

FutureSounds

“I am a philosophic music man who, long ago, was seduced into musical carpentry.”

—Harry Partch

Monday, 1:30-4:30, Lincoln Hall B20

Workshop space in Lincoln Hall B16

Dr. Elizabeth Anne Ogonek, Assistant Professor of Composition (eao57 | Lincoln Hall 338)

Dr. Ryan MacEvoy McCullough, Visiting Lecturer in Piano (rmm323 | Lincoln Hall 331)

In-person office hours by appointment, or on Zoom

Course description

Music has always been fertile ground for theorizing and lofty pontification, mathematical quantization, and phantasmagorical mysticism. But for the makers, shakers, and sonic earthquakers, all musical innovations and developments have come from happy accidents, compulsive tinkering, curious imitations, and a willingness to bravely encounter failure as an avenue for discovery. The apparent stability of the modern instrumentarium belies this fact—a “violin” is not a fixed point in historical space, but rather a concatenation of centuries of experiments, each progression captured in musical amber by composers and performers who dared to ask, “what else can this thing do?” How neat and tidy history looks from *now*, but no one asked Mr. Clean® to build you a dog garn’d banjo.

This course aims to unpack both the play and fray by tasking students with exploring, modifying, designing, and building instruments new and old, for which original works will be composed and performed throughout the semester. The course will be loosely split into three strands: 1) the seminar, which will introduce critical approaches to listening, field recording, feedback, resonance, temperament, notation, idiomaticity, and timbre; 2) the building lab, where students will modify, design and build instruments while keeping all limbs intact; 3) the performance workshop, which will provide a space for students to test drive their developing pieces, embrace failure, and revel in success. FutureSounds culminates in the FutureSounds MicroFestival on May 13, 2022, at the Herbert F. Johnson Museum of Art, which will showcase new student works alongside the inventions of today’s leading instrument builders and practitioners.

Above all, students will spend the semester listening, because the greatest joy of music is not hermetic solipsism, but shared sensation (or, as the anonymous elevator passenger once said, “I heard that”).

Course Expectations and Outcomes

By the end of the semester, students will have learned to:

- 1) design, build, compose for, and perform on their own unique instruments;
- 2) approach design challenges as opportunities to develop musical insight;
- 3) engage with their peers as positive and supportive collaborators;
- 4) develop critical listening skills central to musical experimentation;
- 5) and interrogate the universality of music through material exploration.

Workshop space

The music department has granted this course exclusive access to B16, a storage space which has been cleaned out and repurposed for building and experimentation. This space will serve as a workshop for student projects, house all instruments-in-progress, extant instruments-to-be-explored, building tools and supplies, and as such must remain locked at all times. Students must receive individual instructor approval (and requisite training) to use this space. As with any such situation, it is imperative students respect its communal nature by always leaving the space *cleaner than they found it*, and to exercise necessary caution when using powered equipment. PPE (gloves, mask, and eye protection) will be required at all times, and any regular misuse of the space, unsafe behaviors, or disrespect of other students' work **may result in individual access being permanently revoked and/or significant impact to your final grade.**

Composition assignments

Through regular composition assignments, students are invited to take risks exploring concepts introduced in our weekly meetings, and emulate the work of artists featured during discussions. These assignments will be graded on a three point scale: **0**, if the student did not do the assignment, turned it in late, or did something else entirely; **1**, if the student did the assignment and verifiably met all of our demands; and the very unlikely **2**, if the student absolutely blew all our socks off with their creativity and thoughtfulness. Any assignment grade—including a **0**—may **always** be upgraded upon revision... because we're rooting for you.

Final Project

This course will culminate in a day-long festival takeover of Cornell's Herbert F. Johnson Museum of Art on May 13th. Students will compose a 7-10 minute long work for their bespoke acoustic instruments and perform this composition twice during the day—once in a late morning session, and once in the afternoon. As part of the final project, students will be expected to create a documentary portfolio of their work, both of the instrument and its design, and a recorded demonstration of the instrument. This portfolio will be published on the festival website in advance of the performance, and as such will need to be submitted in a timely manner.

Grading criteria

Artist survey presentation 10%

Composition assignments 20%

Attendance and participation 20%

Portfolio and final project 50%

Class Schedule

Part I: *Conceiving and Characterizing Sound*

January 24 (**virtual**) — 1. *Introduction to Future Sounds*

Composition assignment 1: *Five Soundscapes*—record and document five soundscapes easily (and safely) accessible to you on campus.

January 31 (**hybrid in person, outdoors**) — 2. *Reduced Listening* | Guest: Kim Haines-Eitzen

First half online; second half go on a soundwalk with KHE

Topics: deconstructing/reconstructing sounds; musique concrete; acousmatic listening

Activity: tools for listening, analysis, recording, and editing

Composition assignment 2: *Five Translations*—isolate five unique sounds from your previous assignment and reconstruct them into a 2-3 minute through-composed study

February 4-5 (**virtual**) — *play | pen : makers and music* (FutureSounds symposium)

Friday, February 4

2:00 | Emily Dolan

3:00 | Mark Stewart

—

5:00 | Andrew McPherson

6:00 | Cory Smythe

Saturday, February 5

11:00 | Jesse Jones

12:00 | Devin Hough

—

3:00 | Bart Hopkin

[Q&A with Ryan, Elizabeth and Bart]

February 7 — 3. *A Stranger in a Strange Land*: the composer's dilemma

Topics: exploring unfamiliar instruments; limitations and opportunities of unfamiliarity; notation of unusual sounds

Activity: developing a “found sound” gamut

Composition assignment 3: *Objets Sonores*—compose a work of “Musique Concrete Instrumentale”

February 14 — 4. *And never the twang shall meet*: tuning, transduction, and living resonance

Topics: feedback and resonance; tuning systems as acoustic space; material impedance; transduction; impulse responses

Activity: modifying instruments into controllable feedback machines

Composition assignment 4: *Feedback*—create a feedback composition using the historical instruments

February 21 — 5. *Always Coming Home*: the performer's dilemma | Guests: David Friend/Jerome Begin

Assignment: prepare a 15 minute presentation on a composer, instrument builder, or creative tinkerer from the list below

February 28 — **no class**, February break

Part II: *Creating and Collaborating with Sound*

March 7 — 6. *Artist survey presentations*

Activity: introduction to the building space

Assignment: team design an instrument to build on March 14th

March 14 — 7. *Round-robin I*: building

Teams will begin building their instrument designs

March 21 — 8. *Round-robin II*: composing and interpreting

Teams will trade instruments and begin the process of composing

March 28 — 9. *Round-robin III*: performing

Teams will “teach” their works (and instruments) to another team

April 4 — **no class**, spring break

Part III: *Composing and Performing Sound*

April 11 — 10. Presentations on final project / proposal

April 18 — 11. Workshops (addl. topics TBD)

April 25 — 12. Workshops (addl. topics TBD)

May 2 — 13. Workshops (addl. topics TBD)

May 9 — 14. Dress rehearsal for May 13th performance, final workshop

May 13 — *FutureSounds MicroFestival*: final performances at the Herbert F. Johnson Museum

Instrument builders, composers, and sound artists of interest

John Bertles—*Bash the Trash*

Barbara Benary (b. 1946) — American Gamelan movement

The Baschet Brothers (François Baschet & Bernard Baschet)

Harry Bertoia (1915-1978)

Glenn Branca (1948-2018)

Don Buchla (1937-2016)

Thaddeus Cahill (1867-1934)

Andy Cavatorta

Henry Cowell (1897-1965)

Pierre-Jean Croset (b. 1947)

Ivor Darreg (1917-1994)

Hugh Davies (1943-2005)

Jody Diamond (b. 1953) — American Gamelan movement

Oliver Di Cicco

Lucia Dlugoszewski (1925-2000)

Paul Drescher (b. 1951)

Jacques Dudon (b. 1951)

Daniel Fishkin

Bill Fontana (b. 1947)

Ellen Fullman (b. 1957)

Kyle Gann (b. 1955)

Jonathan Glasier

Lou Harrison (1917-2003) and Bill Colvig (1917-2000)

Bart Hopkin (b. 1952)

Jesse Jones (b. 1978)

Mauricio Kagel (1931-2008)

Walter Kitundu (b. 1973)

Christina Kubisch (b. 1948)

Helmut Lachenmann (b. 1935)

Skip LaPlante (b. 1951)—Composer, performer, instrument builder, co-founder *Music for Homemade Instruments*

Annea Lockwood (b. 1939)

Alvin Lucier (1931-2021)

Andrew McPherson (b. 1982)

Robert Moog (1934-2005)

Conlon Nancarrow (1912-1997)

Tom Nunn

Pauline Oliveros (1932-2016)

Paul Panhuysen (1934-2015)

Harry Partch (1901-1974)

Carina Piaggio—*Bash the Trash*
Brian Ransom (b. 1954)
Robert Rauschenberg (1925-2008)
Susan Rawcliffe
R. Murray Schafer (1933-2021)
Daniel Schmidt (b. 1942) — American Gamelan movement
Mark Stewart
Leon Theremin (1896-1993)
Jean Tinguely (1925-1991)
David Tutor (1926-1996)
Halldór Úlfarsson (b. 1977)
Richard Waters (1935-2013)
Carole Weber—*Music for Homemade Instruments*
Erv Wilson (1928-2016)

Suggested Listening

Aphex Twin
Computer Controlled Acoustic Instruments, Pt. 2 (2015)
Begin, Jerome and David Friend
Post_ (2021)
Björk (Andy Cavatorta)
Biophilia (2011)
Blackwood, Easley Jr.
Twelve Microtonal Etudes for Electronic Music Media (1980)
Cage, John
Constructions (1, 2, and 3) (1939-1941)
Imaginary Landscape (1939-1952)
Sonatas and Interludes for prepared piano (1946-1948)
String Quartet in Four Parts (1950)
Carillo, Julián
Preludio a Colón (1922, rev. 1934)
Cowell, Henry
The Aeolian Harp (1923)
The Banshee (1925)
Downes, Kit
Obsidian (2018)
Fishkin, Daniel
Frey, Jürg
String Quartet No. 2 (1998-2000)
Ives, Charles
Three Quarter-Tone Pieces (1925)

Harrison, Lou
Piano Concerto (1983/1985)

Honstein, Robert
Down, Down Baby (2017)

Johnston, Ben
String Quartets

Lachenmann, Helmut
Salut für Caudwell

Annea Lockwood
Sound Map of the Hudson River

Lucier, Alvin
I'm sitting in a room
Bird and Person Dyning

McPherson, Andrew
Secrets of Antikythera (2009)
d'Amore (2009)

Nancarrow, Conlon
Studies for Player Piano (1948-1992)

Partch, Harry
Castor and Pollux (1952-1968)

Smythe, Cory
Accelerate Every Shift (2020)

Takemitsu, Toru
Rain Spell (1982)

Tenney, James
Song 'n' Dance for Harry Partch

Wyschnegradsky, Ivan
Cosmos (1939)
24 Quarter-Tone Preludes for two pianos (1934-1970)

Bibliography

Blackwood, Easley. *The Structure of Recognizable Diatonic Tunings*. Princeton, N.J.: Princeton University Press, 1985.

Chaigne, Antoine, J. Kergomard, and Murray Campbell. *Acoustics of Musical Instruments.*, n.d.
<https://resolver.ebscohost.com/Redirect/PRL?EPPackageLocationID=1514.10982199.29030985&epcustomerid=s9001366>.

Cho, Gene J. *The Discovery of Musical Equal Temperament in China and Europe in the Sixteenth Century*. Lewiston, N.Y.: Edwin Mellen Press, 2003.

Cowell, Henry. *New Musical Resources*. London: Cambridge University Press, 1958.

Dolan, Emily I., and John Tresch. "Toward a New Organology: Instruments of Music and Science," *Osiris* 28, no. 1 (January 2013),
https://scholar.harvard.edu/files/eidolan/files/dolan_tresch_toward_new_organology_2013.pdf.

Dolan, Emily I., and Alexander Rehding, eds. *Oxford Handbook of Timbre*. New York: Oxford University Press, 2021.

Donahue, Thomas. *A Guide to Musical Temperament*. Lanham, Maryland: Scarecrow Press, 2005.

Duffin, Ross. *How Equal Temperament Ruined Harmony (and Why You Should Care)*. New York: W. W. Norton & Co., 2006.

Dunn, David, ed. *Harry Partch: An Anthology of Critical Perspectives*. Singapore: Hardwood Academic Publishers, Contemporary Music Studies, vol. 9, 2000.

Gunden, Heidi Von. *The Music of Ben Johnston*. Metuchen: The Scarecrow Press, Inc., 1986.

Forster, Cris. *Musical Mathematics: on the Art and Science of Acoustic Instruments*. San Francisco, Calif.: Chronicle Books, 2010.

Helmholtz, Hermann. *On the Sensation of Tone*. New York: Dover Publications, 1954.

Howard, Keith. *Korean Musical Instruments: a Practical Guide*. Seoul: Minsokwon, 2015.

Isacoff, Stuart. *Temperament: How Music Became a Battleground for the Great Minds of Western Civilization*. New York: Vintage Books, 2001.

Ives, Charles. "Some Quarter-Tone Impressions." *Franco-American Musical Society Bulletin*, 1925, pp. 20-29.

Johnston, Ben. "Maximum Clarity" and Other Writings on Music. Urbana: University of Illinois Press, 2006.

Koch, Lars-Christian. *Sitar and Surbahar Manufacturing: the Tradition of Kanailal & Brother, Kolkata*. Berlin: Ethnologisches Museum, Staatliche Museen zu Berlin, 2011.

Libin, Laurence. *The Grove Dictionary of Musical Instruments*. Second edition /. New York: Oxford University Press, 2014.

Moreno, Enrique. *Expanded Tunings in Contemporary Music*. Lewiston, New York: The Edwin Mellen Press, 1990.

Nelson, David Erik. *Junkyard Jam Band: DIY Musical Instruments and Noisemakers*. 1St edition., n.d.
<https://resolver.ebscohost.com/Redirect/PRL?EPPackageLocationID=2755116.7582950.35210851&epcustomerid=s9001366>.

Neuwirth, Erich. *Musical Temperaments*. Vienna: Springer-Verlag/Wien, 1997.

Partch, Harry. *Genesis of a Music: an Account of a Creative Work, Its Roots and Its Fulfillments*. 2D ed., enl. New York: Da Capo Press, 1974.

Hall, Barry. *From Mud to Music: Making and Enjoying Ceramic Musical Instruments*. Westerville, Ohio: American Ceramic Society, 2015.

Hopkin, Bart. *Musical Instrument Design: Practical Information for Instrument Making*. Tucson, Ariz.: See Sharp Press, 1996.

Hopkin, Bart, and Sudhu Tewari, eds. *Sound Inventions: Selected Articles from Experimental Musical Instruments*. New York: Focal Press, 2021.

Hopkin, Bart, Richard Selman, and Experimental Musical Instruments (Organization). *Making Lamellaphones : Instruments of the Mbira & Kalimba Families, and Contemporary Variants*. San Anselmo, California: Experimental Musical Instruments, 2016.

Experimental Musical Instruments
https://archive.org/details/emi_archive/0-START-HERE/

Patteson, Thomas. *Instruments for New Music: Sound, Technology, and Modernism*. Oakland, California: University of California Press, 2016.

Pollens, Stewart. *The Manual of Musical Instrument Conservation*. Cambridge, United Kingdom: Cambridge University Press, 2015.

Rossing, Thomas D. *Science of Percussion Instruments*. Singapore: World Scientific, 2000.

Schaeffner, André. *The Origin of Musical Instruments: an Ethnological Introduction to the History of Instrumental Music*. Edited by Rachelle Taylor. Abingdon, Oxon: Routledge, 2020.

Siminoff, Roger H. *The Luthier's Handbook: a Guide to Building Great Tone in Acoustic Stringed Instruments*. Milwaukee, WI: Hal Leonard Corp., 2002.

Interval. San Diego, Calif.: [s.n.], 1978.

Verrando, Giovanni. *New Lutherie: Orchestration, Grammar, Aesthetics*. Milan: Edizioni Suvini Zerboni, 2014.

Wyschnegradsky, Ivan. *Manual of Quarter-Tone Harmony*. Brooklyn, NY: Underwolf Editions, 2017.

Xi, Qiang, Maoru Qiu, and Jiandang Niu. *Chinese Music and Musical Instruments*. New York, NY: Better Link Press, 2011.

Groups of Interest

Field recording Facebook group—<https://www.facebook.com/groups/field.recording/>
Bash the Trash instrument building resource—<https://www.bashthetrash.com/instruments>
World Forum on Acoustic Ecology—<https://www.wfae.net/contact.html>
Robot Orchestra in Ghent—<https://www.logosfoundation.org/sponsors.html>
Guthman Musical Instrument Competition—<https://guthman.gatech.edu/>
Music Hack Space, a forum for musical innovators—<https://musichackspace.org/>
Hackoustic, a forum for sound tinkerers—<https://hackoustic.org/>
GA Tech musical instrument research program—<https://music.gatech.edu/research>
Bela, the platform of choice for electro-acoustic instrument designers—<https://bela.io/>
Imaginary Instruments (i.e., those that have yet to be built)—<http://imaginaryinstruments.org/>

Land Acknowledgement

Cornell University is located on the traditional homelands of the Gayogohó:nq' (the Cayuga Nation). The Gayogohó:nq' are members of the Haudenosaunee Confederacy, an alliance of six sovereign Nations with a historic and contemporary presence on this land. The Confederacy precedes the establishment of Cornell University, New York state, and the United States of America. We acknowledge the painful history of Gayogohó:nq' dispossession, and honor the ongoing connection of Gayogohó:nq' people, past and present, to these lands and waters.

Students with Disabilities

Your access to this course is important to us. Please request your accommodation letter early in the semester, or as soon as you become registered with SDS, so that we have adequate time to arrange your approved academic accommodations.

- Once SDS approves your accommodation letter, it will be emailed to both you and the course instructors. It is your responsibility to also email your accommodation letter to Jamie

Slater (jla59). Please follow up with us to discuss the necessary logistics of your accommodations.

- If you are approved for exam accommodations, please consult with at least two weeks before the scheduled exam date to confirm the testing arrangements.
- If you experience any access barriers in this course, such as with printed content, graphics, online materials, or any communication barriers; reach out to me or SDS right away.
- If you need immediate accommodation, please speak with us after class or send an email message to us and SDS at sds_cu@cornell.edu.

If you have, or think you may have a disability, please contact Student Disability Services for a confidential discussion: sds_cu@cornell.edu, 607-254-4545, sds.cornell.edu.