

Musiques & Recherches (Belgium, 2012), PANaroma (Brazil, 2014), and ZKM (Germany, 2005, '06, '07, '09, '10, '12, '13), and guest composer at DAAD (Germany, 2008). Finally, he is a member of the Canadian Electroacoustic Community (CEC), and co-founder of Réseaux, an organization devoted to producing media arts events.

Natasha Barrett will visit CCRMA this Spring for a visiting artist residency in the last two weeks of April. She will present a concert of her works on April 22nd in The Braun Rehearsal Hall -

“I am a freelance composer working with music, research and creative uses of sound. I studied in England for masters and doctoral degrees in electroacoustic composition, after which, in 1999, I moved to Norway where I have since lived. During my doctoral research I focused on acousmatic music (electroacoustic music without a visual element) and on instrumental music with live electronics. Since 1999 my work with sound has expanded to encompass sound-art, sound-architectural installations, interactive techniques, collaboration with experimental designers and scientists as well live performance and improvisation. Recent examples of this include the use of scientific data and geological processes in sound-art, spatial composition for hemispherical loudspeaker array and a special interested in HOA, and my third installation project with the group Ocean Design and Research Association. Although computer and digital technologies are my core tools and sometimes the technology stimulates ideas and becomes the focus, most of the time I find technology is just a tool to realise ideas in sound. Technology has changed so fast over the past 20 years and will obviously continue to do so, yet art has a slower sense of evolution, which although connected to changes in both technology and society, has a timeless aspect long after technology has become retro. For me, science, the organisation of society and culture are more significant driving forces. I'm interested in listeners hearing and feeling music and art through sound and temporal structure, rather than them needing to understand the complexity of my techniques. This being said, although I am freelance, when possible I maintain a research profile discussing my aesthetical and technical approaches through conference and journal publications. I also present master classes throughout the world. My works are performed and commissioned throughout the world and have received numerous recognitions, most notably the Nordic Council Music Prize (Norden / Scandinavia, 2006), Giga-Hertz Award (Germany, 2008), Edvard Prize (2004, Norway), Noroit-Leonce Petitot (Arras, France, 2002 & 1998), Bourges International Electroacoustic Music Awards (France 2001, 1998 & 1995), Musica Nova (2001), IV CIMESP 2001, Concours Scime, (France 2000), International Electroacoustic Creation Competition of Ciberart (Italy 2000), Concours Luigi Russolo (Italy 1995 & 1998), Prix Ars Electronica (Linz, Austria 1998), 9th International Rostrum for electroacoustic music (2002). My installations include a major work for the Norwegian state commission for art in public spaces.”



THE GOOD, THE BAD,
AND
THE BING 2
(Return of the Bing)



PROGRAM

Alignment, Cohesion, Separation

Daniel Peterson

From Strands and Strings

Eoin Callery

Stria

John Chowning

(Reconstruction by Kevin Dahan and Olivier Baudouin)

A Very Fractal Cat

Fernando Lopez-Lezgato

Castalie

Gilles Gobeil

The CCRMA Feedback Network Ensemble

Kernel Expansion

Natasha Barrett

Rush and Leland Smith, he founded the Center for Computer Research in Music and Acoustics (CCRMA), which remains one of the leading centers for computer music and related research.

Fernando Lopez-Lezcgato/Lopez-Lezcano enjoys building things, fixing them when they don't work, and improving them even if they seem to work just fine. The scope of the word "things" is very wide, and includes computer hardware and software, controllers, music composition, performance and sound. His music blurs the line between technology and art, and is as much about form and sound processing, synthesis and spatialization, as about algorithms and custom software he writes for each piece. He has been working in multichannel sound and diffusion techniques for a long time, and can hack Linux for a living. At CCRMA, Stanford University since 1993, he combines his backgrounds in music (piano and composition), electronic engineering and programming with his love of teaching and music composition and performance. He discovered the intimate workings of sound while building his own analog synthesizers a very very long time ago, and even after more than 30 years, "El Dinosaurio" is still being used in live performances. He was the Edgar Varese Guest Professor at TU Berlin during the Summer of 2008. In 2014 he received the Marsh O'Neill Award For Exceptional and Enduring Support of Stanford University's Research Enterprise.

Gilles Gobeil has completed a master's degree in composition at Université de Montréal, after studying writing techniques. He has been focusing his work on acousmatic and mixed music since 1985. His works fall close to what is called 'cinema for the ear.' Many of his pieces have been inspired by literary works and attempt to let us 'see' through sound. He has won over 20 national and international awards including the Ars Electronica (Austria, 1995, 2005), Black & White (Portugal, 2009), and the Bourges (France, 1988, '89, '99, 2009). His DVD-Audio *Trilogie d'ondes* has won the Conseil québécois de la musique (CQM)'s Prix Opus for Best Album in 2004-05; his CD *Le contrat* was nominated in the same category in 2003-04. He has received commissions from Codes d'accès (Montréal), DAAD (Berlin, Germany), empreintes DIGITALes (Montréal), Groupe de musique expérimentale de Bourges (GMEB, France), Groupe de recherches musicales (GRM, France), Musiques & Recherches (Belgium), Réseaux des arts médiatiques (Montréal), Société Radio-Canada, Totem contemporain (Montréal), Zentrum für Kunst und Medientechnologie (ZKM, Germany), from Folkmar Hein, Uli Aumüller, Camille Mutel, and Oscar Wiggli, and from performers Suzanne Binet-Audet, René Lussier, Arturo Parra, and Rick Sacks. He has also been composer-in-residence in Banff (Canada, 1993, '95), Bourges (France, 1991), EMS (Sweden, 2013), GRM (France, 1993, 2012), Franz Liszt Academy (Weimar, Germany, 2010), Miso Music Portugal (2012),

ABOUT THE ARTISTS

Daniel Peterson was born and raised in Honolulu, Hawaii. He completed a Master of Music in Composition at the University of Washington under Juan Pampin and is currently a Ph.D. student at the Center for Digital Arts and Experimental Media working with Richard Karpen. He has had works shown at the International Computer Music Conference in Montreal, New York and Perth, Art Basel in Miami, Henry Art Gallery and Meany Hall in Seattle, and at the Reykjavik Art Museum in Reykjavik, Iceland. Recently he has collaborated with light artist Maja Petric on an installation at Microsoft Research in Seattle. His interests include spectral analysis, ambisonics and the exploration of the relationships between literature, philosophy and music.

Eoin Callery introduced the concert.

John Chowning was born in Salem, New Jersey in 1934. Following military service and four years at Wittenberg University, he studied composition in Paris with Nadia Boulanger. He received the doctorate in composition (DMA) from Stanford University in 1966, where he studied with Leland Smith. In 1964, with the help of Max Mathews of Bell Telephone Laboratories and David Poole of Stanford University, he set up a computer music program using the computer system of Stanford's Artificial Intelligence Laboratory. Beginning the same year he began the research that led to the first generalized surround sound localization algorithm. Chowning discovered the frequency modulation synthesis (FM) algorithm in 1967. This breakthrough in the synthesis of timbres allowed a very simple yet elegant way of creating and controlling time-varying spectra. Inspired by the perceptual research of Jean-Claude Risset, he worked toward turning this discovery into a system of musical importance, using it extensively in his compositions. In 1973 Stanford University licensed the FM synthesis patent to Yamaha in Japan, leading to the most successful synthesis engine in the history of electronic musical instruments. [interview about FM synthesis Jun 17, 2015, Barcelona <http://rwm.macba.cat/en/sonia/john-chowning-/capsula>] Chowning was elected to the American Academy of Arts and Sciences in 1988. He was awarded the Honorary Doctor of Music by Wittenberg University in 1990. The French Ministre de la Culture awarded him the Diplôme d'Officier dans l'Ordre des Arts et Lettres in 1995 and he was awarded the Doctorat Honoris Causa in 2002 by the Université de la Méditerranée and in 2010 by Queen's University, Belfast. He taught computer-sound synthesis and composition at Stanford University's Department of Music. In 1974, with John Grey, James (Andy) Moorer, Loren

PROGRAM NOTES

Alignment, Cohesion, Separation

Daniel Peterson

Alignment, Cohesion, Separation is a study based on the idea of flocking. In 1986, computer scientist Craig Reynolds developed a flocking algorithm based on three rules: alignment, cohesion and separation. Combined, the three rules result in a complex system of motion. Based on an implementation by Daniel Shiffman, this algorithm was ported from Processing, a visual arts coding language, to the audio synthesis language SuperCollider, to create a few flocks of spatial sound using the Ambisonic Toolkit. Each flock moves through a different 'sound space', a set of sounds organized in cartesian space based on the similarities of their features using machine learning algorithms. Sounds are triggered when their proximity to individual flock members falls below a modulating threshold thus creating sparse moments as well as dense clouds of notes. In addition, nodes of attraction move around the space, guiding the flock to different areas of sound, creating spectral movement. *Alignment, Cohesion, Separation* is an experiment in the poetics of flocking sounds.

From Strands and Strings

Eoin Callery

This piece passes the guitar and occasionally the inbuilt laptop speakers through a series of overlapping automated limited band-pass filtered feedback patches, controlled with SuperCollider. Occasionally the Supercollider patches are further processed - EQ, Reverb, and Thomas Mundt's amazing Loudmax Limiter - in Logic Audio.

Stria

John Chowning

Chowning received one of IRCAM's first commissions from Luciano Berio to compose *stria* for the institute's first major concert series presented by Pierre Boulez, *Perspectives of the 20th Century* and premiered October 13, 1977 at the Centre Pompidou. *Stria* was realized during the summer-autumn of 1977 at Stanford University's Center for Computer Research in Music and Acoustics (CCRMA) on a Foonly F4 (DEC PDP-10) computer.

The composition was reconstructed in 2007 by Kevin Dahan and Olivier Baudouin and described in *The Computer Music Journal*, Autumn-Winter, 2007 [CMJ 31, 3-4]. The version presented here is by K. Dahan.

The work is based on the unique possibilities in computer synthesis of precise control over the spectral components or partials of a sound. Most of the music we hear is composed of sounds whose partials are harmonic or in the harmonic series. In *stria*, a non-tonal division of the frequency space is based on a ratio, which is also used to determine the relationships between the inharmonic spectral components. The ratio is that of the Golden Section (or Golden Ratio) from antiquity, 1.618, which in this unusual application yields a certain transparency and order in what would normally be considered "clangorous" sounds. The composition of the work was dependent upon computer program procedures, specially structured to realize the complementary relationship between pitch space (scale) and spectral space (timbre). In addition, these procedures are at times recursive allowing musical events that they describe to include the same events within themselves in a compressed form.

A Very Fractal Cat

Fernando Lopez-Lezgato

This is the latest version of a series of algorithmic performance pieces for pianos, computer and "cat" that I started working on at the end of 2008 (the proverbial cat walking on a piano keyboard). The performer - the cat - connects to six virtual pianos through a keyboard controller, our pedals and two modulation wheels, controlling them both directly and through algorithms. Throughout the piece different note and phrase generation algorithms are triggered by the performer's actions, including markov chains that a ghost cat (Schrodinger's cat?) uses to learn from the performer, fractal melodies, plain scales, trills and other simple algorithms. The sound of the pianos is heard directly, and is also processed using spectral, granular and other synthesis techniques at different points in the performance, creating spaces through which the performer moves. The original surround environment was 2D only (thus, the cutout of a cat), but has been upgraded for this performance, the first since 2014, to use full 3D surround. The soundfield is created with Ambisonics spatialization, and everything in the piece (algorithms, sound generation and processing and graphical user interface) is written in the SuperCollider language.

The CCRMA Feedback Network Ensemble

Matthew Wright, Alex Chechile, Mark Hertensteiner, and Justin Yang

A structured musical improvisation in which an ensemble of players "plug our instruments into each other" to excite and control a sparsely-connected feedback delay network. Each player's instrument receives an audio input as well as generating an audio output, allowing to connect all of them to a matrix mixer so

we can effect changes in the graph topology and adapt to them in realtime. See <https://nime2015.lsu.edu/proceedings/329/index.html>

Kernel Expansion

Natasha Barrett

Kernel Expansion contains three interconnected sections and explores the essence of sound in its rich multiplicity. The music exposes the 'kernel' or 'heart' of some specific sound sources; from outdoors, from inside, from realities, dreams and imaginations. The work is spatialised in a hybrid ambisonics format. Some source materials were recorded with a Sound-Field microphone, other materials were synthesised in higher-order ambisonics. *Kernel Expansion* was commission by, and realised in the studios of ZKM, funded by ZKM's Giga-Hertz Award for electronic and acousmatic music 2008. The work was premiered over ZKM's 43-loudspeaker Klangdome concert system.