

AN INTERDISCIPLINARY CONFERENCE  
MAY 11-13, 2012

**MUSIC:  
COGNITION  
TECHNOLOGY,  
SOCIETY**

**MCTS2012.COM**

# PROGRAM

*All sessions are in the A. D. White House, unless otherwise specified*

## FRIDAY, MAY 11

8:30–9:00 *Breakfast*

9:00–11:15 Session 1 – Patterns, schemata and systems

11:15–11:30 *Break*

11:30–1:00 Session 2 – Improvisation

1:05–1:25 Performance: Cornell Avant-Garde Ensemble (CAGE)

1:25–2:30 *Lunch*

2:30–4:00 Keynote: Robert Gjerdingen (Northwestern University)

4:00–4:15 *Break*

4:15–5:15 Session 3 – Demonstration Session [Lincoln B20]

5:15–7:00 *Dinner [on your own]*

7:15–8:15 Tod Machover (MIT) [Barnes Hall]

8:30–10:30 Concert: Argento Ensemble [Barnes Hall]

## SATURDAY, MAY 12

8:30–9:00 *Breakfast*

9:00–10:30 Session 4 – Text, technology and the voice

10:30–10:45 *Break*

10:45–12:15 Session 5 – Psychology and the sonic object

12:15–1:30 *Lunch*

1:30–3:00 Keynote: Eric Clarke (Oxford University)

3:00–3:15 *Break*

3:15–5:30 Session 6 – Instruments and soundscapes

5:30–7:00 *Dinner [on your own]*

7:00–7:45 Panel Discussion [Barnes Hall]

8:00–10:00 Electroacoustic Music Concert [Barnes Hall]

### **SUNDAY, MAY 13**

8:30–9:00 *Breakfast*

9:00–11:15 Session 7 – Music Information Retrieval

11:15–11:45 *Break*

11:45–1:15 Keynote: Ichiro Fujinaga (McGill University)

1:15–2:00 *Lunch*

# MUSIC: COGNITION, TECHNOLOGY, SOCIETY

May 11–13, 2012

Cornell University, Ithaca, New York

Technology plays a crucial role across a broad spectrum of sonic activity, offering new cognitive frameworks and reshaping social networks in ways that challenge the conventional binary of the individual subject versus the collective. It mediates performance and listening, provides new modes of analysis, and inspires musical creation. It conditions our perception of sound as well as our ability to change it, and is thus both an appropriate tool and topic of aural research. The nexus of social, cultural, and political issues in and around music, cognition, and technology encompasses a range of interdisciplinary approaches to the question of musical meaning.

How can music “speak” and how do we have knowledge of it? What is its potential to express, represent, and communicate? How has changing expertise concerning sonic and musical knowledge shaped these questions across time and space?

Whether through studies of perception and performance, psychoacoustic experimentation, computational or linguistic analyses of musical texts, or ethnographies of musical collectives, scholars have sought to investigate the complementary issues of how music is constructed and received. The increasing—and occasionally controversial—importance of technology to this project raises a host of related questions: What are the possibilities and limitations of technology in exploring music cognition and social meaning, and how does it influence our approach to this exploration? What impact does it have on new music, and how does this feed back into our understanding of what “music” is?

This international conference draws on a wide range of scholarship, including musicology and composition, cognitive science, science and technology studies, linguistics, philosophy, computer science, performance studies, and anthropology, featuring papers that attempt to reconcile the hermeneutic and the performative, the empirical and the abstract.

We must finally thank our generous funders, without whom this conference would not have been possible: the Central New York Humanities Corridor, the Cornell University Department of Music's Sidney Cox Fund, the University Lectures Committee, the Graduate and Professional Student Assembly Finance Commission (GPSAFC), the Cornell Graduate School, the Society for the Humanities, the Cornell Council for the Arts, the Department of Comparative Literature and the Bartels Family. Finally, our thanks to our faculty advisors, Roger Moseley, Carol Krumhansl, and Kevin Ernste, whose advice has been invaluable.

Caroline Waight, Evan Cortens, Taylan Cihan and Eric Nathan  
*Conference Organizers*

Friday, May 11, 2012

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**9:00–11:15 — Session 1:  
Patterns, Schemata and Systems**

Robert Gjerdingen (Northwestern University), Chair

GOING AGAINST THE GRAIN: SYNTHESIZING BODY,  
SOUND, AND IMAGE IN (UN)REAL TIME

Tyran Grillo  
Cornell University

The performing body, musical or otherwise, is a productive entity insofar as it nourishes a listener. And yet, what happens when that body is used not only as an instrument or its player, but as both in one? To explore this question, I will be looking at the work of Granular Synthesis. Using 4-channel video as its medium, the Vienna-based duo brings precisely that synthetic approach to the human form in a haunting installation entitled *Modell 5*. Using footage of the head, face, and voice of Japanese performance artist Akemi Takeya, the duo designed a system whereby her vocal improvisations were “severely stylized” by looping and rearranging snippets of time (i.e., “grains”) into sequences that defy the trappings of temporality and pathos. Through the work’s relentless visual and sonic staccato, we see something hidden in the body, where only linear, if multifaceted, articulation was possible and now shattered in favor of overwhelming disclosure. With the advent of DVDJs, granulation has fully entered the concert space as a viable performative gesture. Common to both is the edit, which rather than manipulating audiovisual information treats its elements as pure cells of connective mastery. What separates *Modell 5*, however, from the spectacle of direct audience interactions is precisely its lack of mastery—that somewhere in its unfolding lies the uncanny skeleton of stillness on which any receptor depends.

**Tyran Grillo** is a doctoral student in East Asian Literature at Cornell University, where his research looks at trauma and cultural memory through the lenses of literature and film. A translator of eight books from Japanese to English, of which he has just published his fourth, his most recent project was a theatrical translation, for which he also provided incidental music and which received its world-premiere staging in February of last year. Tyran is also an avid music blogger and his pet project, *between sound and space*, boasts over 300,000 words (and counting) of criticism, essays, and reviews.

DOES ROCK PLAY BY ITS OWN RULES? AN EMPIRICAL  
INVESTIGATION OF HARMONIC EXPECTATION IN ROCK MUSIC

Bryn Hughes  
Ithaca College

Does harmony convey different functions in rock and common-practice music, or does it behave in a universally consistent way? Some music theorists suggest that harmony in rock music is perceived in terms of common-practice syntax (Everett 1999 and 2004). Conversely, others propose that the language of rock abides by its own set of rules (Moore 1992 and 1995; Stephenson 2002). This research aims to empirically investigate this question.

Following Robert Gjerdingen (1988) and David Huron (2006), this paper recasts the notion of harmonic function in terms of schema theory, statistical learning, and expectation. Syntactic violations are judged based on active schemata representing harmonic function. If distinct harmonic expectations exist for rock and common practice music, the schemata upon which those expectations are based should be triggered by the presence of idiom-specific musical features (Gjerdingen and Perrott 2008).

This paper reports significant findings from experiments that investigated listeners' expectations for chord successions presented in rock and common-practice contexts. The results show that listeners preferred successions that featured typical common-practice chord-root motion in both contexts. However, subtle differences were also

revealed. Notably, stylistic context affected listeners' expectations of chromatic chords, and of the subdominant triad.

The results of these studies support the claim that harmonic expectations of rock and common-practice music are similar. This claim is further solidified by significant correlations with several empirical studies (Krumhansl 1990; Bigand et al 1996) and theoretical metrics for judging chord relatedness (Lerdahl 2001). Finally, this paper shows how the subtle differences revealed between stylistic contexts align with the speculative claims made by those advocating for unique harmonic function in rock, and discusses ways in which these discrepancies might be further investigated in future empirical work.

**Bryn Hughes** graduated with the Ph.D. in music theory at Florida State University (2011), where he wrote his dissertation, "Harmonic Expectation in Twelve-Bar Blues Progressions," under the direction of Nancy Rogers. He also studied at the University of Western Ontario, where he earned a Bachelor of Music degree in Music Theory and Composition (2003) and a Master of Arts degree in music theory (2005). Bryn's research interests include music cognition, popular music analysis, atonal voice leading, and the music of Alfred Schnittke. He has presented papers on atonal music analysis and popular music analysis at the UWO Graduate Student Symposium, the FSU Music Theory Forum, the South Central Society for Music Theory, and Music Theory Southeast. He presented research from his dissertation at the national meeting of Society for Music Perception and Cognition in Indianapolis, Indiana (August 2009), and a paper on Alfred Schnittke's Concerto for Choir at the national meeting of the Society for Music Theory in Montreal, Quebec (November 2009).

## CYBERNETIC PHENOMENOLOGY AND MUSIC ONTOLOGY

Joshua Mailman  
Columbia University

Phenomenology is concentrated introspection about past perceptual and cognitive experience—a style of inquiry developed by Husserl (1928/1964) and applied to music by Lewin (1986) among oth-



ers. Consider music listening phenomenology. When the theorizing of a musical quality is pursued as traditional listener phenomenology, it leads to descriptive prose which another reader-listener imagines in sound in order to hear it for herself. Often this involves categorizing the relation between specific notes, chords, beats, or other events, as serving a specific function among a handful of functional categories known in advance as part of a conventional music-theoretic ontology. One can refer verbally only to that which has a name. Yet, when phenomenological description reaches beyond pre-categorized discrete events, to new and often elusive emergent qualities, we find that communication of the phenomenology is blocked by limits of the conventional ontology. When such a newly recognized quality is computationally defined, however, it is then more plausibly viewed as a creative ontological act, which is also instructively communicative. Being inspired by phenomenology of listening, inevitably, such computational modeling involves ingenuity as well as trial-and-error in a feedback process of refinement. This feedback process of listening, phenomenology, and computational modeling is what I call cybernetic phenomenology. Once a perceived quality is modeled computationally, the model can be deployed in several ways: (1) to analyze and theorize yet more music, (2) instructively, to communicate and cultivate understanding and aesthetic appreciation of unconventional music, and (3) for creating more music or creating formal models or technology for creating music (improvised or composed), based on the models. For instance this approach spurs the creation of music whose trajectories of flux suggest the activities of hypothetical meteorological or physiological systems, which have enticing associative, expressive, and affective potential. The proposed presentation offers music analyses using the cybernetic phenomenological approach.

**Joshua Banks Mailman** graduated from the University of Chicago and the Eastman School of Music, where he completed a music theory Ph.D. dissertation on temporal dynamic form. His publications appear in *Psychology of Music*, *Music Theory Online*, and *Music Analysis*, from which he won their 25th Anniversary award for his article on Carter's *Scrivo in vento*. Among his forthcoming publications is his article "Seven Metaphors for (Music) Listening: DRAMaTIC" in the

*Journal of Sonic Studies*. He has presented papers on music of Carter, Crawford-Seeger, Ligeti, Brahms, Babbitt, Schoenberg, and topics such as temporal dynamic form, narrative, electro-acoustic music, binary-state Generalized Interval Systems, and octave-equivalence with atonal melodies in the context of long-term memory. He is also active in sound art and music technology design. He has taught at the Eastman School, University of Rochester, the University of Maryland, and Hunter College, CUNY. He now teaches at New York University and Columbia University. Visit [www.joshuabanksmailman.com](http://www.joshuabanksmailman.com).

## **11:30–1:00 — Session 2: Improvisation**

Roger Moseley (Cornell University), Chair

### AGENCY IN COACTION: A MATERIAL-SEMIOTIC APPROACH TO UNDERSTANDING ELECTRO-ACOUSTIC IMPROVISATION

David Borgo  
University of California, San Diego

The standard account of improvisation maintains that our senses provide information to the brain, which then processes and plans utilizing its rich internal structure, and only then activates our motor systems (Pressing). Ethnomusicologists tend to adopt this orientation while also focusing on how improvisation is shaped by cultural conventions, usually conceived of as a model or referent stored in long-term memory (Nettl). Others shift this focus to the “perceptual agency” of the listener, noting that perception itself is partially volitional (Monson). All of these approaches, however, subscribe to methodological individualism and to a representationalist cognitive paradigm. What if “agency” is not so easily contained by an individual’s consciousness? Recent experimental evidence demonstrates that our actions are often initiated from below the level of our conscious awareness and they can be extremely sensitive to external social pressures of which we are seldom aware (Wegner). Additionally, what if we expand our notions of “agent” and “agency” to include technical systems capable of actively searching

for new information and of participating in planning and control activities? In this presentation I explore electro-acoustic improvised music that involves technologies that share generation, memory, and even judgment capabilities during performance. By drawing on literature in distributed cognition, actor-network theory, and post-humanism, I argue that improvising in this hybrid constellation of human-machine interagency provides an experience by which we can, at least temporarily, lessen our grip on social accounting and realize “action is always dislocated, articulated, delegated, translated” (Latour).

**David Borgo** is an Associate Professor of Music at UC San Diego where he teaches in the Integrative Studies graduate program and the Jazz undergraduate program. In 1994, David won first prize at the International John Coltrane Competition and since that time he has released seven CDs and one DVD and has toured internationally, including performances in Europe, Hong Kong, Mexico City, Canada, and Brazil. In 2006, David’s book, *Sync or Swarm: Improvising Music in a Complex Age*, was awarded the annual Alan P. Merriam Prize from the Society for Ethnomusicology as the most distinguished book in the field.

#### CONTEMPORANEOUSNESS AND PROCESS WITHIN IMPROVISATION

Jeremy Grall  
University of Alabama at Birmingham

The term improvisation usually connotes a process that is freely created out of nothing; however, the act of improvisation is in fact created from a hierarchal schema with numerous predisposed possibilities and predictable constraints. Within studies on improvised Javanese music, such as those by R. Anderson Sutton, and Judith and Alton Becker, have documented such constraints and structures within performance. Respectively, within Robert Gjerdingen’s *Music in the Galant Style*, he discusses a similar schema-based compositional style in which interchangeable melodic figures are placed upon a loose underlying structure. This compositional style, however, is rooted in the performance practices found within the improvised basso ostinati and fantasias of

the Renaissance and early Baroque. While the spontaneous act of improvisation is often distinguished from composition, similar hierarchical structures can be seen in both. The difference, however, is the lack of time and deliberation involved with improvisation in which the performer is part of the creative process. This process can be analyzed by using quasi-linguistic analysis, similar to those seen in the generative models of Fred Lerdahl and Ray Jackendoff, or the variant processes outlined by Kofi Agawu in his work on West African improvisation. Nevertheless, such models do not easily address the question of contemporaneousness—specifically, how this process happens in real-time. In Jean-Jacques Nattiez's *Discourse on Music*, he presents a solution to the problem of contemporaneousness within his adaptation of Molino's tripartition—the dynamic creative process between the esthetic, poietic, and neutral levels. While the tripartition is effective at illustrating the overall creative process, Alfred North Whitehead presents an often-neglected complementary theory for dealing with this process in real-time. Specifically, within *Process and Reality*, Whitehead expounds upon the concept of contemporaneousness within his larger theory of creativity called concrescence. In this paper I recast Nattiez's tripartite and quasi-linguistic analysis within Whitehead's concept of contemporaneousness and concrescence. Following, I support this with recent cognitive studies on memory and creativity. As a case study, I use sixteenth-century performance practices to highlight these various processes; however, this process can be expanded to various types of improvisation and compositional forms.

**Jeremy Grall** received his undergraduate and doctoral degrees from the University of Memphis and the Master of Music degree from the Yale School of Music. Jeremy has presented his research on the analysis and semiotics of improvised music at numerous international, national, and regional music analysis and musicology conferences. Recent presentations include the EuroMAC VII, the Eleventh International Congress on Musical Signification, the Society for Seventeenth-Century Music, and the International Conference of the Society of Music Analysis at Cardiff (CarMAC). Currently, Jeremy is an Assistant Professor in Music Theory and Guitar at the University of Alabama at Birmingham.

## **1:00–1:25: Concert: Cornell Avant-Garde Ensemble (CAGE)**

The Cornell Avant Garde Ensemble (CAGE) was founded in early Spring 2011 as a performing ensemble dedicated to freely improvised music. CAGE is a collective of musicians committed to the realization and enactment of new and experimental works. Its founding was a natural outgrowth of a critical mass of interest and expertise at Cornell, a coincidence of people with shared experiences, backgrounds, and enthusiasm. CAGE is, therefore, an exercise in collective artistic serendipity. “It is the nature of our group to be responsive, to be always listening. We thrive on the unknown...” (Kevin Ernste in *The Cornell Daily Sun*)

Eliot Bates, *oud*; Taylan Cihan, *electronics / speaker elements*; Kevin Ernste, *bowed metal / miscellany*; Tim Feeney, *percussion*; Annie Lewandowski, *electronics*;  
Chris Miller, *rebab*

## **2:30–4:00: Keynote: Robert Gjerdingen (Northwestern University)**

### SCHEMA THEORY TODAY: CHALLENGES AND OPPORTUNITIES

In cognitive psychology, the term “schema” was dominant in the 1970s and ’80s, perhaps because it seemed like an improvement over “Gestalt” and because it could tie together experimental results from work on prototypes and categories. If we characterize that period as the high water mark of the “cognitive revolution” begun in the 1950s and ’60s, it nevertheless may seem antique today because of intervening developments in neuroscience, in technology, and in the study of memory and learning. I will argue that “schema” remains a useful term, with



a history going back to antiquity. Today, however, we may need to update our conceptions of how schemata are formed, represented, and retrieved. Examples will be shown of schemata in music.

**Robert Gjerdingen** was trained at the University of Pennsylvania under Eugene Narmour, Leonard B. Meyer, and Eugene Wolf. He teaches at Northwestern University and publishes in the areas of music psychology, eighteenth-century music, and music learning. He is a former editor of the journal *Music Perception*, and his most recent book is *Music in the Galant Style* (Oxford, 2007).

### 4:15–5:15 — Session 3: Demonstrations

Evan Cortens (Cornell University), Chair

GESTURALLY EXTENDED PIANO AND OPEN SHAPER

William Brent  
American University

[William Brent's biography can be found on page 46]

THE FLUXATIONS HUMAN BODY MOVEMENT INTERFACE  
FOR COMPROVISATIONAL COMPUTER MUSIC

Joshua Mailman and Sofia Paraskeva  
Columbia University

[Joshua Mailman's biography can be found on page 8]

**Sofia Paraskeva** is an artist who experiments with interactive media, film, video and sound. She explores sound and visuals in the context of leading edge technology, developing computer vision installations and interactive performance wearable instruments such as wireless musical gloves, and bodysuits. Her work spans across interactive art

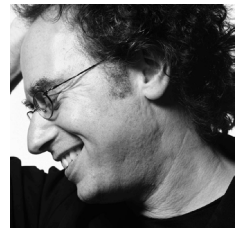
and design, filmmaking, video production, visual effects, graphics and experimental sound. Her passion is creating meaningful ways of communication through the merging of image, sound and performance. Through art and technology she seeks to expand and enhance the human experience.

Paraskeva has a B.A. degree in Visual Studies from Oxford Brookes University and a B.A. in Media Communication from Emerson College, Boston. She earned her master's at the Interactive Telecommunications program at New York University in 2009. She is currently developing her interactive musical interface Rainbow Resonance, for children with special needs.

## **7:15–8:15: Tod Machover (Massachusetts Institute of Technology)**

EXTENDING PERFORMANCE: ONSTAGE, INSIDE, INTERCONNECTED

There is now a long tradition—of which the MIT Media Lab's Hyperinstruments are a part—of extending live musical performance by analyzing and interpreting acoustic, gestural and biometric information. This talk will discuss some recent developments in virtuosic Hyperinstruments, both for solo onstage performance and for offstage “Disembodied Performance” (as seen in the recent “robotic” opera *Death and the Powers*), as well describe how these technologies have been applied to musical experiences for non-professionals, from games like *Guitar Hero* to applications for early Alzheimer's detection. Lastly, current and future work will be shown that attempts to connect remote participants in immersive theatrical experiences (currently being tested in New York on Punchdrunk's celebrated show *Sleep No More*), or to bring together large numbers of people to collaborate in sophisticated musical creation.



[Tod Machover's bio can be found on page 24]

**8:30–10:30**  
**Concert: Argento Ensemble**

Barnes Hall

*Scale 9* Sean Friar  
flute, clarinet, violin, cello, piano, percussion

*Walk* Bryan Christian  
flute, clarinet, violin, cello, piano, percussion

*Miscellaneous Romance No. 1* Amit Gilutz  
bass clarinet, violin, piano, electronics

*Town's Gonna Talk* Eric Lindsay  
flute, clarinet, violin, cello, piano, percussion

– INTERMISSION –

*the resonance after...* Christopher Chandler  
flute, clarinet, violin, cello, piano, percussion, electronics

*Re-route* Juraj Kojs  
bass clarinet and electronics

*Another Life* Tod Machover  
flute, oboe, clarinet, violin, viola, cello, double bass,  
percussion, synthesizer keyboard

ARGENTO ENSEMBLE

Matt Ward, *conductor*; Fiona Kelly, *flute*; Clara Lyon,  
*violin*; Laura Barger, *piano*; Vasko Dukovski, *clarinet*;  
Andrew Borkowski, *cello*; Matt Gold, *percussion*

John Lathwell, *oboe*; Wendy Richman, *viola*;  
Nicholas Walker, *double bass*;  
Andrew Zhou, *electronic keyboard*



## SCALE 9

Sean Friar  
Princeton University

After having spent the better part of half a year studying intensively for major exams while working on my doctorate, I found myself wonderfully energized and ecstatic with my new abundance of free time once they were over. This piece was started while I was still in the midst of that euphoric, manic delight of having a huge weight lifted from my shoulders; it brims with energy that is in turns playful and volatile and frequently changes in ways that are often unexpected.

Scale 9 is the scale used to measure hypomania in the MMPI, a manual widely used by psychologists which provides diagnostic criteria for various mental conditions. I try to capture some of the hallmarks of a manic episode in this piece; especially distraction by irrelevant stimuli, flights of ideas, elevated mood, and accelerated and occasionally out-of-control motor activity.

**Sean Friar's** music combines the spontaneity and directness of his roots in blues piano improvisation with an expansive classical sensibility that is “refreshingly new and solidly mature... and doesn't take on airs, but instead takes joy in the process of discovery [and] in the continual experience of suspense and surprise.” (*Slate Magazine*) He is an Honorary Fellow at Princeton University, and received B.A.s from UCLA.

Performers of Friar's music include the Berlin Philharmonic Scharoun Ensemble, American Composers Orchestra, So Percussion, Crash Ensemble, Ensemble Klang, NOW Ensemble, New York Youth Symphony, and Darmstadt Staatsorchester. Festivals featuring his music include Aspen, Bang on a Can, Bowdoin, GAUDEAMUS, Norfolk, Nuova Consonanza, SONiC, Venice Biennale, and YCM. Among his honors are the Rome Prize, Charles Ives Scholarship, Aaron Copland Award, four ASCAP Young Composer Awards, Lee Ettelson Award, and First Music Award. His music is released on New Amsterdam Records and Darling Records.

## WALK

Bryan Christian  
Duke University

(Commissioned by the Fromm Music Foundation at  
Harvard University and Ensemble U)

I have a penchant for wandering. During the year I lived in Estonia (2008–09), I rarely used public transportation and walked nearly everywhere—often more than 4 miles a day. Eventually, this routine began to alter my perception of time and space: time seemed to expand while space seemed to contract. During this same time, I became increasingly fascinated by the medieval art of rhetoric and memory, exploring the ideas of Geoffrey of Vinsauf in his 13th-century treatise on poetry.

*Dirige gressum ulterius cursumque viae, praeunte figura.  
Curritur in bivio: via namque vel ampla vel arcta, vel flu-  
vius vel rivus erit... Progressurus enim medium quandoque  
relinquo et saltu quodam quasi transvolo; deinde revertor  
unde prius digressus eram.*

[By means of your pre-visualized image, direct your step further along the road's course. The way continues along two routes: there will be either a wide path or a narrow, either a river or a brook... Sometimes, as I advance along the way, I leave the middle of the road, and with a kind of leap I fly off to the side, as it were; then I return to the point whence I had digressed.]

Geoffrey of Vinsauf (fl. 1200 AD)  
Poetria Nova [204–207, 539–541]  
Translation by Mary Carruthers

**Bryan Christian** (b. 1984) is an American composer whose works receive frequent performances throughout the United States and Europe. He has received commissions from the Fromm Music Foundation at Harvard University, the 59th Festival Les Musicales (2011; Colmar, France), the 19th and 20th Juventus Festivals (2009 and 2010;

Cambrai, France), 2011 Monadnock Music in consortium with Duke University, the Ohio Northern University Symphony Orchestra, the Aurora Borealis Duo, pianist Julien Libeer, and famed new music soprano Susan Narucki, among others. He also frequently collaborates with and is commissioned by violinist Liana Gourdjia. Mr. Christian is the recipient of numerous awards, including the J. William Fulbright Fellowship to Estonia, the BMI Student Composer Award, and the Indiana University Dean's Prize in Music Composition.

Mr. Christian is currently pursuing a Ph.D. in Music Composition at Duke University. He holds degrees from the Jacobs School of Music at Indiana University (B.M.), University of California San Diego (M.A.), and the Estonian Academy of Music and Theatre (M.A.), Mr. Christian has studied composition with Stephen Jaffe, Scott Lindroth, Chinary Ung, Toivo Tulev, Helena Tulse, Sven-David Sandström, Claude Baker, Don Freund, and P. Q. Phan. Additionally, Mr. Christian has received consultations by composers as diverse as Arvo Pärt, George Crumb, Peter Eötvös, and Helmut Lachenmann.

#### THE RESONANCE AFTER...

Christopher Chandler  
Eastman School of Music

the resonance after... was composed for the new music ensemble eighth blackbird and supported by a summer research fellowship awarded by the University of Richmond. The piece exploits the resonance that is left after a sharp attack. The gradual harmonic and timbral unfolding of this resonance heard in the opening creates a slowly evolving and quiet musical landscape that encourages introspection.

**Christopher Chandler** is a composer of acoustic and electroacoustic music currently studying at the Eastman School of Music with Ricardo Zohn-Muldoon. His music has been performed by eighth blackbird, cellist Madeleine Shapiro, and the Cleveland Chamber Symphony. Recent performances include the Midwest Graduate Music Consortium Conference, the Ball State University New Music Festival, the Third Practice Electroacoustic Music Festival, the New York

City Electroacoustic Music Festival, and the SEAMUS 2011 and 2012 National Conferences. His music has been honored with awards including second prize in the 2012 ASCAP/SEAMUS Student Commission Competition, first prize in the 2009 Austin Peay State University Young Composer's Competition, and winner of the American Modern Ensemble's Fifth Annual Composition Competition.

Christopher is currently a Ph.D. candidate in composition and a teaching assistant for the Eastman Computer Music Center working with Allan Schindler. He previously received his B.A. in music composition and theory from the University of Richmond and his M.M. in music composition from Bowling Green State University. His teachers include Benjamin Broening, Mikel Kuehn, Elaine Lillios, and Marilyn Shrude.

#### TOWN'S GONNA TALK

Eric Lindsay  
Indiana University

I had the privilege to live in downtown Chicago for the month of July, 2011. My stay there was filled with daily walks from my hotel in River North down into the Loop. In stark contrast to my years living in Los Angeles, where the majority of my trips between destinations was done by car (and accompanied by the stations I'd select on the car radio), traversing Chicago on foot attuned my ears to a different kind of music: the urgent call and response of car horns, the rumble of the El, the fragments of overheard cell phone conversations, the aleatoric combinations of buskers near and distant, as well as the underlying grooves (\*shuk shuk shuk shuk\*...) of panhandlers along Wabash Ave rhythmically shaking their coin-filled plastic cups like maracas. For me, this urban counterpoint represented something bigger than us all, like music being improvised daily by the city, herself.

**Eric Lindsay's** music includes various approaches to concert music, interactive electronics, sound installation and film. Eric holds composition degrees from Indiana University and USC, as well as studies at King's College in London. His work has been performed by the Ameri-

can Composer's orchestra, Pittsburgh Symphony Orchestra, Cabrillo Festival Orchestra, eighth blackbird, New York New Music Ensemble, Del Sol Quartet, ADORNO Ensemble, Chamber Mix, Volti, Thornton Contemporary Music Ensemble, Indiana University New Music Ensemble, and pianist Jenny Lin, among many others.

He has received awards from the Finale National Competition Contest, PSO's Audience of the Future competition, Southern Indiana Wind Ensemble Composers Competition, ASCAP, SCI, NFMC, Volti's Choral Arts Laboratory and the Thornton School of Music. He has also participated in June in Buffalo, Aspen, and ACO Underwood New Music Readings. Recordings are available on his website, [www.musicsscore.com](http://www.musicsscore.com). Some of his scores for motion pictures and television are available at [www.neptunesbroiler.com](http://www.neptunesbroiler.com).

## MISCELLANEOUS ROMANCE NO. I

Amit Gilutz  
Cornell University

The Miscellaneous Romance Project is a modular set of pieces based on 'missed connections' and other personal ads. Ideally, each performance will adapt to local and current texts.

Frank Sinatra croons, "As time goes by."

It's easy to look at digitally mediated intimacies as evidence that time has gone by, but not in the right sorts of ways. Is a kiss still a kiss, do the fundamental things still apply when people go online to connect? To some, Craigslist personal ads might seem a strange place to look for love or sex. This is especially true because we are conditioned to understand relationships as taking place only within particular times and places. Dominant cultural scripts about intimacy tell us that it should occur in what some queer theorists have called "straight time," an idealized temporality of how to live a life, or a good one. Straight time demands that you grow up, get educated, get a job, settle down. Intimacy is snapped into the story of a linear life course: you meet someone, you go on dates, dates become more serious, and this seriousness is codified through some ritual process, like moving in and shopping at Ikea, or marriage. And all of this should occur within the

confines of the “real” world, in restaurants, bars, offices, and private bedrooms. However, dominant narratives of intimacy cannot capture the irregular or inconstant stutter of desire, the ways desire frequently disorganizes our stable sense of ourselves, or the way our most profound longings for connection can never be fully satiated by the forms (coupled, monogamous with a house and kids) our society sanctions.

Normative scripts of an intimate life lived right govern our attitudes toward “virtual intimacies,” those intimacies that do not conform to ideals about what constitutes a real intimate life lived in the right order. “Virtual intimacy” thus captures the mocking disapproval our culture expresses toward those forms of intimate connection that take place outside of straight time and space, forms that include, among many others, the extended adolescence or permanent bachelorhood of some gay men (and women), the entangled fictive kinship networks of some lesbian communities, or public sex, polyamory, or looking for sex in the ether of cyberspace. To say that something is virtual is to say that it is almost, but not quite, the real deal. This is the meaning that comes to mind when we hear the phrase “virtual reality,” for instance.

Yet there are other meanings of the virtual. For the French philosopher Gilles Deleuze virtuality describes an immanent force that has not actualized into form. The virtual is a capacity; it refers to the latent capacities of a thing, the probable forms it has the potential to take. Desire, before it’s crystallized into sentimental Hallmark card slogans or coherent stories about how we met our significant others, is virtual. It has the potential to take many forms. It is a powerful immanence, like a leviathan waiting under the surface. And it is generative—we act, sometimes in embarrassing ways, in response to this force that presses on us.

Miscellaneous Romance expresses all of these senses of virtual intimacy. It evokes the mediated, transactional, even mechanized, form desire takes in digital contexts. In a world in which every human feeling has morphed into a commodity form, it should not be so surprising that people would turn to the anonymous space of the net to express their longings more freely, without the threat of censure and in the hope that someone’s lonely heart feels a tug of recognition on the other side of the screen. Miscellaneous Romance also suggests, however ubiquitous these spaces have become, that looking for intimacy in these contexts does not quite sit right with many of us—how can

we find “real” or “true” love in a virtual space? We imagine others, or ourselves, sitting alone at our computers, our hopes and failings illuminated by the light of screen. In this sense, we can understand online personals as mirrors, not just vistas onto other worlds we’d someday like to explore. *Miscellaneous Romance* manages to dwell in the vast potential immanent to desire. The long strings of numbers that identify postings and the amplification that occurs when people’s expression of longing begin to overlap with one another together suggest the magnificent and generative capacity of our desire for romance and connection, miscellaneous or otherwise.

**Amit Gilutz** (b. 1983) is a graduate of the Rubin Music Academy in Jerusalem and is currently studying at Cornell University with Steven Stucky and Kevin Ernste, as well as Fabien Lévy (Columbia). Among his principle teachers there were Andre Hajdu, Yinam Leef and Mark Kopytman. Amit participated in master classes with Esa-Pekka Salonen, Brian Ferneyhough, Chaya Czernowin and others. Winner of the Israeli-American Culture Fund scholarships for composition (1999–2008), first prize of the 2003 Mediterranean Music Center Composition Competition (Greece), prize for outstanding achievement from the director of the Jerusalem Music Academy, Chana Idor Avni Composition Competition, Klon Scholarship for young composers, 2007 ACUM award, Prix Nadia Boulanger of the 2010 Ecoles D’Art Americaines de Fontainebleau, and the 2011 NewEar composition competition for student category. His music has been performed by the Argento Ensemble, Talea Ensemble, Tel-Aviv Soloists Ensemble, Meitar Ensemble, the Israeli Chamber Project, Ensemble Reconsil, Ensemble Adapter, the iO Quartet, the Momenta Quartet, Sqwonk, the Cornell Wind Ensemble and many others.

#### RE-ROUTE

Juraj Kojs

Miami International University of Art and Design

**Juraj Kojs** is a Slovakian composer, performer, multimedia artist, producer, researcher and educator residing in the U.S. His compositions

received awards at Europe—A Sound Panorama, Miami New Times Best Off Award, Eastman Electroacoustic Composition and Performance Competition and the Digital Art Award. Kojs has received commissions from The Quiet Music Ensemble, Miami Light Project and Meet the Composer. His research articles appeared in journals such as Organized Sound, Digital Creativity, Leonardo Music Journal, Journal of New Music Research and International Journal of Arts and Technology.

Kojs is the director of Miami-based Foundation for Emerging Technologies and Arts (FETA). He holds a Ph.D. in Composition and Computer Technologies from University of Virginia. Kojs taught at Medialogy Department Aalborg University (Copenhagen, Denmark), Yale University and University of Virginia. Kojs is currently a full time faculty in the Audio Production Department at Miami International University of Art and Design in Miami, FL. [www.kojs.net](http://www.kojs.net)

## ANOTHER LIFE

Tod Machover

Massachusetts Institute of Technology

*Another Life* was composed in 2006 for Collage New Music, and is scored for nine unamplified acoustic instruments plus live computer electronics. The title refers to reflecting on the passing of time, in my case thinking back on the intensive period I spent in France from 1978–1985. This time at IRCAM allowed me to confront musical ideas very different from my own—especially the timbral elegance of the “spectral school” and the “organic proliferation” ideas of Pierre Boulez—and gave me much to think about and absorb, and also helped me to find my own personal voice. Since that “voice” turned out to be not very French, I also realized that I had to return to the States—helping to launch the MIT Media Lab, where I still work—in order to best develop my music and ideas. In doing so, I turned my back on many of the experiments that I tried in Paris, and that period has come to feel like “another life” to me. But of course it isn’t, so in this piece I have tried to reconsider some of the ideas and feelings which I felt passionately about during my time in Paris, to explore the many conflicts I experienced trying to refine my personal vision in the midst of a fairly



alien atmosphere, and to reexamine my musical roots which gave been with me since childhood.

*Another Life* is in three movements played continuously without breaks. The first movement is quiet and delicate, juxtaposing contrasting musical elements that fuse into pulsating textures and timbres. The second movement is lyrical, with shards of melody passed from instrument to instrument surrounded by brief fragments of shared accompaniment. The final movement presents an attempt to force cohesion between the piece's many diverse elements, exploding into a more gentle mood of acceptance—both of what was done in the past and in what might come next—with which the piece ends. Throughout, the electronics serve both to enhance the sonic specificity of, and difference between, each acoustic instrument, while paradoxically providing the context or “timbral sea” in which all elements swim, find their commonality, and merge into something richer than the sum of parts.

**Tod Machover**, called “America’s most wired composer” by the *Los Angeles Times*, is known for his innovative compositions as well as for designing new technologies for music. He is the Muriel R. Cooper Professor of Music & Media at the MIT Media Lab, where he directs the Opera of the Future Group. He studied with Elliott Carter and Roger Sessions at Juilliard and was the first Director of Musical Research at Pierre Boulez’s IRCAM in Paris. Machover has received numerous prizes and awards, including the “Chevalier des Arts et des Lettres” from the French government, the Kurzweil Prize for Music and Technology, and the 2010 Arts Prize from the World Technology Network (CNN/Time Inc.). He is renowned for his pioneering work with Hyperinstruments, which use technology to extend the expressive range of traditional instruments for virtuosos like Yo-Yo Ma and Prince, as well as for children, for health and well-being, and for the general public through games like *Guitar Hero*, which grew out of his Lab. Machover is especially recognized for his unusual operas, including the science fiction *VALIS*, the audience-interactive *Brain Opera*, and the robotic *Death and the Powers*, which premiered in Monaco and the U.S. during the 2010/2011 season, and was a Finalist for the 2012 Pulitzer Prize in Music.

Saturday, May 12, 2012

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**9:00–10:30 — Session 4:**  
**Text, technology and the voice**

Enongo Lumumba-Kasongo (Cornell University), Chair

TUNING IN THE (NON)HUMAN: DIGITAL PITCH  
CORRECTION IN PRACTICE

Owen Marshall  
Cornell University

Musical pitch correction technologies such as Antares' Auto-Tune and Celemony's Melodyne have come into widespread use since 1997, offering an unprecedented degree of control over the pitch and intonation of recorded musical (primarily vocal) performances. This paper situates pitch correction within a broader history of sound recording and manipulation, tracing its iterative construction and reconstruction through multiple contexts of use, and identifying two predominant trajectories of interpretation: covertly "corrective" tuning and overtly artificial-sounding "hard tuning." At the heart of this development lies an emergent vision of the "tunable self," framed in a surgical discourse and attended by competing formulations of such qualities as human-ness, perfection, and emotional value. These themes are explored through an ethnographic account of music production in a Los Angeles recording studio.

**Owen Marshall** is a Ph.D. student in the Cornell Dept. of Science and Technology Studies. He is interested in sound studies, anthropology of the body, and the politics of science and technology. Prior to his graduate studies he has done audio production work for Chicago Public Radio and science policy research for the Consortium for Science Policy and Outcomes at Arizona State University.

FROM TRINIDAD TO CYBERSPACE: RECONSIDERING  
TOCH'S GEOGRAPHICAL FUGUE

Carmel Raz  
Yale University

Perhaps uniquely in music history, Ernst Toch's *Geographical Fugue* is a work composed for technological media that has had an almost exclusively acoustic performance history of more than eight decades. Premiered in 1930 at a Berlin-based festival dedicated to the incorporation of technology in music, a few years later the *Geographical Fugue* was transformed into a humorous showpiece spoken by live a capella choirs. However, these later renditions represent a substantial deviation from the composer's intention, as Toch created the work as an audio recording designed to be played back on the gramophone at a faster speed.

In situating the work within the lineage of early electronic music (see also Katz 2001), I explore three facets of Toch's compositional materials: the relationship between early experimental music and radio technology, the significance of mechanically transformed human voices following the First World War, and the influence of contemporary research on phonetics and sound reproduction on Toch's creative process. I further examine these aspects through a linguistic analysis of the vowel and syllabic distribution within the *Geographical Fugue* itself. I also discuss the afterlife of these features of Toch's spoken music in various contemporary YouTube remixes, and the ways in which contemporary possibilities of musical creation and dissemination enable the work to return to a state that evokes its original context of technological experimentation.

**Carmel Raz** is a graduate student in music theory at Yale University, working on a dissertation exploring the influence of late eighteenth-century neurophysiology on the development of Romantic music. She holds a master's degree in composition from the University of Chicago, and a degree in violin performance from the Hochschule für Musik Hanns Eisler in Berlin, Germany. In parallel to her academic life she maintains an active career as a professional composer and violinist, and has been featured as a chamber musician at Carnegie

Hall, the Concertgebouw, and the Kennedy Center. More information at [www.carmelraz.com](http://www.carmelraz.com)

**10:45–12:15 — Session 5:  
Psychology and the sonic object**

Carol Krumhansl (Cornell University), Chair

REFASHIONING RHYTHM: HEARING, ACTING, AND  
REACTING TO METRONOMIC SOUND IN EXPERIMENTAL  
PSYCHOLOGY, 1875–1915

Alexander Bonus  
Duke University

Establishing a science unique to the Industrial Age, nineteenth-century experimental psychologists devised widely repeated experiments that measured their subjects' physical and mental performances through exacting time controls. One of the most important tools for these scientists in testing humans' ability to perceive "in rhythm" was the clockwork metronome. The machine objectively defined and dictated a precise "beat" that some skilled musicians during the age often heard as distracting and potentially damaging mechanical noise.

Using a host of new technologies and methods, these empirical scientists had radically redefined the values of rhythm for both their discipline and Western culture at-large by 1900. Their studies helped to mechanize the once-experiential qualities of creative or "artistic" rhythm with the audible "tick-tock" of clockwork. Correspondingly, musical "artistry" waned in value for these scientists; in their laboratories, the inexorable sound of the metronome now ruled over the subjective rhythms, pulses, and movements of musical performance.

This paper explores how these self-dubbed "New Psychologists" first refashioned the ideals of rhythmical action with their novel laboratory methods and metronomes. By analyzing scientific, technological, and musicological sources, this interdisciplinary history uncovers how experimental psychologists altered the very beliefs in "good

rhythm” for modern-age culture, while they mechanized the musical pulse in ways that many contemporaneous musicians considered abhorrent. Although seldom acknowledged today, their radical scientific theories greatly influenced musical pedagogy and aesthetics starting in the twentieth century. Thus it will be shown how these scientists first administered the incessant metronomic “rhythm” that many musicians and listeners consider commonplace in our own mechanical age.

**Alexander Bonus** is a faculty member of Duke University’s Department of Music, where he teaches courses on music theory and musicology. As an early-music specialist and conductor, he also directs the Duke Collegium Musicum. Dr. Bonus regularly lectures at conferences across Europe and America, and his latest scholarship will appear in the revised *Grove Dictionary of Musical Instruments*, the journal *Nineteenth-Century Music Review*, and a collection entitled *Noise, Audition, Aurality* (Ashgate, 2013). He is presently adapting his Ph.D. dissertation “The Metronomic Performance Practice” (2010, Case Western Reserve University) to form two separate monographs. In 2011, Dr. Bonus received a New Faculty Fellowship from the American Council of Learned Societies.

THE HISTORICAL SOUNDSCAPE OF MONOPHONIC HI-FIDELITY:  
SONIC PATHOLOGY AND LOSS

Murray Dineen  
University of Ottawa

This paper examines a particular stage in the development of modern recording and reproduction technology—high fidelity (or “Hi-Fi”) monaural recording in the era after World War II until the advent of stereophonic sound reproduction as the norm in the 1970s. It describes monaurality as a pathology; in its historical post-war context, monaurality is a disease that manifests itself in symptoms that arise from mistaking a putatively “true” world—a world of “fidelity” to a sound object—for a real world, a world in which in its natural truth to a sound object does not come into question. Symptoms of the disease are to be found in such concrete forms as record advertisements that

list microphone types, or in the proceedings reproduced in the *Journal of the Society of Motion Picture Engineers*.

In the post-war stage in the development of recorded sound, the term “Hi-Fi” postulates a falsehood, a putatively “true” sonic object—an unmediated auditory perception capable of sonic reproduction. Like the term artificial intelligence in this regard, Hi-Fi presupposes a reality that in its natural state needs no articulation. We do not (or rarely) speak of real intelligence in computers, nor of Hi-Listening in music. But in coining their antonyms, it follows that real intelligence and Hi-Listening follow pathologically—as fictions necessary to artificial and to Fi.

Over objections, let us say that the ever receding horizon of a natural intelligence has been largely abandoned in favor of intelligence horizons having little to do with reality. So too, digital compression and the use of synthetically generated sounds have rendered questions of fidelity redundant, especially under the economies of the internet, such as bandwidth. But this does not permit us to lose sight of a brief historical envelope—the age of monaurality—in which fidelity and reality contested as sound objects.

**Murray Dineen** is a professor in the School of Music at the University of Ottawa, where he teaches music theory, history, and aesthetics. A book entitled *Friendly Remainders: Essays in Music Criticism after Adorno* was published in the fall of 2011 by McGill-Queens University Press. Recent publications include the article “Gestural Economies in Conducting,” in *New Perspectives on Music and Gesture*, edited by A. Gritten and E. King (Ashgate, 2011), and essays on music and ethics, and on Kurt Blaukopf’s Marxist musical treatise of 1935. When he is not falling out of canoes, Murray is an amateur welder.

## 1:30–3:00: Keynote: Eric Clarke (Oxford University)

### EXPLORATIONS IN VIRTUAL SPACE: MUSIC PERCEPTION AND RECORDED MUSIC

The modern recording studio makes available a range of technological resources that have revolutionized the ways in which we can hear music, and the experiences that music can afford. In this paper I explore some of the perceptual possibilities of recorded music from an ecological perspective, focusing on the attributes of the virtual world that recorded music opens up. These include a range of virtual spaces, motions and proximities that in turn afford compelling transformations of listening consciousness. In short, I offer a broadly psychological perspective on how it is that technological developments have had such a dramatic impact on the kinds of musical subjectivity that we can experience.



**Eric Clarke** has been the Heather Professor of Music at Oxford University since 2007. In 2010 he was elected a Fellow of the British Academy. He was an Associate Director of the Arts and Humanities Research Council's Research Centre for the History and Analysis of Recorded Music from 2004–2007, is an Associate Director (2009–2014) of the AHRC Phase II Research Centre for Musical Performance as Creative Practice, is on the Advisory Council of the Institute of Musical Research (IMR), and was elected to membership of the Academia Europaea in 2009. He is an Associate Editor of the journals *Music Perception* and *Musicae Scientiae*, is on the editorial boards of *Empirical Musicology Review*, *Radical Musicology*, and *Per Musi*; and is a consulting editor for *Psychology of Music*.

## 3:15–5:30 — Session 6: Instruments and soundscapes

Anaar Desai-Stephens (Cornell University), Chair

INSTRUMENTS, AFFORDANCES, IDIOMS, OR, THREE  
WAYS TO PLAY THE HARMONICA

Jonathan De Souza  
University of Chicago

Musical instruments afford bodily actions and sonic materials. Experimental research shows that such affordances influence players' perception. But how do instruments shape performance? This question suggests a technological determinism that affordance theory undermines, since objects may always be used in unexpected ways. Yet affordances depend on physical relationships between agent and object; they aren't arbitrary or unlimited. This paper explores instrumental constraints through music-analytical and ethnographic investigation of harmonica music. It proposes a concept of "idiomaticity," considering how affordances are interpreted through socio-cognitive frameworks.

Blowing through a harmonica's holes gives a tonic triad; drawing air through the same holes gives the remaining notes of the major scale. Folk-harmonica players typically stay within this key. Blues players, however, approach these affordances in a way that the instrument's nineteenth-century designers never anticipated, treating the in-breath notes as a Mixolydian tonic and bending notes. Bending is only possible with certain pitches, which colors the tonal idiom of blues-harmonica improvisation. More recently, some jazz harmonica players have developed an "overblowing" technique to play chromatically on the usually diatonic instrument. Analyzing solos by Bob Dylan, Sonny Boy Williamson II, and Howard Levy, I show how these divergent styles reflect the harmonica's sonic and physical affordances.

Their idiomaticity involves the coordination of this technological potential with individual and communal techniques. Just as affordances emerge at the nexus of organism and environment, instrumental idioms appear in the interplay of individual, object, and culture. This idea



engages cognitive anthropology and philosophy: as Bernard Stiegler writes, “the question of the idiom is that of the link between the *who* and the *what*.” A phenomenology of instrumental practice, then, ultimately raises ontological questions about the link between humanity and technics.

**Jonathan De Souza** is a doctoral candidate in music theory and history at the University of Chicago. His dissertation looks at interactions between musical instruments and performers’ bodies, drawing on grounded cognition and phenomenology. Jonathan holds an M.M. from Royal Holloway, University of London and a B.M. from the University of Western Ontario. His other research interests include film musicals and aleatory music, and he is active as a fiddler and jazz violinist.

#### CLATTERING BELLS AS A FIELD OF EXPERIENCE AND COGNITION

Paul Chaikin

University of Southern California

Writing about the auditory landscapes of rural France in the early nineteenth century, the historian Alain Corbin reminds us that in this world, devoid of ambient industrial noise, the loud clatter of bells exacted an extraordinary effect on village life. Their clamor marked the passage of time and played an important role in ordering lived experience, conferring symbolic authority on religious, civic, and festive affairs. Bright and jarring, bells are somehow noisy, beautiful, solemn, cheerful, and instantly recognizable, all at once. People enjoyed “being sporadically deafened” by firecrackers, cannons, and above all, clattering bells, “all of which were regarded as indispensable compliments to public rejoicing.” The notion that people might relish cacophony is difficult to reconcile with conventional handles on aesthetic reflection, especially with respect to a time and setting that we tend to romanticize as quaint, pastoral, and above all, dulcet. Nevertheless, if we trust Corbin’s account of village bells in nineteenth-century France, we are led to some fascinating questions about ambient sound, psychoacoustics, and the nature of aesthetic experience.

In this paper, I relate the socio-cultural history of civic and ecclesiastical bell ringing in Europe to the perception and cognition of bells as acoustic phenomena. My hypothesis, in short, is that bells tend to be heard in a way that prompts listeners into a mode of perception that simultaneously provokes an awareness of their own subjective freedom and a sense of deference to a greater authority. This double-edged confrontation with subjectivity—a consequence that reflects both the acoustic characteristics of struck bells and our innate and conditioned listening habits—helps to explain the institutionalization, expansion, and persistence of bell ringing across Europe over the past four centuries.

**Paul Chaikin** earned his Ph.D. in Ethnomusicology at Brown University in 2010, having written his dissertation about opera and related cultural affairs in contemporary Berlin. He joined the musicology faculty at the USC Thornton School of Music in 2011.

THE TECHNOLOGY OF WOODWORK:  
LUTHIERS OF THE ITALIAN RENAISSANCE

Adem Merter Birson  
Cornell University

The significance of the triumvirate music, technology and society is materialized through the figure of the instrument maker. Instruments are dynamic social objects, and their builders are influenced by various forces ranging from the practical to the aesthetic. The sixteenth-century Italian lute is particularly well-suited for this type of investigation. Luthiers working in such cultural centers as Venice and Bologna introduced major innovations in lute design, representing significant departures from the lute's original Arabic archetype. These luthiers tended to migrate to the Italian city-states from the German lands to the north, where there was an abundance of natural resources, and brought with them technical woodworking expertise in addition to lute-making supplies. The development of the lute coincided with the revival of humanistic thought during the Italian Renaissance. Using classical and medieval models, especially Pythagoras and Boethius, music theorists reunited music with the other three elements of the

*quadrivium*: geometry, arithmetic and astronomy. It was believed that these four disciplines allowed for a connection between the cosmic spiritual realm and worldly human existence. In this study, the innovations of luthiers Magno Tieffenbrucker and Hans Frei will be examined in order to demonstrate how the sixteenth-century Italian lute embodied these elements.

**Adem Merter Birson** is a graduate student at Cornell University, where he has begun research for his dissertation on historical, analytical and performative aspects of chromaticism in the string quartets of Joseph Haydn. He is simultaneously doing research for a graduate minor in the study of Turkish art music from the early twentieth century. He is a performer of both the piano and the Turkish *ud* (lute).

**8:00–10:00**  
**Electroacoustic Music Concert**

Barnes Hall

*Homage to La Monte Young* Nicholas Cline

*Ecology No. 8* Nathan Davis

*The Rite of Judgment* Nicola Monopoli

*Hydromancer* Peter Van Zandt Lane

Peter Van Zandt Lane, *bassoon*

– INTERMISSION –

*Zey-glitch* Eliot Bates, Taylan Cihan

Eliot Bates, *oud / electronics*;  
Taylan Cihan, *electronics / speaker elements*

*Megas Diakosmos* Stelios Manousakis

*Two-Handed Storytelling* Christopher Stark

Andrew Zhou, *piano*

## HOMAGE TO LA MONTE YOUNG

Nicholas Cline  
Indiana University

*Homage to La Monte Young* (four-channel fixed media) explores the interacting sounds of feedback from scordatura electric guitars and noisy amplifiers. The pervasive 60-cycle hum that permeates the industrial soundscape provides the initial impetus and harmonic material for the work. Naturally, a precursor to this idea can be found in La Monte Young's *Composition 1960 #7* (B and F# 'to be held for a long time')—about which he says:

“Actually, the first sustained single tone at a constant pitch, without a beginning or end, that I heard as a child was the sound of telephone poles, the hum of the wires.”

A second point of intersection comes from Robert Palmer's essay, “The Church of the Sonic Guitar.”

“But an electric guitar, properly tuned to resonate with everything from the [concert] hall's acoustics to the underlying 60-cycle hum of the city's electrical grid, is forming its massive sound textures from harmonic relationships that already exist in nature; compare this to the arbitrary ‘equal temperament’ system which causes decidedly unharmonious harmonic interference patterns and dissonances when certain tones are allowed to ring together.”

**Nicholas Cline** (b. 1985) is a composer of concert, and mixed-media music. In 2008 he completed a B.M. in composition at Columbia College Chicago and is currently pursuing a master's in composition at Indiana University Jacobs School of Music. His principal teachers include Don Freund, Ilya Levinson, Sebastian Huydts, and Rick Baitz. He has studied electronic music with Jeffery Hass, John Gibson, and Tiffany Sevilla. His undergraduate works were performed by the International Contemporary Ensemble and featured in Columbia College's commencement ceremony in the spring of 2008. He has also written scores for films in diverse genres and participated in festivals in Illinois and California.

## ECOLOGY No. 8

Nathan Davis

*Ecology No. 8* is one of a series of works exploring explicitly organic principles of construction. Short sonic structures are born, reproduce, live, die, and evolve according to algorithmic rules, and the result is a complex tapestry of sonic and visual “life.” I composed both the audio and video of *Ecology No. 8* using software of my own design, programmed primarily in Objective-C for Mac OS X.

**Nathan Davis** earned his Ph.D. in music composition and theory from the University of California, Davis and earned both a B.A. in music and mathematics and an M.A. in mathematics from Brandeis University. At UC Davis, he studied composition with Ross Bauer, Pablo Ortiz, and Yu-Hui Chang, and at Brandeis he studied composition with David Rakowski, Martin Boykan, and Eric Chasalow and piano with Evan Hirsch. Davis’s music, both acoustic and electronic, has been performed and presented widely. Davis lives in Madison, Wisconsin, where he maintains a career as a musician, software developer, and mathematician with the support of his wife and their two cats.

## HYDROMANCER

Peter Van Zandt Lane  
Brandeis University

*Hydromancer* (2011) is the second in a set of five pieces for bassoon and electronics. Each of the pieces uses a mixture of pre-recorded sounds and live electronics to dramatically expand the sound world of the bassoon, employing techniques from both avant-garde and popular forms of electronic music. This one, in particular, grapples with the long (and undoubtedly cliché) practice of using samples of water droplets in *musique concrete* tradition. In some ways, *Hydromancer* is an homage to the piece that started it all, Hugh Le Caine’s 1955 classic, *Dripsody*.

**Peter Van Zandt Lane** (b. 1985) is a widely performed composer living in New England, and has written music for a variety of ensembles across the country and beyond. His instrumental music, in particular, often engages technology and its influence on new music through the use of electronics. Drawing inspiration from neo-classical, modernist, jazz, rock, electronica, and early music, he draws on his diverse experiences to compose music that is fresh, genuine, and engaging. Recent projects include a Barlow Endowment commission for a new electro-acoustic work for the Quux Collective (to be premiered in October), String Quartet No. 1 (for string quartet, soprano, and electronics) for the Lydian String Quartet, and Busker Fantasy for percussion ensemble (commissioned by the SUNY Purchase Percussion Ensemble). Peter is currently completing a Ph.D. in Composition and Theory at Brandeis University. As a bassoonist, he has premiered a number of new works by living composers.

## THE RITE OF JUDGMENT

Nicola Monopoli

Inspired by the psychoanalytical theories, the main theme of *The Rite of Judgment* is the inner reaction in consequence of a given or received judgment. The audio part of the work is characterized by many textures and complex rhythms. The vocals are many times hidden but sometimes they leap up. The vocals are the inner voice, a dark voice inside the ego, the voice of the judgment. The voice could judge or react to a judgment. *The Rite of Judgment* is the inner struggle, an external impulse response. What happens to someone who is judged or who is judging? This work tries to give a deep reply which is impossible to 'transcribe' using words. The audio part is all generated from the elaboration of the voice. The video part deals with the audio because it has been generated using the same technique (continuous resampling). The attention to the sonic details and the presence of a musical deep structure help the listener to understand the meaning of the work: sometimes a natural thing, almost primitive, may require some complexity to be expressed in the better way. The title comes from Stravinsky's *The Rite of Spring*.

Born in 1991 in Barletta (Italy), **Nicola Monopoli** started to play piano and compose very young. In 2011 he graduated *summa cum laude* from “N. Piccinni” Conservatory with a bachelor’s degree in Music and New Technologies. His music has been performed in Italy, France, Germany, England, Greece, Russia, Spain, Norway, the Netherlands, USA, Canada, China, Taiwan and South Korea. His compositions have been selected and performed in many festivals including De Montfort University SSSP, SICMF, Stanford LAC, ACL Festival, Emufest, Fullerton New Music Festival, FIMU, Shanghai Conservatory EMW. His music has been performed in many places such as Sviatoslav Richter Memorial Apartment in Moscow, D. Mendeleev University of Chemical Technology of Russia, S. Antonio Church and Curci Theatre in Barletta, A. Goldenweiser Memorial Apartment in Moscow, Piccinni Conservatory Auditorium, Santa Cecilia Conservatory Auditorium and Kammermusiksaal in Hannover. He won the third prize in Musicworks Magazine Competition 2011.

## MEGAS DIAKOSMOS

Stelios Manousakis

Center for Digital Arts and Experimental Media

*Megas Diakosmos* (“The Great Order of the Universe”) takes its name from a lost cosmological treatise by Leukippos, a Greek natural philosopher of the 5th century BCE. In it Leukippos first introduced an Atomic Theory of cosmology, surprisingly comparable to contemporary cosmological theories. He postulated that the universe consists of tiny, invisible, indestructible, unchangeable and indivisible ‘Atoms’ (the ‘Being’) differing only in size and shape, and of an infinitely expanding and contracting ‘Void’ (the ‘Non-being’), existing in-between atoms and also with material properties, although different (anti-matter?). Void allows atoms to move and collide eternally, creating and destroying matter, new bodies, our world and a multitude of others.

Leukippos’ atomic theory and turbulent cosmogonic vision form the conceptual and experiential seed for the composition, its sonorities and their development throughout the piece, as well as for the



system and sound synthesis methods used. The system is a cybernetic model based on digital feedback and implemented as a sonic complex dynamical system—mathematically similar to a cosmological entity or universe in motion. This sonic universe is defined by the sample-by-sample interactions of a single binary digit (One, or ‘Being’) moving incessantly within a world of Void (Zeros, or ‘Non-being’). This digit floats and collides, is fused and split from delayed copies of itself, thus creating countless sonic bodies in states of equilibrium, oscillation, chaotic behavior, noise and silence.

Although *Megas Diakosmos* is a fixed medium piece, all the different ‘worlds’ (layers and sections) were performed in real-time in the studio, using a hands-on, live electronics version of the system to maintain an aspect of ‘in-time’ timelessness, and to accentuate the primal and visceral character of the composition.

**Stelios Manousakis** is a composer, performer, sound artist and researcher. In these capacities he strives to develop a new musical and artistic language that is both visceral and cerebral, communicating in a purely cognitive and experiential level while being complex and multilayered.

Manousakis operates in the convergence zones between art, science and engineering, composition, performance and installation, the rich tradition of Western art music and ‘digital folk’ idioms. Most of his work is deeply concerned with the unearthing of rich, complex and organic worlds that can emerge through iterative processes. In the core of his artistic philosophy lays the notion that powerful music and time-based art pieces can be conceived and designed as growing organisms or emergent ecosystems, and that they can be algorithmically or systematically modeled as complex dynamical systems with dynamic structure that develops over time. To this extent, he applies complexity science, cybernetic and biology-inspired models in software that he develops to generate novel musical systems, cybernetic instruments, non-standard sound synthesis methods and interaction platforms, often merging algorithmic finesse with the expressivity of improvisation and the immediacy of audience participation. This approach extends from fixed medium pieces, to live electronic or electro-instrumental open compositions, to interactive multimedia and sound art installations.

Besides his solo work, Manousakis is a founding member of several music ensembles and multimedia groups. He is currently finishing his Ph.D. at the Center for Digital Arts and Experimental Media (DX-ARTS) in Seattle, Washington.

## TWO-HANDED STORYTELLING

Christopher Stark  
Cornell University

*Two-Handed Storytelling* was the first piece of “solo” piano music that Christopher Stark composed, and came about after an earlier planned collaboration was scratched but I was still in need of an original work to be given a local première in Orléans, France. Stark decided to solve the knotty issue of writing for the piano by incorporating pre-recorded sounds, which are incited by the use of a separate control pedal placed to the left of the piano’s soft pedal. The effect of the setup is such that the live portions of the work are susceptible to momentary whims, offering freedoms that a tape piece could not afford, while the pre-recorded sounds, often direct echoes of the live musical material, carry with them a certain inevitability as they remain fixed entities. The composer writes, “I am fascinated by the concept of illusion in music, and I felt that by using electronic sounds I could ‘fictionalize’ the ‘non-fictional’ piano techniques.” The pre-recorded samples are, in fact, unmanipulated piano sounds in the central section, whose main motif features a musical cryptogram of my first name, and simply manipulated piano sounds in the outer ones. The piece, whose subtle virtuosity comes from the accurate use of the extra pedal in addition to total-body coordination in, at, and around the piano, is dedicated to Stark’s friend and colleague Tyler Walker. The piece was awarded a composition prize from the André Chevillion-Yvonne Bonnaud foundation (under the aegis of la Fondation de France) in March 2012.

– Andrew Zhou

**Christopher Stark** is a composer of contemporary classical music deeply rooted in the American West. Having spent his formative years

in rural western Montana, his music is always seeking to capture the expansive energy of this quintessential American landscape.

Described as “fetching and colorful,” (*New York Times*) Stark’s music has been performed in concert venues around the world from the Neue Synagoge Berlin to Carnegie Hall. A recipient of the coveted Underwood Commission from the American Composers Orchestra, and winner of the 2012 Prix de composition from the Orléans International Piano Competition, his music has been featured on NPR’s *Performance Today* and was recently broadcast as a fan-voted favorite on New York City’s WXQR.

Other awards include first prize in the Utah Arts Festival Orchestra Competition, and an ASCAP Morton Gould Young Composer Award in 2010. Stark was also a regional winner in SCI/ASCAP 2011 Student Commission Competition, and received honorable mentions from the 2010 ASCAP/CBDNA Frederick Fennell Prize and 2010 Music Teachers National Association Distinguished Composer of the Year Award.

Stark is currently finishing his doctorate at Cornell University where he studies with professors Roberto Sierra and Steven Stucky, and in the fall of 2012 he will be a resident artist at the Civitella Ranieri Foundation in Umbria, Italy.

**Andrew Zhou**, whose performances have been described as “disciplined and sensitive” (*San Francisco Classical Voice*) as well as possessing “striking suppleness” and “technical ease” (*Anaclase*), has given recitals in major venues in Los Angeles, Boston, and Paris. He has appeared with the Callithumpian Consort, Discovery Ensemble, and the Quatuor Diotima. A strong advocate for contemporary music who strives for thoughtful and adventurous programming, he has worked with composers such as Tristan Murail, Christian Wolff, and Robert Sierra, and has premiered and commissioned the works of many emerging talents.

A finalist and laureate of the recent tenth edition of the Concours International de Piano d’Orléans (France), Zhou studied with Bruce Brubaker at New England Conservatory and received the Beneficent Society Scholarship. He is currently studying with Xak Bjerken as a doctoral student at Cornell University. Upcoming projects include a summer as a fellow at the Tanglewood Music Festival, a performance of Britten’s piano concerto, and a series of recitals in France.

Sunday, May 13, 2012

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**9:00–11:15 — Session 7: Music Information Retrieval**

Graeme Bailey (Cornell University), Chair

MIR AND THE CREATION OF TASTE TAUTOLOGIES

Damien McCaffery  
University of Glasgow

Online music information retrieval (MIR) seeks to replace tastemaker roles once held by DJs and the listener's peers and kin. MIR uses algorithms to identify musical characteristics and align them with user purchase and click-through patterns, social attitudes, and music-community affiliations (as seen in such services as iTunes Genius). Often these algorithms bear the imprimatur of mathematics or science. Statistical dynamics underpin MIR's basic functions; Pandora's Music Genome Project even implies an affiliation with genetics. Such characteristics lend MIR an irrefutable quality, as if predicting musical taste was merely a function of probability modeling and number-crunching.

My paper will look at the five most prevalent forms of algorithmic music recommendation; collaborative filtering, demographic filtering, content-based attribute-recognition, context-based filtering, and hybrid forms which employ all four techniques. It will also look at feedback loops, a phenomena inherent to automated music recommendation, and the one most damaging to their effectiveness.

I will look at whether, despite the ever-increasing granularity of MIR, and new research into musical qualities once supposed ineffable (for example "sentiment analysis" and "emotion recognition," two closely-investigated topics in recent gatherings of the International Society of Music Information Retrieval), such narrowing spirals of similarity may be avoided without the benefit of human intuition, and if so how.

Most importantly, and following on from the work of Dr. Oscar Celma (*Music Recommendation and Discovery*, Springer-Verlag, 2010),

I will examine how these methods tend to work less with scientific objectivity than as prescriptive structures, and in so doing have, paradoxically, a conservative, and normative, effect on listening habits. Are services which use MIR capable of broadening listener tastes, as many claim to, and if so is there a way to avoid socially-bound “taste tautology” which MIR tends to reinforce?

**Damien McCaffery** received his undergraduate degree from Sarah Lawrence College and earned his first master’s degree in musicology at the University of Edinburgh, studying under Simon Frith. He holds a second master’s in information management and preservation from the University of Glasgow’s Humanities Advanced Technology and Information Institute, focusing on music collections and genre formation. He currently lives and works in Glasgow, Scotland.

EXPLORING CONTROL AND FEEDBACK MECHANISMS  
FOR PERSONALIZED INTERNET RADIO

Douglas Turnbull  
Ithaca College

Personalized Internet radio players like Pandora and Last.fm provide users with customized streams of music. While they are extremely popular, these systems are limited in the number of the ways that a user can control the radio station. They tend to provide the user with only a small amount of feedback after the user alters the station. We introduce a system called MegsRadio that provides a user with a broad variety of control and feedback mechanisms. Based on a small user study, we find that users make use of many of the novel control mechanism and develop a better understanding of the playlist algorithm based on the feedback they receive from the system.

**Doug Turnbull** is an assistant professor in the Department of Computer Science at Ithaca College. His research interests include multimedia information retrieval, computer audition, machine learning, and human computation. Doug received a B.S.E. degree (with honors) in Computer Science from Princeton University in 2001

where he was a member of the Princeton Sound Lab. He received M.S. and Ph.D. degrees in Computer Science & Engineering from UC San Diego in 2005 and 2008. While at UCSD, he co-founded the interdisciplinary Computer Audition Laboratory (CALab).

## PHYSICAL NAVIGATION OF VIRTUAL TIMBRE SPACES

William Brent  
American University

Among current open source music information retrieval packages, those designed for real-time multimedia programming environments are especially valuable for the performance of live computer-based music. Such software allows artists to search, analyze, organize, and reshape immense collections of digitally stored sound with sophistication and relative ease. At the same time, as interest in embodied computer music practices continues to grow, software that facilitates the capture of detailed body movement data is also critical. In combination, these elements support the growth of novel modes of sound exploration and digital music performance based on freely designed action-sound relationships.

This paper describes recent development of two open source software libraries for Pure Data (Pd), and summarizes developing projects that were achieved using the two packages in tandem. The timbreID feature extraction and classification library enables real- and non-real-time audio analysis via high-level modules that can be programmed for a variety of purposes. Provided example applications include vowel recognition, instrument identification, target-based granular synthesis, and sound visualization.

DILib (the Digital Instrument Library) provides software tools for accessing and managing gesturally-based control streams as captured by increasingly sophisticated yet inexpensive and widely available sensor hardware. The range of options include accelerometers, multi-touch surfaces, body tracking systems, and high frame-rate digital cameras that can be used for various computer vision strategies.

Realized at the intersection of these software packages, the “Gesturally Extended Piano” (an augmented instrument driven by piano

performance gestures) and the “Open Shaper” (a digital musical instrument controlled via open-air infrared fingertip tracking) are discussed from both technological and aesthetic viewpoints.

**William Brent’s** creative work is spread across experimental music performance, sound design, and computer programming. These projects involve various combinations of human-, robotic-, and computer-realized sound, and are controlled by software written in the SuperCollider and Pure Data (Pd) programming environments. His primary areas of research are the relationship between gesture and sound in the performance of live computer-based music, and signal processing techniques for quantifying timbre. As a programmer, he has developed software libraries for use in Pd related to these interests. Brent is currently an Assistant Professor of Audio Technology at American University in Washington, D.C.

## **11:45–1:15: Keynote: Ichiro Fujinaga (McGill University)**

### THE RESEARCH PROGRAM AT THE DISTRIBUTED DIGITAL MUSIC ARCHIVES AND LIBRARIES LABORATORY

The main goal of this research program is to develop and evaluate practices, frameworks, and tools for the design and construction of worldwide distributed digital music archives and libraries. Over the last few millennia, humans have amassed an enormous amount of information and cultural material that is scattered around the world. It is becoming abundantly clear that the optimal path for acquisition is to distribute the task of digitizing the wealth of historical and cultural heritage material that exists in analogue formats, which may include books, manuscripts, music scores, maps, photographs, videos, analogue tapes, and phonograph records. In order to achieve this goal,



libraries, museums, and archives throughout the world, large or small, need well-researched policies, proper guidance, and efficient tools to digitize their collections and to make them available economically. The research conducted within the program addresses unique and imminent challenges posed by the digitization and dissemination of music media. In this talk various projects currently conducted at our laboratory will be presented, including optical music recognition, workflow management for automatic metadata extraction of LP recordings, Networked Environment for Music Analysis (NEMA), creation of ground truth for music structural and chord analysis, and evaluation of digitization methods for analogue recordings.

**Ichiro Fujinaga** is an Associate Professor and the Chair of the Music Technology Area at the Schulich School of Music at McGill University. He has bachelor's degrees in Music/Percussion and Mathematics from University of Alberta, and a master's degree in Music Theory, and a Ph.D. in Music Technology from McGill University. He has been the Acting Director of the Center for Interdisciplinary Research in Music Media and Technology (CIRMMT) and a faculty member at the Peabody Conservatory of Music at the Johns Hopkins University. Research interests include music theory, machine learning, music perception, digital signal processing, genetic algorithms, and music information acquisition, preservation, and retrieval.