today, notions of identity are often framed through genetics in biology, and categories of sexuality, race, gender, or nation in cultural practice. But in Laura's life, identity was a lived experience of unequal partnerships, partnerships that governed professional success and failure, and defined the realities of song-collecting. By connecting the dots between today's categories of identity, and a point of origin in the early twentieth century, I hope to re-examine the notion of identity

itself as product of historically negotiated partnerships between songs, peoples, nations, and—most importantly—between species.

"MUSIC AND THE MAKING OF MODERN SCIENCE"

PETER PESIC
ST. JOHN'S COLLEGE
SANTA FE, NEW MEXICO

Music has had a significant effect on science from ancient Greece to the present. Indeed, science (especially physics) as we know it is the "child" of four sisters: arithmetic, geometry, music, and astronomy, the quadrivium (four-fold way) of "liberal arts" that Plato established as the core of higher education. This talk will present three seminal cases in the encounter between music and science: Johannes Kepler using new astronomical observations to find the "song of the Earth"; Hermann von Helmholtz creating a new concept of space from the comparison of hearing with vision; Max Planck experimenting with harmoniums and choruses before turning to black body radiation and the quantum.

"ARNOLD SCHOENBERG: AMERICA'S ACCIDENTAL EINSTEIN OF MUSIC"

ALLISON PORTNOW
UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL

As Albert Einstein became a household name in the United States and his theories of relativity gained notoriety, composers and music critics had to contend with the man and his important theories in their work. For American modernists, especially those inside the rapidly coalescing musical academy, Einstein and relativity became touchstones for three key areas of musical life. First, Einstein (the man) served as a model for the modernist composer. Second, his theories—and the way that they were hailed in spite of limited understanding or even misunderstanding—presented a possible example for the reception of modernist theories of music by a broader audience. Third, Einstein's notions of space and time provided a point of comparison and even source of inspiration for new and developing compositional techniques.

One particular figure seemed at the time—and is sometimes still described as—the very embodiment of these three musical modes of understanding Einstein and relativity for the American public: Arnold Schoenberg. It was not long after the composer moved to the U.S. that the American press began calling him the "Einstein of Music," enmeshing the public images of the two famous émigrés. Today, I will explore the possible reasons Schoenberg was given his new nickname, including the emerging (and then enduring) parallels perceived between Einstein's theories of relativity and Schoenberg's system of twelve-tone composition. I'll concentrate on the period when the comparisons began—a time when, as Schoenberg himself put it, "everybody made believe he understood Einstein's theories and Schoenberg's music"—before briefly exploring how this phenomenon fit in with broader ideas about Einstein, relativity, and musical modernism.

"LISTENING IN THE LANDSCAPE OF THE MIND"

JOHN SUPKO
DUKE UNIVERSITY
DURHAM, NORTH CAROLINA

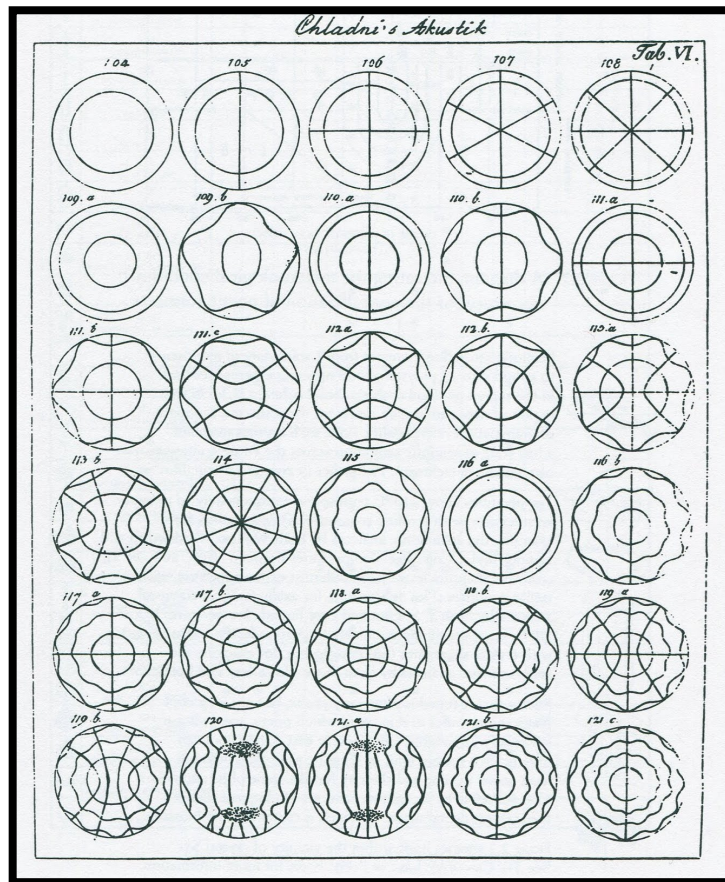
A lecture/demonstration exploring aspects of human thought, its manifestations in language, and Supko's interest in incorporating text and speech in his work. Supko's delivery of the text will be mediated by software that will extract musical possibilities from his speaking voice, transforming his reading into a new kind of musical performance.

"EXPERIENCES OF NATURE THROUGH ENVIRONMENTAL SOUNDS AND MUSIC"

HILDEGARD WESTERKAMP
SIMON FRASER UNIVERSITY
VANCOUVER, BRITISH COLUMBIA

This talk will explore how the 'languages' of environmental and musical sounds 'speak' to listeners in the context of nature—specifically nature as perceived in two very different environments: when we visit actual natural places, and when we experience it in the cinema, on TV or computer screens. We will visit The Zone of Silence, a desert region in Mexico and listen to single natural sounds in an extraordinarily quiet pace, including the singular cricket heard in my composition *Cricket Voice*. Then we will explore natural places as represented in film and video.

How do soundscape composition and visual media reveal nature to audiences and in what way can they, *do* they, assist in raising awareness of ecological issues through environmental and musical sounds and soundscapes—at a time when music seems to have become the preferred or habitual 'language' to accompany natural cinematic scenes? What does music mean in this context: listening to natural sounds as if they were music or listening to music as if it were setting the tone for how to experience natural environments? What kind of ear do we apply when listening in these contexts, a conscious searching and curious one or a habitual one? Which approach is encouraged by the creators of the composition or visual medium? To what extent does our own listening require a re-education?



Ernst Chladni, *Acoustics* (1830)

Conference Participants

(IN ALPHABETICAL ORDER)

Amanda Black is a second year graduate student in Musicology at UNC. She holds an MA in Translation Theory from the Universidad de Málaga, where her thesis theorized the translation of the poem "Love Exhumed" by Ecuadorian poet Jorge Enrique Adoum. She is a regular contributor to the regional cultural newspaper *Indy Week*, covering the Latin music scene in the Triangle, and has also published on translation methodologies in qualitative research. Her MA thesis in musicology explores the challenges of maintaining a musical scene in the face of repressive anti-immigration legislation. Amanda's research interests include music and exclusion, sound studies, and cross-genre listening in Latin America.

Andrea F. Bohlman is assistant professor of music at the University of North Carolina at Chapel Hill. Her monograph in preparation is a study of the interaction between political action, listening, and music in Poland in the late twentieth century. She has also worked extensively on the composer Hanns Eisler and European popular musics, in particular the Eurovision Song Contest. Her current project is a history of sound media in twentieth century Poland that engages economies of amateur music worlds, the persistence of "old" media such as magnetic tape and radio, and audio-visual documentary practices. An article on sound documentation and protest is forthcoming in the Spring 2016 issue of the *Journal of Musicology*.

Angus Forbes is an assistant professor in the Department of Computer Science at University of Illinois at Chicago where he directs the Creative Coding Research Group within the Electronic Visualization Laboratory. His research investigates novel techniques for visualizing and interacting with complex scientific information; his interactive artwork has been featured at museums, galleries, and festivals throughout the world. Angus is chairing the IEEE VIS Arts Program (VISAP'16), to be held in Baltimore, Maryland in October 2016, a forum that promotes dialogue about the relation of aesthetics and design to visualization research. Additional information about Angus's research and artwork can be found at <http://creativecoding.evl.uic.edu>.

Romanio N. Golphin Sr. is a symphonic thinker. He has studied at Howard University; The Juilliard School; and at the M. Lomonosov Philological Department at Moscow State University. Among his many titles are that of scientist, composer and linguist (Russian, Mandarin & Spanish), and has been called a true polymath by those who know him well. He has held a variety of positions in his over 20 years of professional experience in television and film, multimedia strategy, as well as a variety of areas of musical composition (classical, opera and jazz). He most recently served as Operations Manager and Multimedia Strategist in the Department of Music at the University of North Carolina, Chapel Hill, and served as lead liaison of a \$17 Million dollar renovation of historic Hill Hall. Mr. Golphin continues to honor one of his great heroes Paul Robeson in his quest to devise effective tools and strategies to teach complex concepts in both science and arts to young learners. His focused work with his son led to considerable media attention in 2012 and his teaching framework, TEAM3S (Technology Engineering Arts Meditation Mathematics Music Science) has led to him receiving awards, speaking invitations and continued requests for educational programming from parents, educators and others from around the world. These requests have prompted a shift in his focus from composition to educational innovation that he has worked on developing with his wife. In addition to his international work experience, his proudest achievement is what he considers his most important job: "Father" to Romanio Jr.

Joanna Helms holds masters degrees in musicology from UNC and the Indiana University Jacobs School of Music, as well as a bachelors in flute performance from the University of South Carolina. Her research interests generally center around music, sound, and technology, focusing particularly on issues of dissemination, participation, and collaboration. She is currently beginning work on a dissertation on the Studio di Fonologia, an electronic music research center associated with Italian radio and television network RAI in Milan. Joanna remains active as a flutist, including currently with UNC's Charanga Carolina, and is also a co-founder and a current organizer of the Experimental Music Study Group, which presents concerts and holds discussion groups in the Triangle area.

Jonathon Kirk is a Chicago based composer, multimedia artist and teacher. His music has recently been performed by Picoso, Spektral Quartet, Ensemble Dal Niente, Harvard University Collegium Musicum and members of Champ D'action and Ensemble Modern. His multimedia work has been presented at the Tate Modern in London, the London and Melbourne International Animation Festivals, Festival Internazionale di Musica Elettroacustica del Conservatorio S. Cecilia in Rome, the Los Angeles Short film Festival, the Courtisane Festival in Brussels, Princeton's Listening in the Sound Kitchen, Boston Cyberarts Festival, Zentrum für Kunst und Medientechnologie (ZKM) in Karlsruhe, Germany, Festival Musica Viva in Portugal, and the Itaú Cultural in Sao Paulo. Kirk has held residencies at the Logos Foundation in Gent, Belgium (2000-2001) and the Petrified Forest National Park (2009). His collaborative work with Lee Weisert has been presented across the country including New Interfaces for Music Expression, the International Computer Music Conference, Moogfest, Santa Fe Currents International Media Festival, and the New York Electroacoustic Music Festival. He is currently an assistant professor of music at North Central College.

Jeremy Marzuola received his undergraduate degree from the University of Oklahoma in 2002, writing an undergraduate thesis on Numerical Semigroups with Professor Andy Miller. Then, he went to UC-Berkeley completing his Ph.D. working with Professor Daniel Tataru in 2007. The thesis topic was the asymptotic behavior of solutions to the Nonlinear Schrödinger Equation (NLSE). From 2007-2008 and 2009-2010, he was at Columbia University as a National Science Foundation Postdoctoral Research Fellow working with Professor Michael Weinstein and spent the academic year 2008-2009 as a Hausdorff Center Postdoc with Professor Herbert Koch at the University of Bonn. Presently, he is an Assistant Professor in the Analysis Group at the University of North Carolina, Chapel Hill. His research interests lie mainly in phenomenological descriptions of solutions to linear/nonlinear PDE's related to quantum mechanics and other physical models that give rise to Hamiltonian structure.

Laurie McNeil is the Bernard Gray Distinguished Professor of Physics at UNC-CH. She received her A.B. in Chemistry and Physics from Radcliffe College and her A.M. in Physics from Harvard University. After completing her Ph.D. in Physics at the University of Illinois at Urbana-Champaign she held a postdoctoral appointment at MIT before joining the Physics & Astronomy Department at UNC-CH in 1984. An optical spectroscopist, she conducts research on the physics of semiconductors and biological tissue. Together with Prof. Brent Wissick of the UNC-CH Music Department she teaches a First-Year Seminar on the physics of musical instruments, in which students build their own unique instruments and write compositions for them.

Rachel Mundy is an Assistant Professor of Music in the Arts, Culture, & Media program at Rutgers University in Newark. She specializes in twentieth-century sonic culture with interests at the juncture of music, the history of science, and animal studies. Her research shows how music has been used to navigate changing boundaries between race, species, and culture in the twentieth century. Rachel's work has been published in the *Journal of the American Musicological Society*, *The Musical Quarterly*, *Animals & Society*, and other journals. Her forthcoming book *Animal Musicalities* traces comparisons between human and animal songs from social Darwinism through the postwar rejection of racial science. She is currently working on a comic-book inspired biography of American song collector Laura Boulton that features archival photographs of Laura's trip to Angola for the Carnegie Museum of Natural History in 1930-31. She is also in the early stages of a second monograph about a generation of women biologists who turned in the 1970s to musical listening in lieu of laboratories as a way of reconfiguring notions of animal intelligence.

Peter Pesic is a writer, pianist, and educator. He is director of the Science Institute at St. John's College in Santa Fe, New Mexico, where he is also Musician-in-Residence and Tutor Emeritus. His five books, seven editions, and sixty papers consider questions in the history and philosophy of science, music, and ideas. His book reviews have appeared in the Wall Street Journal and Times Literary Supplement. Born in San Francisco of Serbian parents, he was educated at Harvard and Stanford, where he received a doctorate in physics and subsequently taught in its program on Structured Liberal Education. At Stanford, he studied piano with Naomi Sparrow and performed with the new music ensemble Alea 2; he then attended the Aspen Music School. In the course of three hundred concerts he has surveyed the music of Schubert, Bach, Haydn, Beethoven, and Schoenberg; he has given premieres of works by Nicolas Roussakis, David Lang, and Lawrence Cave. He has given concerts with sopranos Danielle DeNiese and Helen Vanni, cellists Yehuda Hanani, Wayne Foster Smith,

and Antonio Lysy, and pianist Vitya Vronsky. On the faculty of St. John's College in Santa Fe since 1980, he has been deeply involved in its unified curriculum based on close study and discussion of great works, especially in shaping its unique program of study in laboratory science, mathematics, and music. Besides the newly formed Science Institute (which offers week-long intensive seminars on important texts in science and mathematics for teachers and other interested participants), he is editor-in-chief of *Physics in Perspective* and an Associate of the Department of Physics at Harvard University.

Allison Portnow is the Public Programs Manager at the Ackland Art Museum at UNC-Chapel Hill. In this role, she manages the Museum's wide variety of programs, including the Ackland's Music in the Galleries program, the Ackland Film Forum, and the museum's many talks, tours, and hands-on programs for all ages. Allison received her PhD in musicology in 2011 from UNC, with a dissertation entitled "Einstein, Modernism, and Musical Life in America, 1921-1945." In the time since completing her degree, she has been exploring various ways of incorporating her musicological training into her museum role, designing not just well-researched concerts in the galleries, but also curating soundtracks to accompany exhibitions and planning other musical and performance-based experiences for visitors. Allison has presented recently at the 2015 conference on the "Past, Present, and Future of Public Musicology" and at the fall 2015 American Musicological Society meeting on being a "musicologist in an art museum."

John Supko Called "spellbindingly beautiful" (Steve Smith, *Time Out New York*), "hypnotic...eerily beautiful" (Vivien Schweitzer, *The New York Times*), and "fascinating" (Philip Clark, *The Guardian*), the work of composer John Supko (b. 1980, NY) explores intersections: chance and intention; traditional music notation and real-time score generation; sound and spoken text; installation and performance; human and computer creativity. In recent years, Supko has been developing generative software to navigate his vast archives of field recordings, sampled acoustic and digital instruments, noise, and voice recordings. He uses this software to find unexpected compositional possibilities as well as to create dynamic sonic environments that are integrated into live performance with human musicians. He is a recipient of the Fulbright (2002) and Georges Lurcy (2007) fellowships, both for Paris, France, where he studied at the Ecole Normale de Musique. He has won numerous prizes and grants, among them the BMI Student Composer Award, two ASCAP/Morton Gould Young Composers Awards (including the 2008 Leo Kaplan Award), the Grand Prize of the National Young Composers Competition, the Perkins Prize of the Princeton University Music Department and a Commissioning Music/USA Meet the Composer commission. His work has been published in collaborative editions with the poet Philippe Denis by Collection Mémoires (Paris) and by Harpo & (Marseille), and has been released on the New Amsterdam and Cotton Goods labels. His 2014 collaborative album "s_traits" (with Bill Seaman) was named in "Best of 2014" recording lists in *The New York Times* and *The Boston Globe*. Currently the Hunt Family Assistant Professor of Music at Duke University, where he co-directs The Emergence Lab with Bill Seaman, Supko holds degrees from the Indiana University Jacobs School of Music (BM) and Princeton University (PhD).

Hildegard Westerkamp has lectured on topics of listening, environmental sound and acoustic ecology and has conducted soundscape workshops internationally. By focusing the ears' attention to details in the acoustic environment, her compositional work draws attention to the act of listening itself and to the inner, hidden spaces of the environment we inhabit. For details check her website: <http://www.sfu.ca/~westerka>. Her music has been commissioned by CBC Radio, Canada Pavilion at Expo '86, Ars Electronica (Linz), Österreichischer Rundfunk, Zentrum für Kunst und Medien in Germany. She received Honorable Mentions in competitions such as Prix Ars Electronica in Austria, Prix Italia, and the International Competition for Electroacoustic Music in Bourges, as well as a Recommendation for Broadcast from the International Music Council's 4th International Rostrum of Electroacoustic Music. Her articles have been published in *Radio Rethink*, *Kunstforum*, *Musicworks*, *MusikTexte* and a variety of books. For an extensive exploration into her compositional work see Andra McCartney's *Sounding Places: Situated Conversations through the Soundscape Work of Hildegard Westerkamp*, York University, Toronto, 1999. As part of Vancouver New Music's yearly season she has coordinated and led Soundwalks for some years since 2003, which in turn inspired the creation of *The Vancouver Soundwalk Collective*: https://www.facebook.com/vancouver_soundwalk_collective/. A founding member of the World Forum for Acoustic Ecology (WFAE, see: www.wfae.net), and long-time co-editor of its journal *Soundscape*, Westerkamp was a researcher for R. Murray Schafer's *World Soundscape Project* in the Seventies, and has taught acoustic communication at Simon Fraser University with colleague Barry Truax.

The University of North Carolina at Chapel Hill Department of Music
presents

MUSIC, SCIENCE, & NATURE - CONCERT 1

Friday, April 1, 2016

7:30 pm

Person Recital Hall

~ Program ~

Festival on the Hill Keynote Lecture: Peter Pesic, "Music and the Making of Modern Science"

Short Break

Rain Tree (1981)

Toru Takemitsu
(1930-1996)

Juan Álamo, Julia Thompson, Joseph Van Hassel, percussion

Préludes, Book II (1913)

Bruyères
Ondine

Claude Debussy
(1862-1918)

Thomas Otten, piano

Ondine from *Gaspard de la nuit* (1908)

Maurice Ravel
(1875-1937)

Ethan Chu, piano

At the River (1916)

The New River (1921)

The Housatonic at Stockbridge (1921)

Charles Ives
(1874-1954)

Eugene Galvin, bass-baritone; Deborah Hollis, piano

Un reflet dans le vent (1928-9)

Olivier Messiaen
(1908-1992)

Margaret Lynch, piano

Catalogue d'oiseaux (1958)

L'alouette lulu ("Woodlark")

Olivier Messiaen

Clara Yang, piano

The University of North Carolina at Chapel Hill Department of Music
presents

MUSIC, SCIENCE, & NATURE - CONCERT 2

Saturday, April 2, 2016

8:00 pm

Kenan Rehearsal Hall

~ Program ~

- Cricket Voice* (1987) Hildegard Westerkamp
(b. 1946)
- So far ich hin zu Jesu Christ* (1648) Heinrich Schütz
(1585-1672)
UNC Chamber Singers; Susan Klebanow, director
- ...until...* (1972) Clarence Barlow
Version 5 for piano & drone (1974) (b. 1945)
Richard Drehoff, piano
- Etudes Australes* (1974-75) John Cage
VIII. (1912-1992)
Peter Pesic, piano
- The Musical Offering* (1747) Johann Sebastian Bach
Ricercar à 6 (1685-1750)
Peter Pesic, piano

Intermission

- Nothing is Real* (1990) Alvin Lucier
(b. 1931)
Richard Drehoff, piano and amplified teapot
- The Audible Phylogeny of Lemurs* (2010) Chris Mercer
(b. 1972)
- Quintext I-V: Five Textures* (1972) James Tenney
V. Spectra for Harry Partch (1934-2006)
- Nicholas DiEugenio, violin; Leah Peroutka, violin; Mason Allen, viola; Brent Wissick, cello; Adam Maloney,
bass

*The University of North Carolina at Chapel Hill Department of Music
presents*

MUSIC, SCIENCE, & NATURE - CONCERT 3
SILA: THE BREATH OF THE WORLD

Sunday, April 3, 2016

3:00 pm

McCorkle Place, UNC Grounds

- Program -

Sila: The Breath of the World (2014)

John Luther Adams
(b. 1953)

Performed by members of the UNC Symphony Orchestra, Wind Ensemble, and UNC Chamber Singers
Evan Feldman, director

*The University of North Carolina at Chapel Hill Department of Music
presents*

MUSIC, SCIENCE, & NATURE - CONCERT 4

FACULTY JAZZ ENSEMBLE

Sunday, April 3, 2016 **7:30 pm** **450 West Franklin Street, Chapel Hill**

- Program Selected from the Following -

<i>Ornithology</i>	Charlie Parker
<i>Pithecanthropus Erectus</i>	Charles Mingus
<i>Equinox</i>	John Coltrane
<i>Sail Away</i>	Tom Harrell
<i>Up Jumped Spring</i>	Freddie Hubbard
<i>Little Sunflower</i>	Freddie Hubbard
<i>Out of Nowhere</i>	Green/Heyward
<i>Black Nile</i>	Wayne Shorter

UNC Faculty Jazz Ensemble

Jim Ketch, trumpet and flugelhorn; Dave Finucane, tenor sax; Juan Álamo, vibes; Scott Sawyer, guitar; Jason Foureman, bass; Dan Davis, Drums

Concert Participants

(IN ALPHABETICAL ORDER)

Juan Álamo Originally from Cidra, Puerto Rico, Dr. Álamo has presented solo recitals at universities and percussion and jazz festivals throughout the United States, Central and South America, and the Caribbean. He has been featured as a soloist and with Jazz ensembles in television and radio shows in Puerto Rico, Mexico, Venezuela and the United States. Dr. Álamo has recorded and shared the stage performing in collaboration with renowned artists such as Keiko Abe, William Cahn, Ney Rosauero, Orlando Cotto, Steve Shick, Tito Puente, John Wooton, Dave Samuels, Michael Spiro, Alfredo Naranjo, and Ted Piltzecker. He has performed and recorded with the San Juan Pops and played the Classical orchestral repertoire with the Puerto Rico Symphony Orchestra under the direction of Krzysztof Penderecki and Sergiu Comissiona. More recently, he has performed with the Bach Society Orchestra in Denton, Texas. His solo marimba recording *Remembrance* was released in 2007. It features standard repertoire as well as two of his compositions for marimba. Several of Dr. Álamo's pieces have been published by Innovative Percussion, Drop6 Media, and Mallet Works. Dr. Álamo is a member of the Percussive Arts Society, Kappa Kappa Psi and is artist-clinician for Encore Mallets Inc. His teachers include Jose Torres, Jose Alicea, Christopher Deane, Mark Ford, Dr. Robert Schietroma, and Ed Smith. Dr. Álamo will be releasing his latest marimba solo recording—featuring commissions & original compositions—next fall with Albany Records. Dr. Álamo will be taking a sabbatical on the fall of 2016 to do research work in Brazil, present concerts and master classes nationally and internationally as well as to write and record original compositions for his Latin jazz quintet Marimjazzia. More information about Dr. Álamo's artistic career, compositions, recordings and performance schedule can be found in his personal web site at, www.juanalamo.com.

Mason Allen is a senior from Cary, NC and is pursuing a Bachelor of Music degree in music performance with a second major in Communications-Media and Production. He is a member of Phi Beta Kappa Honor Society and is doing an Honors Thesis research project with Dr. Jocelyn Neal. His training in music began with violin, and later, continued with both violin and viola under the direction of Yoram Youngerman. Currently, he is studying viola at UNC with Amy Mason. He is the Principal Violist for the UNC Symphony Orchestra and has played with the orchestra for four years. While at UNC, he has also played with the Baroque Ensemble and Chamber Ensembles. Other concerts he has performed at include the Bohemian Music Festival, Etude Festival, J.S. Bach's Brandenburg Concerto Concert, Mythmusica, and Cantari Voices Concert. Mason has been active as a youth coach for students in the Mallarmé Youth Chamber Orchestra and the UNC Musical Empowerment program.

Ethan Chu is a junior Kenan Music Scholar from Chapel Hill, NC, and is pursuing a Bachelor of Music degree in piano performance and a second major in Computer Science. His piano background includes studies with John Ruggero and masterclasses with Boris Slutsky, John Perry, the Tokyo String Quartet, and the Perlman/Quint/Bailey Trio. Ethan also presented the first movement of Beethoven's Piano Concerto No. 4 with the UNC Symphony Orchestra in February of 2016 as a winner of the UNC Concerto Competition. He performed in the UNC Etude Festival in the fall of 2014 and the "Reanimating Warsaw" project curated by Prof. Andrea Bohlman in the spring of 2015, where he performed contemporary Polish solo piano works by composer Marta Ptaszyńska. As a chamber musician, Ethan performed in the UNC Pleyel Celebration Concert and advanced to the final rounds of the prestigious Fischhoff National Chamber Music Competition as a member of the Piedmont Trio in 2013. In recent years, he was selected to compete in the Arthur Fraser International Concerto Competition, and won awards in competitions sponsored by the North Carolina Symphony, the Winston-Salem Symphony, East Carolina University, and the Music Teacher's National Association. Ethan is a student of Thomas Otten.

Dan Davis (B.M. East Carolina University; M.M. North Carolina Central University) has studied drumset with David Via, Keith Copeland, and Thomas Taylor. Born in Lexington, NC, Dan studied privately with Massie Johnson (NC School of the Arts). After high school, he received the A.J. Fletcher music scholarship to

study percussion with Harold Jones and Mark Ford at East Carolina University. He was the 1987 MTNA-Wurlitzer competition national winner in percussion and performed Darius Milhaud's, Concerto for Percussion in New York City. In 1988, Dan won the ECU concerto competition and performed Paul Creston's Concertino for Marimba with the ECU Symphony Orchestra. At ECU, Dan worked with jazz pianist and faculty member Paul Tardif, and became increasingly interested in drummers such as Elvin Jones, Tony Williams, Max Roach, Art Blakey, Joey Baron, and Jack DeJohnette. Dan moved to the Raleigh/Durham/Chapel Hill area in 1990, where he began a long association with many of the finest musicians in the southeast. He has performed/recorded with Dr. Stephen Anderson, Jim Ketch, Steve Haines, Dr. Jeff Bair, Scott Sawyer, Ed Paolantonio, John Plymale, Carroll Dashiell, Paul Jeffrey, Wes Lachot, Jack Wilkins (USF), Dick Hodgins, Will McFarlane (Muscle Shoals/Bonnie Rait), Adrian Duke, Ray Codrington, Cyril Lance (Moog Music), Dave Finucane, Dr. Juan Alamo, and many others. Dan is an active educator and clinician. From 2002–2005, Dan was band director at the Durham School of the Arts in Durham, NC, receiving the Claus Nobel educator of distinction award in 2005.

Nicholas DiEugenio Praised for his “invigorating, silken” playing and “mysterious atmosphere” (Cleveland Plain Dealer) and as an “evocative” violinist (New York Times), Nicholas DiEugenio leads a versatile life as performer, collaborator, and teacher, in music from Biber to Carter and beyond. DiEugenio and pianist Mimi Solomon perform as a duo in the US and abroad. A core member of the Sebastian Chamber Players (dubbed “everywhere sharp-edged and engaging” by the New York Times) and the Quodlibet Ensemble, projects this year also include performances with Early Music New York and Seraphic Fire. Upcoming recording projects include works for violin and piano of composers Steven Stucky, Robert Palmer, and Jesse Jones. As soloist, DiEugenio has performed with orchestras including Interlochen's World Youth Symphony. In 2012, DiEugenio premiered his commission of composer Loren Loiacono's Violin Concerto with Jeffery Meyer and the St. Petersburg Chamber Philharmonic in Glinka Hall. DiEugenio's 2015 Musica Omnia release of the complete Schumann violin sonatas with pianist Chi-Chen Wu received two Global Music Awards Gold Medals. A passionate teacher, DiEugenio gives masterclasses throughout North America. He was previously Assistant Professor of Violin at the Ithaca College School of Music, and his students have attended graduate schools and summer festivals across the US and Europe. He holds degrees from the Cleveland Institute of Music (BM, MM) and the Yale School of Music, where he earned the Artist Diploma and DMA. More info at www.nicholasdieugenio.com

Richard Drehoff Jr. (b. 1991) is a composer and performer based in Chapel Hill, NC. His works span a variety of instrumentations and styles, often featuring the use of live and/or fixed electronic elements. Drehoff serves as the music director of the Chapel Hill Contemporary Music Ensemble, where he regularly premieres new compositions by local composers. Richard frequently performs as a conductor and collaborative pianist across the state, championing twenty-first century works and interdisciplinary pieces. Richard holds a Bachelor's degree with Highest Honors and Distinction in Music and Mathematics from The University of North Carolina at Chapel Hill, and will be pursuing a Master's of Music in Composition in Fall 2016.

Evan Feldman is Associate Professor of Music at the University of North Carolina at Chapel Hill, where he conducts the Wind Ensemble and Symphony Band and teaches conducting and music education. He also directs the Triangle Wind Ensemble and Greensboro Concert Band. He is an active guest conductor, clinician, and adjudicator. Dr. Feldman's arrangements of Vaughan Williams, Enescu, Dvořák, Ramirez, and Prokofiev are published by Tierolff Muziekcentrale, and his research has been presented at the national and international conferences of CBDNA, WASBE, and IGEB. In 2016, the second edition of Dr. Feldman's textbook, *Instrumental Music Education*, was released by Routledge Publishing and has been adopted by university music education programs throughout the country. He is the author of the first MOOC (massive open online course) dedicated to conducting and rehearsal technique. Over 20,000 students have enrolled through Coursera.org. He is also a contributing author to three volumes of the series *A Composer's Insight*, and his writing have been published in *The Instrumentalist*, the *Iowa Bandmaster Journal*, the *MENC Music Educators Journal*, and the *IGEB Alta Musica*. Dr. Feldman earned his DMA from the Eastman School of Music, where he studied with Donald Hunsberger. He received his masters from Ithaca College and his BA in Music from Duke. A native of Long Island, Evan previously taught at Central College (IA) the College of William and Mary (VA) and high school music in Hicksville, New York.

Dave Finucane performs throughout the Triangle with his own group as well as with Scott Sawyer, Jim Ketch, Stephen Anderson, and other area artists. He can be heard on Scott Sawyer's latest release, *Dreamers*, Jim Ketch's *A Distant View*, and his own CD entitled *Valerie's Song*. Dave is director of the Durham Jazz Workshop, a community-based jazz performance and teaching venue, and also teaches saxophone and jazz improvisation at Duke University. Finucane is a graduate of New England Conservatory.

Jason Foureman was born in Durham, NC. He received his undergraduate degree from the University of North Carolina at Greensboro in 2000. In 2005 he was awarded a teaching assistantship at the University of Louisville where he taught and received his Masters degree in Jazz Studies. While at the University of Louisville, Foureman had the unique opportunity to travel throughout Russia, Finland, Estonia, and Sweden performing and teaching jazz clinics. In 2006, Foureman was awarded a position in the Betty Carter Jazz Ahead program and had performances in Washington, D.C. at the Kennedy Center. Jason has performed with Cedar Walton, Eric Alexander, Corky Hale, Harry Pickens, Jim Snidero, Jamey Aebersold, Kenny Werner, Terri Lyne Carrington, Joel Frahm, and Slide Hampton among others.

Eugene Galvin, Bass-Baritone, praised in Opera News for his "rich voice and superb musicianship," has sung with the Washington, Wolf Trap, Cleveland, Cincinnati, Sarasota and National Operas, Opera New England, Opera Theater of Northern Virginia, and Summer Opera Theater companies, at Constitution Hall as Sarastro in *The Magic Flute* under the baton of Victor Borge, and as the title character in *The Marriage of Figaro* with the New York Grand Opera. His roles also include Basilio, Don Giovanni, Colline, Dulcamara, Gremin, DeBecque and Pandolfe. He played Marshall opposite Patti Lupone in the Kennedy Center production of *Regina*, and created two roles in Wolf Trap Opera's critically acclaimed world premiere of John Musto's *Volpone*. Recent engagements include roles with Washington Concert Opera (Alidoro, Quinault), roles in Opera Lafayette's *Le Deserteur* (recorded on Naxos Records), Bartolo in Paisiello's *Il Barbiere di Siviglia*, and the title role of *Gianni Schicchi* with InSeries in Washington. On the concert stage, Mr. Galvin has performed with Ute Lemper and the National Symphony in Kurt Weill's *Seven Deadly Sins*, and with the Arlington Symphony and Williamsburg Symphonia. As a director, Mr. Galvin has staged his own translations of Donizetti's *Rita* and Viardot's *Cendrillon*, the University of Maryland Opera Workshop, and productions for Opera Theater of Northern Virginia, Belcantanti Opera, and Catholic University. Mr. Galvin holds a D.M.A. in Opera Performance from the University of Maryland, where he studied with Dominic Cossa. He is currently Opera Director and Lecturer in Voice at The University of North Carolina at Chapel Hill where the UNC Opera will present his translation of *Cendrillon* this spring, along with Gian Carlo Menotti's *The Telephone*.

Deborah Lee Hollis is highly respected by colleagues for her sensitivity and skill as a collaborative partner. Her passion for vocal music has led to masterclass performances for such esteemed artists as Frederica von Stade, Dawn Upshaw, George Shirley, Anthony Dean Griffey, and Jennifer Larmore; collaborative pianists Rudolph Jensen, Martin Katz, Warren Jones, and John Wustman; and composers Jake Heggie, Ricky Ian Gordon, Lori Laitman, and John Harbison. Hollis began her career in Chicago where she was pianist for the Chicago Symphony First Chair Series. Since coming to the Triangle, she has worked with many prominent music organizations including Long Leaf Opera Company, Opera Company of North Carolina, Eastern Music Festival, Mallarme Chamber Players and VOICES. Hollis holds piano performance degrees from Oberlin Conservatory and the University of Illinois at Champaign-Urbana, and received her Doctor of Musical Arts in Collaborative Piano from The University of North Carolina at Greensboro. An avid educator, she has conducted masterclasses and coached collaborative pianists and vocalists at Shenandoah, Furman, and Longwood Universities, and presented lecture-recitals at Duke University about the fortepiano and music of Haydn, Mozart, Beethoven and Schubert. Previously on faculty at Wheaton College, Guilford College and The University of North Carolina at Greensboro, and a collaborative pianist at Duke University and The University of North Carolina at Chapel Hill, Dr. Hollis is an active recitalist and maintains a private studio in piano, collaborative piano, and vocal and chamber music coaching.

Jim Ketch is a Summit Records artist and Professor of Music and Director of Jazz Studies at the University of North Carolina at Chapel Hill. His three CDs on the Summit Records label includes *Next Set* (2009), *A Distant View* (2012), and *Distracted Society* (2015). In 2012 he received UNC's prestigious Chapman Award for outstanding teaching. He is a faculty artist for the Jamey Aebersold Summer Jazz Workshops and Associate

Director of Swing Central Jazz for the Savannah Music Festival. Mr. Ketch is a Bach Trumpet clinician, and has served as conductor for numerous All-State and Honors jazz ensembles. He serves as Music Director of the North Carolina Jazz Repertory Orchestra and is President of the Jazz Foundation of NC and a Board member of the Durham Jazz Workshop. He has performed internationally in England, France, Switzerland, and the Netherlands, and with such jazz artists as Marcus Roberts, Jason Marsalis, Tom Harrell, Eric Alexander, Gary Smulyan, John Pizzarelli, Rene Marie, Natalie Cole, Aretha Franklin, The Temptations, and the Manhattan Transfer. He is at work on a book titled *Jazz Trumpet Essentials*.

Susan Klebanow is Professor of Music and Director of Choral Activities at The University of North Carolina at Chapel Hill, where she conducts the Carolina Choir and Chamber Singers and teaches courses in conducting. She is a recipient of UNC's Tanner Award for Excellence in Undergraduate Teaching and a Chapman Family Teaching Award from UNC's Institute of the Arts and Humanities. Devoted to period instrument performance, she has also commissioned and conducted numerous new works with her UNC ensembles.

Klebanow is in high demand as a clinician and has led choral festivals and workshops throughout the U.S. and in Mexico, China, and Italy. She has guest conducted a variety of vocal and instrumental ensembles, including the North Carolina Symphony, the Emmanuel Church of Boston Bach Cantata Series, the Mallarme Chamber Players, Boston University's Opera Theatre, and the University of Veracruz Baroque Festival Chorus in Xalapa, Mexico. Active as a pianist and soprano, Klebanow has recorded and performed extensively with contemporary music and early music groups based in Boston, North Carolina, and Mexico. She holds degrees from Brandeis University and the New England Conservatory of Music.

Margaret Lynch is a sophomore piano performance major and Kenan Music Scholar from Charlotte, N.C. In the fall of 2015, Margaret was named first alternate in Young Artist category of the North Carolina MTNA Competition, and in the spring of 2016, she was named first runner-up in the Dr. Sharyn Edwards piano competition. In the summer of 2015, Margaret attended the Brevard Music Center as a merit scholar for the second time, studying with Dr. Douglas Weeks. Margaret has studied and coached with several major pedagogues and performers, including pianists Mitsuko Uchida, Pierre-Laurent Aimard, Leif Ove Andsnes, Molly Morkoski, Steven Beck, violinist Gil Shaham, and the Brooklyn Rider quartet. Margaret also studies collaborative piano, and she will present a collaborative recital with tenor and fellow Kenan Music Scholar Mark Storey in April 2016. In addition, her upcoming performance schedule includes a solo recital, also in April 2016. Outside of music, Margaret is an avid runner and coffee drinker. Margaret is a student of Clara Yang.

Thomas Otten, a California native born of German-American parents, has been hailed by the *New York Times* as "an extremely original player who puts a formidable technique at the service of his ideas." He made his debut at age seventeen with the National Symphony Orchestra at the John F. Kennedy Center, and has since developed a global profile, performing in Australia, Europe, the Caribbean, and throughout the U.S. He has appeared in such venues as the *Gasteig* (Munich, Germany), St. Petersburg Conservatory (Russia), *Teatro Nacional* (Santo Domingo, Dominican Republic), Lincoln Center, Carnegie Hall, the National Press Club, the German Embassy, and as concerto soloist at the Chautauqua and Brevard Summer Festivals. His performances have been broadcast on both coasts, including WQXR New York, WGMS Washington, and KUSC Los Angeles. Otten has been the recipient of numerous national and international prizes. A student of master teachers John Perry, Nelita True, Barbara Lister-Sink, and Ylva Novik, he holds performance degrees from the University of Southern California (DMA, MM) and the University of Maryland, College Park (BM, *summa cum laude*). He has been on the faculties of the Saarburger Serenaden International Music Festival (Germany), the American Institute of Musical Studies (Austria), and the Kent/Blossom Festival in Ohio. He currently chairs the piano area at the University of North Carolina at Chapel Hill, where he joined the faculty in 2002. His debut CD, *Tristan und Isolde: Piano Transcriptions of Franz Liszt*, was released by MSR Classics in 2005. He recently released a premiere recording of Leslie Adams' *Piano Etudes, Part II* on Albany Records.

Leah Peroutka holds degrees from UNC-Chapel Hill (BM 2007) and the Cleveland Institute of Music (MM 2009). She performs regularly on modern violin with the Carolina Philharmonic, Fayetteville Symphony, and Western Piedmont Symphony, among others, and is also an active chamber musician. Ms. Peroutka currently serves as the Coordinator and Assistant Artistic Director of the Chapel Hill Chamber Music Workshop, now in its 19th year, and is also the Coordinator for the Mallarmé Youth Chamber Orchestra organization. She has

participated in Eastern Music Festival, Cours International de Musique (Morges, Switzerland), and International Music Academy Pilsen (Czech Republic). Ms. Peroutka's principal teachers have included Joanne Bath, Richard Luby, and David Updegraff. As a Baroque violinist, Ms. Peroutka has performed throughout North Carolina and northeast Ohio. She was a member of the UNC Baroque Ensemble under the direction of Brent Wissick and the Case/CIM Baroque ensemble under the direction of Julie Andrijeski. She has participated in masterclasses with the Academy of Ancient Music, Jordi Savall, Quicksilver, and members of Apollo's Fire, among others. She is a founding member of GEM Baroque, based in Greensboro, NC. Recent performances and masterclasses include Magnolia Baroque Festival and East Carolina University.

Peter Pesic (see Conference Participants section)

Scott Sawyer displays his musical diversity like a badge of honor, re-visiting his blues & rock roots while continuing to explore the jazz tradition & beyond. Since 1980, he's performed at countless venues in the U.S. and abroad (Asia, Brazil, Canada, Central America, Europe, the Middle East); including prestigious festivals & concert halls, music clubs, and beer-soaked dives. Born in Chicago, Sawyer eventually settled in North Carolina. Early exposure to jazz via his father's record collection eventually influenced his growing interest in the genre. Sawyer has performed extensively with jazz singer Nnenna Freelon including the 1992 Philip Morris Superband world tour. He's shared the stage and/or recorded with many notable artists; including Charlie Byrd, David Murray, prima ballerina Marie-Christine Mouis, Willie Pickens, Ed Thigpen, Bob Cranshaw, Oteil Burbridge, Jon Lucien, Jon Metzger, Melissa Reaves, Tony Williamson, Kate McGarry, Bruce Piephoff, Claire Holley, and Mel Melton. Sawyer's latest album *Dreamers* was released in November 2013. His previous album *Go There* (2007) charted on XM Radio. Numerous recording credits include Keith Water's *Carolina Tracks* (2012); Bruce Piephoff's *Soft Soap Purrings* (2014); *Still Looking Up at the Stars* (2012), Dave Fox's *The Meldavians-Farewell to Arigemon* (2012); Nnenna Freelon's *Homefree* (2010), Grammy-nominated *Shaking Free* (1997), *Live* (2003), and *Listen* (1993); Lois Deloatch's *Roots: Jazz, Blues Spirituals* (2010); Bill Anschell's *a different note all together* (1998). He arranged & recorded "The Glory Of Love" w/ Danny Aiello, as featured in the Cinecom film *Once Around*. Sawyer is a Teaching Instructor at East Carolina University, a Lecturer of Jazz Guitar at the University of North Carolina at Chapel Hill, and leads Group Guitar classes at the Durham Jazz Workshop.

Julia Thompson, percussionist, performs regularly with the North Carolina Symphony, North Carolina Opera, Carolina Ballet, Chamber Orchestra of the Triangle, and Colorado MahlerFest. Locally, Julia has also appeared with New Music Raleigh, Carolina Brass, numerous touring shows, theater companies, and regional orchestras. She holds degrees from UNC-Greensboro (BA-Percussion Performance/Music History), UNC-Chapel Hill (MS-Library Science), and completed additional graduate percussion study at the University of Cincinnati-College/Conservatory of Music. Her principal teachers include James Culley, Russell Burge, Allen Otte, Scott Pollard, Lynn Glassock, and John R. Beck. Julia enjoys a dual career as a librarian, for which she has trained in multiple disciplines, and held diverse positions—from the Classics Librarian at UNC-Chapel Hill, to various work in music librarianship, reference, special collections, rare books, and bibliography. Also trained as an orchestra librarian, Julia currently serves as librarian for the North Carolina Opera, and works with numerous other performing arts organizations, universities, public libraries, and information centers. Julia was previously a Library Fellow with the New World Symphony and trained further with the Metropolitan Opera, New York Public Library, and North Carolina Symphony. In her spare time, Julia enjoys world travel, yoga, outdoor activities, foreign languages, and craft beer. A fierce education advocate, she also serves on the alumni board for the Governor's School of North Carolina.

Joseph Van Hassel is a North Carolina-based percussionist specializing in orchestral and chamber music. Performance highlights include Carnegie Hall, the Cincinnati MusicNow Festival, the Percussive Arts Society International Convention, the International Tuba Euphonium Conference, and the Hindemith Center in Switzerland. He has performed with numerous orchestras and big bands throughout the country, and on tour with the 2008 Juniper Chamber Music Festival. A versatile artist in many genres, Joseph has performed or recorded with the Percussion Group Cincinnati, Roland Vazquez, Bernard Woma, and the Ethos Percussion Group. He has worked with numerous composers in the performance of their music, including Steve Reich, Joseph Schwantner, William Bolcom, Jennifer Higdon, Elliot Cole, and John Corigliano. Active in the perfor-

mance of new repertoire, Joseph has individually commissioned and premiered works by many composers, and is especially noted for his close working relationships with David Macbride, Stuart Saunders Smith, and Dan VanHassel. He can be heard on recordings for the Innova, Mode, Equilibrium, nobrow.sounds, and Ohio Percussion record labels, and his solo CD of percussion commissions is available on Soundset Recordings. He is published in *Percussive Notes*, and his compositions are published by Media Press and PerMus. An active educator, Joseph has presented master classes and given solo performances at numerous colleges throughout the USA, including the Manhattan School of Music, Peabody Conservatory, and the University of California at Berkeley. He is on the percussion faculty at the University of North Carolina at Pembroke and Blue Lake Fine Arts Camp, and previously taught at Ohio University. Joseph is a member of the Percussive Arts Society's New Music / Research Committee. Joseph earned degrees from the Hartt School, the Cincinnati College-Conservatory of Music, and Ohio University. He endorses Innovative Percussion sticks and mallets, Black Swamp Percussion Products, Sabian Cymbals, and Remo Drumheads.

Brent Wissick has taught cello and early music performance at UNC-CH since 1982. He and Physics professor Laurie McNeil have team-taught the First-Year Seminar "The Interplay of Physics and Music" 12 semesters since they first introduced it in 1999, and will revive it in Spring 2017. In 2014, he was the recipient of a Tanner Award for Excellence in Undergraduate Teaching. His concerts have taken him throughout North America, Europe, Asia and Australia as a soloist and ensemble player; and he has recorded on numerous labels. Three of those CDs were Grammy nominated.

Clara Yang "A first-rate pianist who isn't afraid of challenges," (Fanfare) Chinese-American pianist Clara Yang is currently Assistant Professor of Piano at UNC-Chapel Hill. She has performed in notable venues and major conservatories/universities throughout the United States and in major cities such as London, Barcelona, Moscow, Beijing, Shanghai, Sydney. She has performed as a soloist with renowned conductors such as Vladimir Ashkenazy, Grant Llewellyn, Jeff Tyzik, and Carl St. Clair. She has performed eight concerts as a soloist with the North Carolina Symphony since 2011. Her solo album *Folding Time* (Albany Records, July 2015) won Global Music Awards Gold Medal, and her cello-piano duo album *Grieg and Prokofiev* was released by Albany Records in 2014. She recorded Lee Weisert's *Érard*, which was written for her, for Weisert's album *Wild Arc* on the New Focus Recordings label. These recordings have received highly positive reviews from major publications such as Fanfare, American Record Guide, New York Arts, and Chicago Reader. Her upcoming major project includes collaboration with distinguished composer Chen Yi, who will write a concerto for her to perform with the top orchestra in China, the China Philharmonic Orchestra, under Long Yu in the Carolina Performing Arts Series in December 2016. Dr. Yang was featured as one of the three scholars in the acclaimed Chinese national magazine *Globe* in 2014. She served on the Artistic Panel for New Music USA in fall 2015. Her principal teachers include Nelita True (Eastman), Claude Frank (Yale), and John Perry (USC). A sought-after teacher, Ms. Yang has frequently given masterclasses in the United States and abroad. Her students have won prizes in state, national, and international competitions. She was featured as one of the three scholars in the acclaimed Chinese national magazine *Globe* in 2014. She also served on the Artistic Panel for New Music USA in fall 2015.

Sila: The Breath of the World - UNC Student Performers

Winds

Abby Jean Bergman
Katherine Gora Combs
Leah Gilmore
McKenna Gramzay
Aaron Hougui
Collin Koh
Jack Livingston

Gehrig Loughan
Michael Mallory
John Martin
Stephen Mattson
Erin Mayo
Skye Satz
Daniel Schwartz

Eya Simpson
Rachael Spillane
Kirsten Steininger
Emily Taylor
Adam Wang
Isaac Weber
Yusheng Zhang

Brass

Joshua Altman
Will Buddendeck
Gage Clawson
Addison Cook
Matthew Digan

Kyle Johnson
Henry Kilcup
Matt Litzsinger
Andrew McKeon
Vance Miller

Jonathan Minnick
Melissa Moss
Jack Perisich
Sagar Shetty
David Suddaby

Percussion

Kurtis Bass
Tyler Beames
Chase Carroll
Will Church
Parker Comella
Allison Flors

Brian Holtshouser
Arvind Malikarjunan
Nathan Mason
Jhana Parikh
Tomás Phillips
Jay Rao

David Rivero
Trevor Scanlon
Robert West
Daniel Winecoff

Strings

Brandon Castillo
Devin Cornacchio
Rachel Evans

Matt Lopez
Vivek Menon
Molly Merritt

Alexander Roupas
Nishanth Shah

UNC Chamber Singers

Ryan Anderson
Samuel Barge
Alexi Batchelor
Jameson Blount
R. Isaac Boulter
Ana Dougherty
Justin Duck

Corinna Egge
Dyson Ford
Gabrielle Geenen
Neil Hester
Abigail Houpt
Theresa Jones
Nora Knapp

Anna Krome-Lukens
MacKensie Kvalvik
Elizabeth Morgan
Blake Wall
Tatjana Zimbelius-Klem

Program Notes: Concert 1

Rain Tree (1981)

Toru Takemitsu

"It is called the 'Rain Tree' because it seems to make it rain. Whenever it rains at night, throughout the following morning the tree makes drops fall from all its richly growing leaves. While the other trees quickly dry out after the rain, the Rain Tree, because its leaves, no bigger than fingertips, grow so closely together, can store up raindrops in its leaves. Truly an ingenious tree!"

From *Atama no ii Ame no Ki* (The Ingenious Rain Tree) by Kenzaburo Oé (included in the score).

* * *

Préludes, Book II (1913)

Claude Debussy

Debussy wrote 24 preludes for piano, which he divided into two books of twelve each. *Bruyères* and *Ondine* are found in the second book, published in 1913. Nature was a favorite topic that Debussy explored throughout both books, and it is central to tonight's examples, as well. *Bruyères* is a lyrical portrait of the heather plant and is among the most overtly melodic and harmonically stable of the preludes, clearly anchored in A Flat Major. *Ondine* is an archetypal water piece, at which both Debussy and Ravel excelled. Debussy's interest in myth/legend is also present here: Ondine is a playful description of a frolicking water sprite. Debussy's version is not nearly as dramatic or virtuosic as Ravel's, but is nonetheless a delightful piece, sensitively capturing the ever-changing nature of water, along with the mythological being wedded to this life-giving element.

- Thomas Otten

* * *

Ondine from Gaspard de la nuit (1908)

Maurice Ravel

...I thought I heard
a vague harmony enchanting my slumber
and, near me, spreading, a murmur like the
interrupted songs of a sad, tender voice.

C. BRUGNOT.—*The Two Genii*.

"Listen! Listen! It is I, it is Undine brushing with these drops of water the resonant diamond-panes of your window illuminated by the dull moonbeams; and here, in a dress of moire, is the lady of the castle on her balcony gazing at the beautiful starry night and the beautiful slumbering lake.

"Each wave is a water sprite swimming in the current, each current is a path winding toward my palace, and my palace is of fluid construction, at the bottom of the lake, within the triangle formed by fire, earth, and air.

"Listen! Listen! My father is beating the croaking water with a branch of green alder, and my sisters are caressing the cool islands of grasses, water lilies and gladioli with their arms of foam, or are laughing at the tottering, bearded willow that is angling."

After murmuring her song, she besought me to accept her ring on my finger, to be the husband of undine, and to visit her palace with her, to be the king of the lakes.

And when I replied that I was in love with a mortal woman, she was sulky and vexed; she wept a few tears, burst out laughing and vanished in showers that formed white trickles down my blue windowpanes.

- Poem by Aloysius Bertrand

Three Songs

Charles Ives

At the River (1916)

Shall we gather at the river,
Where bright angel feet have trod,
With its crystal tide forever
Flowing by the throne of God?
Gather at the river!
Yes, we'll gather at the river,
The beautiful, the beautiful river;
Yes, we'll gather at the river,
That flows by the throne of God.
Shall we gather?
Shall we gather at the river?

(Text by Robert Lowry)

The New River (1921)

Down the river comes a noise!
It is not the voice of rolling waters.
It's only the sounds of man,
phonographs and gasoline,
dancing halls and tambourine;
Killed is the blare of the hunting horn
The river Gods are gone.

(Text by Charles Ives)

The Housatonic at Stockbridge (1921)

Contented river! in thy dreamy realm—
The cloudy willow and the plummy elm:
Thou beautiful! From every dreamy hill
What eye but wanders with thee at thy will
Contented river! and yet over-shy
To mask thy beauty from the eager eye;
Hast thou a thought to hide from field and town?
In some deep current of the sunlit brown
Ah! there's a restive ripple, and the swift
Red leaves—September's firstlings—faster drift;
Wouldst thou away, dear stream? Come, whisper near!
I also of much resting have a fear:
Let me to-morrow thy companion be
By fall and shallow to the adventurous sea!

(Text by Robert Underwood Johnson)

* * *

Un reflet dans le vent (1928-9)

Olivier Messiaen

Published in 1930, *Un reflet dans le vent* is the eighth prelude in Messiaen's set of short, Debussy-esque preludes. *Un reflet dans le vent* literally translates to "a reflection in the wind." Messiaen encapsulates the sonority of wind through various techniques and figures throughout the prelude. Structurally, the prelude is in a general ABA form. The dramatic, abrupt introduction contrasts with the smooth, flowing A section. Messiaen notably uses many tritones and other dissonant leaps in the lyrical melody of the A section, which is accompanied by quick, running left hand figures. The stormy middle section has a chordal, syncopated texture that quickly builds into a wildly spinning climax that descends rapidly down the keyboard. The A section (transposed down a fifth) returns after the climax, and the material from the introduction provides an exciting end to this brief yet complex prelude.

- Margaret Lynch

* * *

Catalogue d'oiseaux (1958)

Olivier Messiaen

Birds were of great symbolic value to Messiaen. They represented for him small emanations of the Divine, or, as he put it, 'little servants of the immaterial joy'. As he wrote for the premiere performance of the *Catalogue d'oiseaux*:

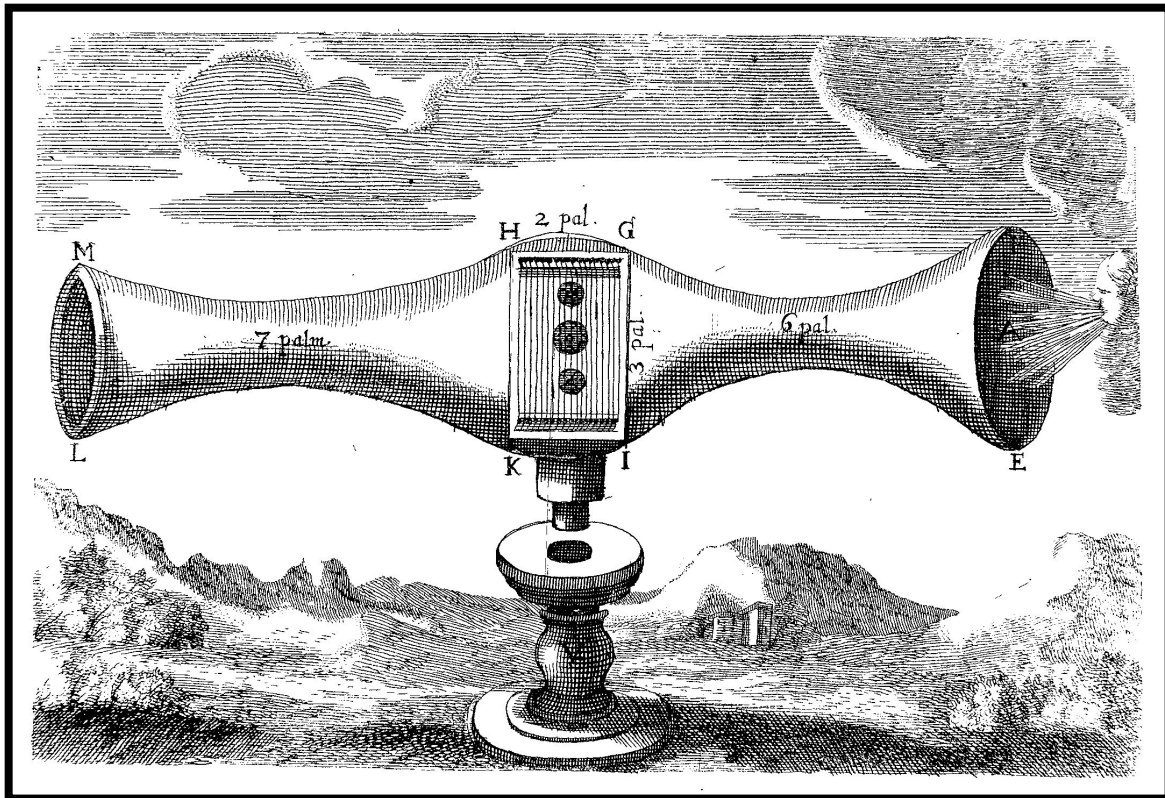
In my hours of gloom, when I am suddenly aware of my own futility, when every musical idiom—classical, Oriental, ancient, modern and ultra-modern—appears to me as no more than admirable, painstaking experimentation, without any ultimate justification, what is left for me but to seek out the true, lost face of music somewhere off in the forest, in the fields, in the mountains or on the seashore, among the birds.

Catalogue d'oiseaux is a grand and spectacular meditation on the natural world. Messiaen's fidelity to nature is of paramount importance, and a compelling example of the wonders at hand if only we play close and concentrated attention to our environment. But the real miracle of the work is its fusion between imagination and nature, between art and ornithology. Vast and intricate, the *Catalogue d'oiseaux* is the apotheosis of nature-in-music. That such a complex and modern score offers such a variety of meanings to its audience—as an expression of musical ultra-modernism, nature portrait, hymn and love poem—is a testament to the power and continuing relevance of the music of Olivier Messiaen.

- Paul Hopwood

"From the col of the Grand Bois at St-Sauveur en Rue, in the mountains of the Forez. Pinewoods to the right of the road, meadows to the left. High in the sky; in the darkness, the Woodlark peel off two-by-two: a chromatic, fluid descent. Hidden in a thicket, in a clearing in the wood, a Nightingale responds, its biting tremolos set in contrast with the mysterious voice from on high. A Woodlark, invisible, draws near, fades. The trees and fields are dark and still. It is midnight."

- Preface to the score by Olivier Messiaen



Athanasius Kircher, *Phonurgia nova* (1673)

Program Notes: Concert 2

Cricket Voice (1987)

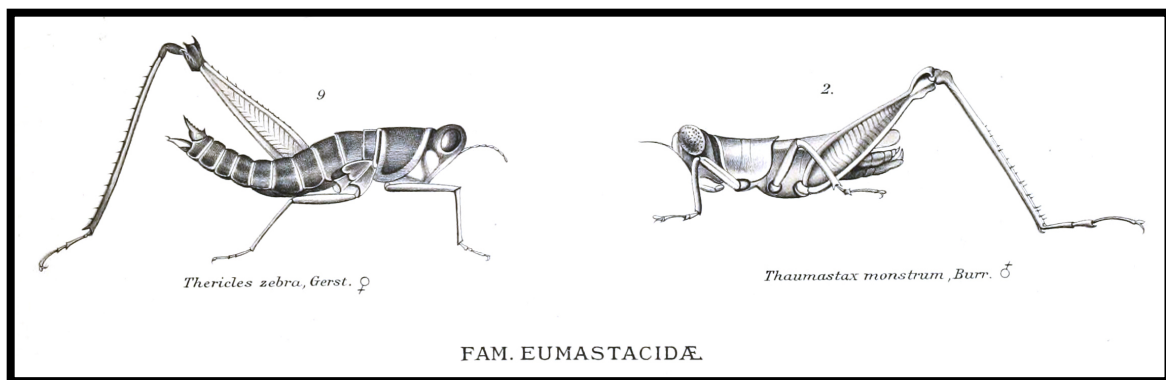
Hildegard Westerkamp

Cricket Voice is a musical exploration of a cricket, whose song I recorded in the stillness of a Mexican desert region called the Zone of Silence. The quiet of the desert allowed for such acoustic clarity that this cricket's night song—sung coincidentally very near my microphone—became the ideal "sound object" for this tape composition. Slowed down, it sounds like the heartbeat of the desert, in its original speed it sings of the stars.

The quiet of the desert also encouraged soundmaking. The percussive sounds in *Cricket Voice* were created by 'playing' on desert plants: on the spikes of various cacti, on dried up roots and palm leaves, and by exploring the resonances in the ruins of an old water reservoir.

Cricket Voice was completed at my own studio Inside the Soundscape with the assistance of the Canada Council. It was premiered in June, 1987 at the Community Arts Council in Vancouver.

- Hildegard Westerkamp



Philogène Wytsman, *Genera Insectorum*

So fahr ich hin zu Jesu Christ (1648)

Heinrich Schütz

After studying in Venice, Schütz sought to bring back to his native Germany "the light of Italy" he learned from his teacher, Giovanni Gabrieli. But the straitened conditions following the Thirty Years War drew Schütz to adopt a far more restrained style than his earlier, luxuriously Italianate works. Written in that later period, the motet *So fahr ich hin zu Jesu Christ* (1648) is a miracle of counterpoint and expression. The opening section takes a simple four-note scale and overlays it against itself, rising and falling, both in half notes and quarter notes, the contrapuntal techniques of inversion and diminution illustrating the flight of the soul to God. A sudden change of texture marks the words "thus I fall asleep and rest soundly," which Schütz underlines with simple declamation and a flatted sixth chord (one of the first uses of this magical chord, which later Beethoven made central to his harmonic language). It was this exact harmonic shift that drew the attention of Max Planck, as I will discuss on Friday evening, because it makes unusual demands on the intonation of the singers, as is appropriate for a moment that casts a miraculous aura around the sleep of death. Schütz's inspired blending of contrapuntal art with deepest feeling actually conveys something of the actuality its text describes: its hearers feel the gate of heaven open and taste eternal life.

- Peter Pesic

...until... (1972)

Clarence Barlow

...until... was conceived in 1972 as a variable piece. It consists essentially of a cycle of pitches, initially highly consonant to a given drone, but gradually increasing in dissonance. At the final, most dissonant stage, a small shift in the drone reveals that the present cycle is nothing but a phase-shifted transposition of the original. The most 'minimal' of my compositions comprises the following text and to date nine realization of it.

The text:

Play a succession of pitches, the frequency ratios of which measured against a continuous drone can be expressed as pairs of contiguous whole numbers; a unison with the drone is also possible. Repeat this succession continually, at first without any change in it; after a while replace the pitch with the largest frequency ratio numbers at its position in the succession by another pitch with ratio numbers not necessarily contiguous and at least equal in size if not larger. Do this at first sporadically, then increasingly often, until it is the rule.

Repeat this process with all the other pitches in order of decreasing ratio numbers. After all pitches have been replaced, the new succession ought to be a phase-shifted transposition of the original by an interval that is smaller than any of those between the initial pitches and the drone. Continue repeating the succession, gradually shifting the drone, slowly and continuously, by the same interval; during further repetitions start dropping the pitches one by one, again starting with the pitches with the highest ratio numbers against the present drone - hold the last remaining pitch for a while.

Version 5, composed in 1974 for keyboard instrument, consists of a rapid sequence, lasting one second, of eleven pitches. All notes are equally long. The drone, initially on B-flat and sounded together and in unison with the soloist, can be played on another instrument electronically. The whole piece lasts less than four minutes. Near the end (in bar 78) the drone slowly glides a semitone downwards.

- Clarence Barlow

* * *

***Etudes Australes* (1974-75)**

John Cage

After a long period working with electronics, in order "to begin all over again" in the mid-1970s John Cage returned to traditional instruments and decided to write new music for them that would verge on the impossible. He described his *Etudes Australes* as "the most difficult piano pieces ever written." To write them, Cage used the *Atlas Australis*, a star chart of the Southern Hemisphere (at the epoch of 1950), over which he laid a transparent grid and then applied chance operations using the *I Ching* to select which of 1,175 possible aggregates of notes would correspond to a given star on the chart. This involved intricate calculation and exhaustive work; it took Cage a year to complete four books of eight etudes. In them, each hand plays independently, both ranging over the whole keyboard (one thinks of Cage's devotion to self-reliance). Certain notes are held down silently throughout each etude, forming a kind of virtual drone.

Over his career, Cage used star charts as a basis for composition many times; the *Etudes Australes* are particularly exacting attempts to render the stars audible (at least their positions), attempts that may be compared with contemporary "sonifications" that make scientific data audible (rather than visible). Many such sonifications have shown that sometimes the ear can grasp data in ways that elude the eye. Cage himself connected his "impossible" etudes with his deep ecological concerns: "we must work very hard in order to play this music, and we must also work very hard to preserve our environment."

- Peter Pesic

The Musical Offering (1747)

J.S. Bach

"Gentlemen, old Bach is here." Thus spoke Frederick II, king of Prussia, "with some agitation" on learning that Johann Sebastian Bach had arrived to play for him. The music-loving monarch offered Bach a "royal theme" (perhaps composed by Bach's son Carl Phillip Emmanuel, the king's resident composer) as a subject for improvisation on the then-novel pianoforte (on whose design the keyboard builder Silbermann had consulted Bach, who found its tone weak). Frederick was a partisan of the Enlightenment, himself anti-Christian, a devotee of flute music in the fashionable galant style, so different from Bach's intricate polyphony. During his visit, Bach improvised a three-part fugue for the king, including a passage in galant style; on returning home, he prepared a whole series of treatments of the royal theme that he called *Musical Offering*. Among these are two ricercari, or learned fugues, one in three voices (probably a version of Bach's improvisation) and the other in six voices. This, perhaps the earliest work written for the piano, may be the greatest as well.

The *Ricercar à 6* is an incomparable masterpiece whose six independent voices are playable by the ten fingers of a single player; no one had written such a work, before or since; perhaps Cage's *Etudes Australes* have a comparable ambition to reach the limits of what two hands can do. In one way, the *Ricercar à 6* is a monument to what Heinrich Schütz called "cracking the hard nut of counterpoint," the rigorous science governing polyphonic voices (which Schütz thought was neglected by the younger composers). But it is far more than a tour de force; Bach disliked what he called "dry and wooden" counterpoint. This fugue is filled with fire, combining to the highest degree the most serene art with the deepest expression, the diatonic and the chromatic, intellectual rigor and emotional freedom. Like all the greatest works of art, it effaces all the difficulties it surmounts and leaves only the sense of an inspired outpouring.

- Peter Pesic

* * *

Nothing is Real (1990)

Alvin Lucier

In the Spring of 1990, Aki Takahashi asked me to write an arrangement of a Beatles song for her. She had just finished recording the complete piano music of Satie for Toshiba-EMI, the success of which had prompted them to ask for a collection of Lennon and McCartney tunes. She agreed, on the condition that she could invite composers of her own choosing to write the arrangements. Not wanting to pin myself down to a specific song, memory or feeling, I asked her to choose one for me. She selected Strawberry Fields Forever. When I asked why she chose that particular song, she replied that the line, "nothing is real," reminded her of my music.

During this work, fragments of the melody are played and sustained as clusters. The performance is recorded on a cassette tape recorder. After the last fragment has been played, the tape is rewound and played back through a small loudspeaker hidden inside a teapot. During the playback, the lid of the pot is raised and lowered, changing the resonance characteristics of the pot. Twice during the performance the pot itself is lifted off the lid of the piano, causing the resonances to disappear completely.

- Alvin Lucier

* * *

The Audible Phylogeny of the Lemurs (2010)

Chris Mercer

The Audible Phylogeny of Lemurs is an electroacoustic composition that examines relationships among the vocalizations of modern lemurs, a process that reveals much about their evolutionary story. Genetic analysis of modern lemurs confirms that genetically related animals emit acoustically related calls in similar behavioral contexts. *The Audible Phylogeny of Lemurs* attempts to elucidate these relationships while making musical sense of them in the process.

The piece is the product of three years of research on prosimian primates, including work in residence at the Duke University Lemur Center, where I have had the privilege to observe and record semi-free range lemurs and to conduct a set of playback studies. The Duke Lemur Center is the world's largest lemur reserve outside of the animals' native Madagascar, housing 250 or so highly charismatic animals, many of them in generous, forested natural habitat enclosures. This work would not be possible without the DLC and its knowledgeable staff and animal care technicians.

The piece is largely based on a 1994 study by Joseph Macedonia and Katherin Stanger in which the authors evaluated communication evidence—primarily vocal signal information—to produce a lemur phylogeny (analysis of species relationships). Comparing the Macedonia-Stanger study to a more recent molecular phylogeny, I was struck by how well the earlier communication-based analysis held up—excellent news for an artist interested in animal communication. It suggests that, with proper context, the evolutionary story encoded in the vocalizations of modern animals is audible.

Note: The video presentation that accompanies the piece is a kind of extension to this program note. It tells you what section you are in and what vocalization topic or “context of emission” the section is addressing. It also shows you, with yellow highlighting, where you are in the actual phylogeny. Finally, there are photos of some of the animals you are listening to. The photos and sounds are not always precisely matched, moment to moment, but the photos you see during a given section are animals that definitely do appear in that section. In the end, the video is a guide to the audio and is not itself the main attraction. When in doubt, just listen...

- Chris Mercer

* * *

Quintext I-V: Five Textures (1972)

James Tenney

The five movements of *Quintext* are individual studies in the abandonment of melody and drama, the exploration of certain "essential" characteristics of string instruments, and in the creation of static textural environments in which microstructural motion is undetermined, but whose macrostructure has a clear, precise, and powerful unification. Each is dedicated to a different composer, and in much the same manner as *Koan* and *Rose is a Rose is a Round*, reflect some aspect of that composer's ideas, though all pay quite different sorts of homage.

Quintext V, Spectra for Harry Partch, has a simple, direct form. It is nine minutes long, with the first and last minutes being a kind of outer border for the piece. In the opening minute, only open strings are used (first harmonics on the given strings) and they gradually enter from the lowest to highest harmonic until an eight-part chord made up of the odd harmonics 1-15 is sounded. Over the next seven minutes, several things happen. The temporal density of pitch change becomes greater and greater, beginning with about one per four second measure and ending in about six per measure. Each possible node of each string is used at least once over the seven minutes, with the lower nodes in general used more often (though some higher nodes, like the sixth on the cello G string, are used as much as the lower ones). The general direction is from lower nodes to higher nodes or from simpler harmonic ratios to more complex ones. Thus, as the piece progresses, it moves faster and gets harmonically richer. The last minute is almost the mirror image of the first, as the harmonic motion gradually builds into a recurrence of the open string chord at the eight minute mark, and fades out in much the same way as the piece begins, over the course of the last minute.

- Larry Polansky

Program Notes: Concert 3

Sila: The Breath of the World (2014)

John Luther Adams

"Songs are thoughts which are sung out with the breath when people let themselves be moved by a great force..." - Orpingalik, a Netsilik elder

In Inuit tradition the spirit that animates all things is *sila*, the breath of the world. *Sila* is the wind and the weather, the forces of nature. But it's also something more. *Sila* is intelligence. It's consciousness. It's our awareness of the world around us, and the world's awareness of us.

Over the past four decades most of my music has been inspired by the outdoors, but heard indoors. With *Inuk-suit*—for nine to ninety-nine percussionists—I finally composed music intended from the start to be performed and heard outdoors. In *Sila: The Breath of the World* I continue this exploration with a full orchestral palette.

Listening to music indoors, we usually try to ignore the outside world, focusing our listening on a limited range of sounds. Listening outdoors we're challenged to expand our attention to encompass a multiplicity of sounds. We're invited to receive messages not only from the composer and the performers, but also from the larger world around us.

In *Sila* the musicians are dispersed widely throughout a large performance space. Listeners, too, are free to move around and discover their own individual listening points. Listening carefully to the counterpoint between the composed music of *Sila* and the never-ending music of the performance site, we transform seemingly empty space into more fully experienced place.

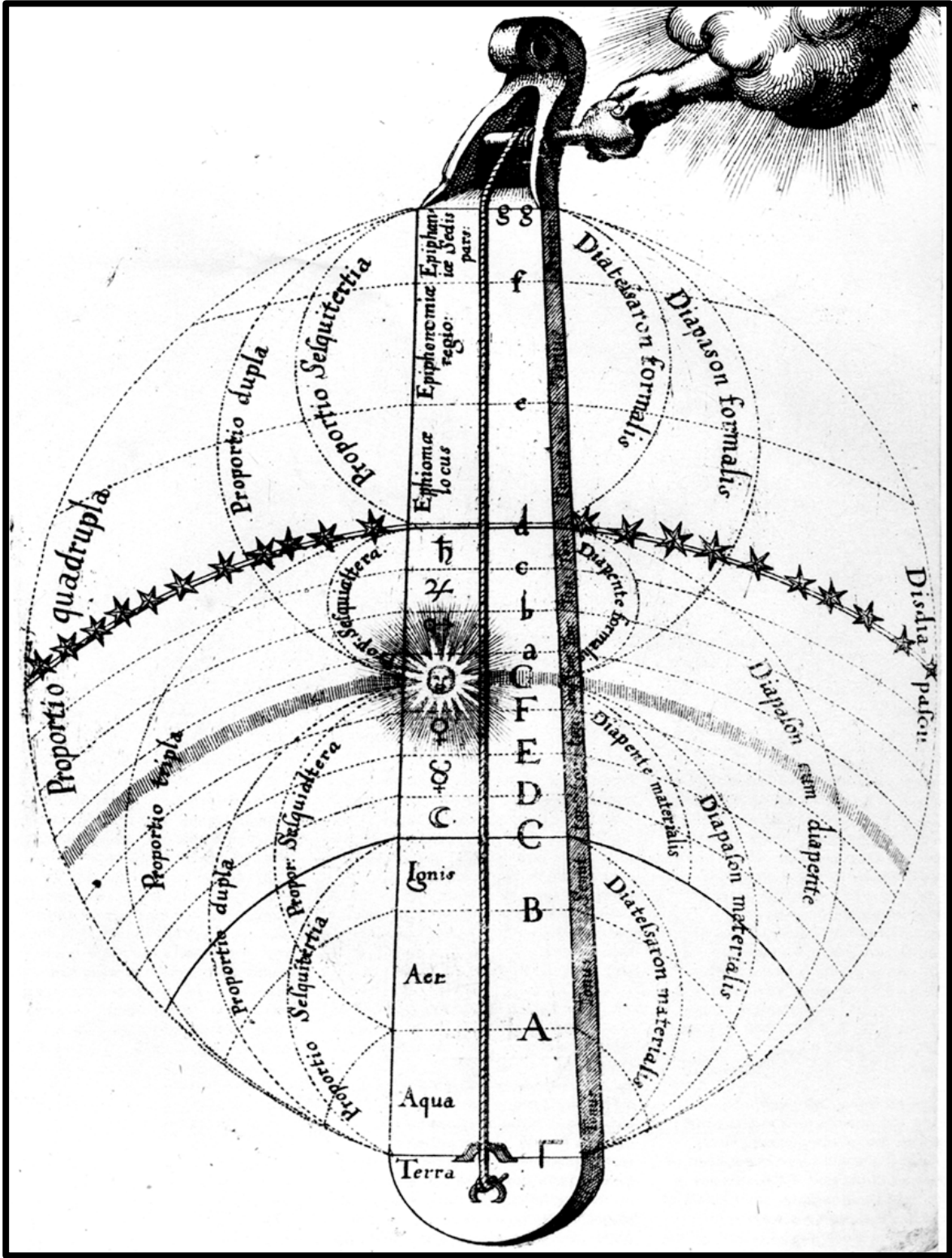
Sila is intended for performance outdoors by 16 to 80 musicians, or more. The performance materials include scores and parts for five different ensembles of woodwinds, brass, percussion, strings and voices. These five ensembles may perform *Sila* in any combination, successively or simultaneously, in the same space or separate spaces.

Sila comes out of the earth and rises to the sky. The piece traverses sixteen harmonic clouds, grounded on the first sixteen harmonics of a low B-flat. All the other tones in the music fall "between the cracks" of the piano keyboard—off the grid of twelve-tone equal temperament.

Like the tuning, the flow of musical time in *Sila* is also off the grid. There is no conductor. Each musician is a soloist who plays or sings a unique part at her or his own pace. The sequence of musical events is composed, but the length of each event is flexible. The music breathes.

A performance of *Sila* lasts approximately 70 minutes. There is no clearly demarcated ending. As the music of the performance gradually dissolves into the larger sonic landscape, the musicians join the audience in listening to the continuing music of the place.

- John Luther Adams



Robert Fludd, *De Musica Mundana* (1618)