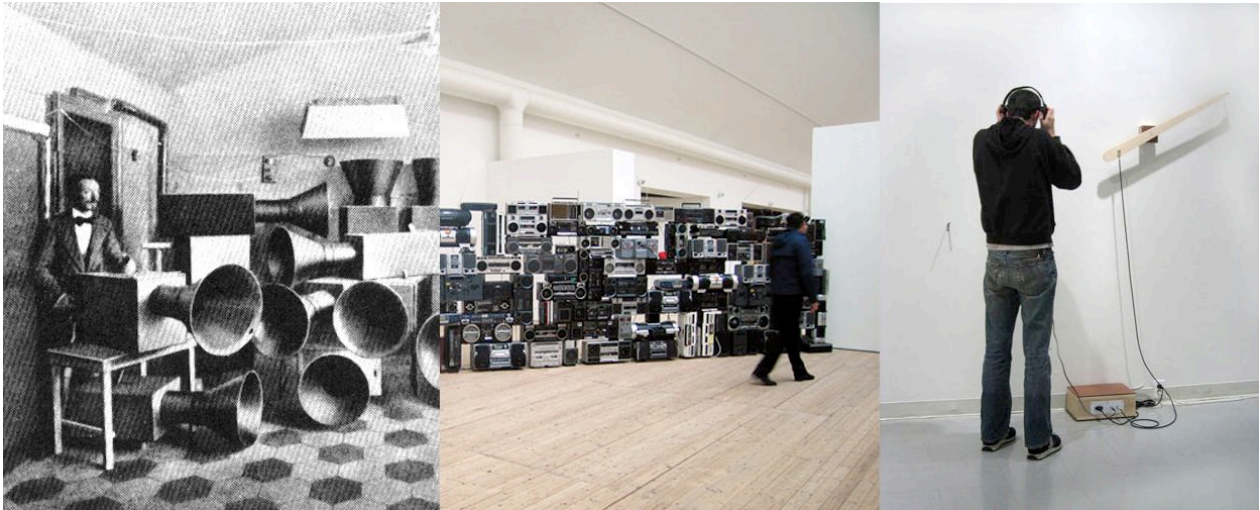


Sound Installation

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Course description

During this four-week class students will learn the basics of electronics with an emphasis on sensors and sound while at the same time collaboratively developing a massive sound installation in the 3rd Ward gallery. The course will culminate in a full-blown opening.

The course will be divided into two halves:

1. Practical technical information about sensors and electronics for artists and musicians (in other words, minimize the math!). Students will learn how to safely create elements needed for interactive sound installations, sensors for live performance, and other useful tools.
2. Real collaboration between members of the class and the instructor. While some elements will be predefined, the goal is a meaningful collaboration. It is expected that students will arrive with some ideas but, more importantly, a desire to take risks with their work and venture into new territory.

In addition, a gathering and sharing of technical, historical, and conceptual information will give everyone a lasting resource to take away. Between class meetings, students will be asked to put together lists of artists and musicians, technical resources, and useful links to be compiled online.

Methodology

It is my sincere hope that this short workshop will result in meaningful collaboration between strangers. On one hand the fact that we do not know each other or each other's work can be a liability to overcome. My role as the instructor is to facilitate and direct the project and discussion to be most beneficial. On the other hand, though, the fact that we are forced to work together in such a short period of time means that we can take risks and try weird and interesting possibilities that might otherwise be edited by the impulse to filter ideas.

Course website

A course website, which will include this syllabus as well as shared technical information and documentation of the finished project can be found at:

www.jeffreythompson.org/sound-installation

Materials and tools

Your course materials fee is intended to cover the purchase of materials for the installation. Depending on the decisions we make as a class, additional materials may need to be purchased which will be the responsibility of the students. All efforts will be made to keep within the budget and to use found/scrounged materials when possible. You are also welcome to lend materials to the project, which can be reclaimed after the show.

We will have full access to 3rd Ward hand and power tools if needed (pliers, drills, etc) and limited access to the wood and metal shop. We have a very limited selection of tools for electronics so if you have a soldering iron, wire strippers, etc bringing them to class will be a great help.

If you have and use a laptop regularly, it may be useful to bring it to class for research, editing sound files, etc.

Course outline

| | |
|------------------|--|
| Week 1 02.09 | Introductions, hand out syllabus, acoustic and electric sound generation, begin planning project Assignment: diagrams, drawings, plans, sketches, recordings, gather parts, etc |
| Week 2 02.16 | Sensor design and interface, project-planning discussion, artist presentations, begin work on project |
| Week 3 02.23 | Sound distribution and alternative sound sources, project-planning discussion, artist presentations, continue work on project |
| Week 4 03.02 | Finish/install project, artist presentations as needed, documentation, final discussion |
| Opening 03.06 | Party party |
| Deinstall | Date TBD |

Installation parameters, beginnings

We have full access to the 3rd Ward gallery starting on the third week to begin installation. Other than the parameters of civility towards the people that work here (we don't want to be blasting the front desk folks all day) the resulting project is quite open.

I am recommending that we begin with one of the themes/ideas listed below. This will save us from having to come to a consensus about where to start and allow us a common point to work from. That said I'm certainly willing to (and hope that we will) change or morph the premise to suit everyone's particular interests.

- + Place as other place, simultaneously two or more places or locations, convergence of site
- + Sound made physically manifest, sonified objects, sound making objects/images
- + Huge interactive instrument designed to make a variety of sounds and played by the viewer
- + Impossible sounds, amplifying the small, systems of generating sound out of objects and spaces

Recommended reading

Certainly not required, and there are so many others

“Building Electric Guitars” by Martin Koch

The best of many books on building electric guitars, focus on using hand and small power tools

“The Complete Manual of Woodworking” by Albert Jackson, David Day, and Simon Jennings

A very thorough (though not all useable) book on woodworking, mostly hand tools

“Pocket Reference” by Thomas J. Glover

A really great, very compact book with information on (basically) everything

“Complete Metalsmith, Pro. Ed.” by Tim McCreight

Not so much a welding guide, but tons of information on casting, bending, etc

“Circuit-Bending” by Reed Ghazala

Written by the pioneer of hacking toys (and really any electronic device that makes sound) and creating “alien” instruments.

“Noise Water Meat” by Douglas Kahn

A bit theory-heavy, but overall an amazing historical, technical, and theoretical introduction to avant-garde music up until 1970-ish.

“Musical Instruments of the World” published by Facts on File

Detailed drawings of hundreds of instruments, and some great diagrams (included in this syllabus)

The Met also has a great section devoted to musical instruments from all around the world.

Also, the Steinway piano factory (in Astoria) offers free tours of their amazing factory every week. We can schedule a class visit if there is interest.

Music/sound related websites that may be interesting/helpful

Instructables.com

User-created instructions on all sorts of projects (perfect if you need to build a potato gun or a gravy fountain).

Tinfoil.com

Early wax cylinder recordings, all streaming and downloadable.

American Mavericks

An NPR series about American avant-garde composers.

Windworld.com

The address of this site is misleading – the site is actually dedicated to the building of experimental instruments. Lots of good information including fret and windhole calculators and a section of suppliers of weird materials like bone.

www.ehhs.cmich.edu/~dhavlerna/

The personal website of Dennis Halvena, with instructions on how to make a variety of traditional instruments such as tin whistles and the hurdy gurdy.

Oddmusic.com

A gallery of odd, one-off instruments.

Anti-theory.com

Reed Ghazala’s (the godfather of circuit-bending) website with history and some instructions.

Makezine.com

Really cool magazine, really cool website (and an especially good blog); often has music projects

Electronics

Surprisingly, NYC is completely dry when it comes to electronics components. Here are a few online recommendations:

| | |
|-----------------|---|
| Mouser, Digikey | Huge parts suppliers, easier when you know exactly what you want |
| Robot Store | Basic electronics parts, gear motors, servos, and other robot stuff |
| SparkFun | Sensors, Arduinos, and other cool stuff; also some good tutorials |

NYC lumberyards

Rosenzweig Lumber 718-585-8050 - in the Bronx so not too convenient to stop by, but they carry a wide selection and are very helpful. They also have a website.

If for some reason Rosenzweig does not work out, I recommend:

Tulnoy Lumber Carries oak, mahogany, teak, cherry, maple, birch, walnut and some exotic hardwoods as well as a full selection of plywood – often out-of-stock on hardwood

LeNoble Lumber Pretty good selection, a little pricey but very friendly, in LIC; they mostly sell lumber that has been surfaced prepped, meaning you will have to spend less time at the planer/joiner

Many custom molding places will sell you wood, it's worth a try if it's right down the street.

Software

A huge category, but here are a few recommendations (many free or nearly free)

| | |
|----------------|---|
| Max/MSP/Jitter | Made by Cycling 74, graphical programming language for real-time audio/video |
| Pure Data (PD) | Free, open-source version of Max/MSP |
| Processing | Also free, open-source programming environment for visuals, based on Java |
| Arduino | Software (free) for the hardware (~ \$40), easy to learn, based on Processing |
| Audacity | Free multi-track audio editing – a little awkward but fully functional |
| GarageBand | I love this software; multi-track and MIDI, lots of good effects, nearly free |

Other vendors

| | |
|--------------------|---|
| Stewart MacDonald | Most of the guitar parts for this class were bought here, great selection |
| Home Depot / Lowes | Decent selection of softwood, some hardwood, hardware and tools |
| Pratt Art Supply | A little closer than Pearl, some sculpture/architectural supplies |
| Mcmaster.com | An amazing online hardware store, any nut or bolt you could ever want |
| Canal Plastics | Great selection of plastic sheets, rods, and weirdly-shaped pieces |
| Rockler.com | Online catalog of general woodworking tools and lots of hardware |
| Woodcraft.com | Similar to Rockler, with lots of tools |

If there's something else in particular you want to find, please ask. If you know a resource, please share and we'll add it to the list online!