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## Dissonance Future

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Dissonance Future

Senior Project Submitted to  
The Division of the Arts  
of Bard College

by  
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Annandale-on-Hudson, New York  
May 2023



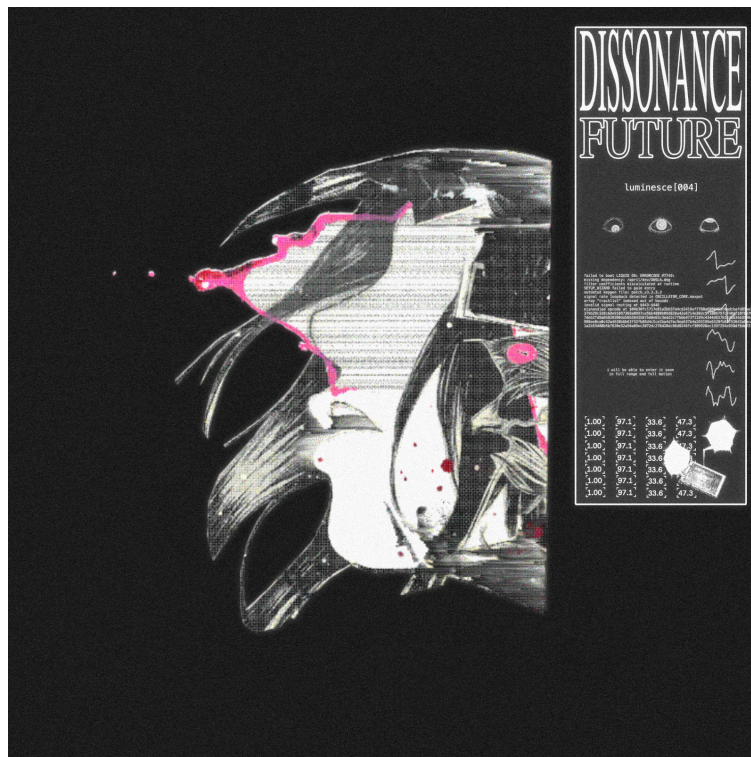
## The Album

My first semester project is an album of experimental electronic dance music titled *DISSONANCE FUTURE*. I began the album in September, but I continued to work on it into the second semester. It has nine tracks, which I wrote and produced in Ableton Live. The aesthetic goal of the project was to blend many forms of electronic dance music, pulling the musical language of many subgenres throughout the history of the medium. Each track is a fusion of at least two distinct styles of dance music, often from very different periods. “HYPERdisk” blends techno and contemporary dubstep with classic frenetic layered rave synths. “2fold\*” is a mix of melodic dubstep and UK garage, with early 2010s chopped vocals. I was inspired by contemporary leftfield bass artists like MUST DIE!, ISOxo, and Tsuruda, as well as classic OWSLA releases like Moody Good. In particular, MUST DIE!’s album *CRISIS VISION* provided the inspiration for the earliest stages of songwriting, and I named the album *DISSONANCE FUTURE* partially as a nod to that record.

The general aesthetic is retro-futurist, pulling from early conceptions of the internet and the melding of technology with personal identity. The opening track, “Liquid OS” features a spoken vocal sample from *Serial Experiments Lain*, a 1998 anime series about a girl who fuses herself into an alternative conception of the internet from her small bedroom filled with server racks and tube monitors.

Aside from a few samples like this, the majority of the album is entirely electronic, with a mixture of sounds I made on a hardware modular system, or in software synths like Phase Plant. Most of the sonic language of the record comes from aggressive mixing and DSP techniques—routing several elements together into a hard distortion, ducking synths against kick drums, extreme multiband compression and limiting, etc. For example, the lead kick/bass sound

from “KEYGEN” is a looped kick drum from the modular system layered with two textural noise layers, each of which is distorted individually before they are driven together into three different distortions and a multiband compressor. The rest of the elements are layered in (percussion, secondary bass layers, and spatial effects) and the whole mix is driven into two more distortions and a hard limiter. The drop synths from “HYPERdisk” are samples from Noise Engineering’s Basimilus Iteritas, processed with aggressive phase delays. Most of the drum sounds on the record get their punch from extreme parallel compression (i.e. the drum breaks from “Liquid OS” and “\$FFFF”).



*Cover Art: DISSONANCE FUTURE*

The cover art (above) was a collaboration with my partner July Bushee. The central image is from a collage they made with old manga illustrations and screentone sheets. I processed the image with some dithering and pixel sorting, and added the banner in the corner with the album title and some fake terminal error messages.

## The Synthesizer

My second semester project is a software synthesizer. It's a Max For Live device—a piece of music software written in Max/MSP which appears as a native device in Ableton Live. Max/MSP is a visual programming environment for audio software, in which programs are assembled from a collection of small objects which each do a single function (adding numbers together, generating a sine wave, routing signals, etc). I chose Max For Live because the visual workflow is extremely fast to use and easy to debug, and the native integration with Ableton Live lets me immediately use the software in my songwriting as I'm creating it.

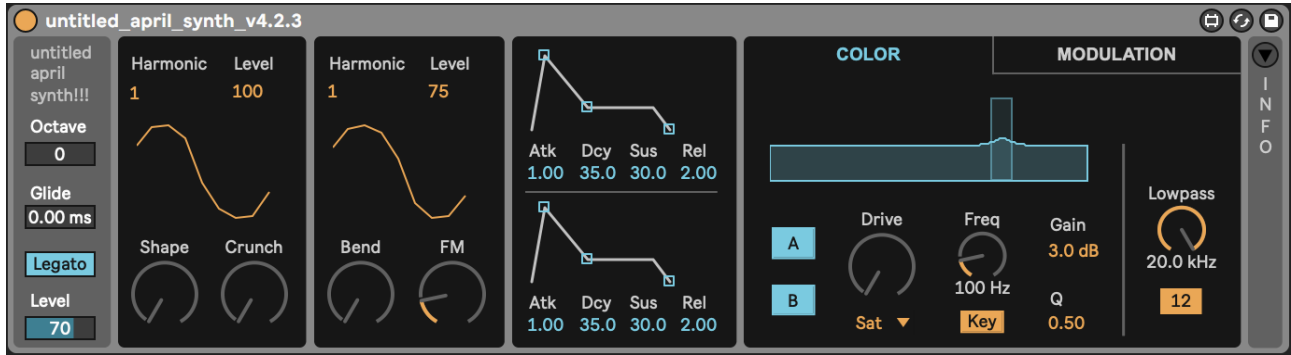
The synth is monophonic, and primarily geared toward dense, harmonically rich timbres. It's based on a pair of oscillators, which each have a pair of controls for manipulating their waveforms. Oscillator A's Shape control sweeps through various blends of triangle and saw waves, and the Crunch control introduces odd harmonics through phase distortion. Oscillator B's Bend control bends a sine wave to a triangle and then a saw wave before fading to a square wave. The FM control introduces frequency modulation from Oscillator A. The Crunch and FM controls get extreme very quickly, and combining the two can create sounds that don't track pitch across the keys in the way you would expect.

The oscillators can be routed through a combination of an EQ and a distortion to bring out more harmonics. The EQ is a single bell filter which can boost or cut the signal at a given frequency, and which can track the keyboard so that it affects the same part of the sound relative to whatever pitch is played. The EQ is followed by a distortion with a single Drive control. Routing the EQ first allows the signal to be pushed into the distortion in different ways, creating drastically different timbres. The distortion has three modes: simple saturation, sinusoidal waveshaping, and wavefolding.

The final part of the signal chain is a non-resonant lowpass filter, which can be set to either 6 or 12 decibels per octave. All audio passes through this filter before the output.

A pair of ADSR envelopes can be used to modulate several parameters of the synth. Either envelope, or the maximum of the two, can be used to affect the parameters of the two oscillators and the EQ/distortion. Rather than a traditional modulation matrix, which would allow routing of each modulation source to each destination in individual amounts, I opted for a more limited approach. Each section of the audio path (OSC A, OSC B, and EQ/distortion) can have one modulation source selected (ENV 1, ENV2, or MAX), and that source can be sent to each of the timbral parameters in varying amounts. For example, oscillator B's Bend and FM parameters can be modulated by different amounts (or not at all), but they will always share the same modulation source. The levels of the oscillators share this same switching function, but with a fourth option: In "Split" mode, the level of each oscillator is controlled by whichever source is modulating its timbral parameters. This allows each oscillator to have a different volume curve, while introducing another interesting limitation.

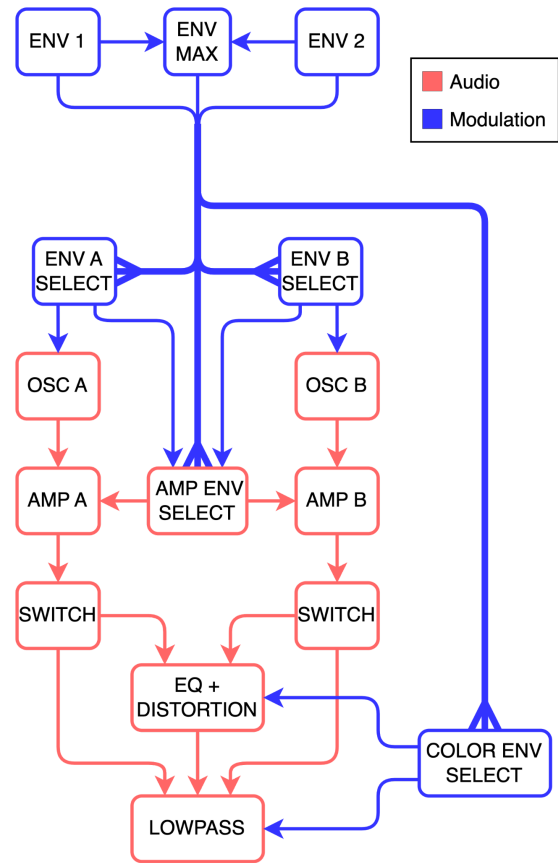
I chose this approach as opposed to a modulation matrix because I think it imposes the "good" kind of limitations—the kind which push the user to make choices they wouldn't otherwise make, leading to surprising sounds. This design philosophy extends to the rest of the synth as well. In development I experimented with adding more timbral parameters to the oscillators, allowing FM to be applied in either direction, finer control over the tone of the distortion, etc. But limiting all these factors to just the vital elements made the synth more intuitive to use and inspiring to work with. An extremely flexible and customisable synth is great, but my goal with this project wasn't to recreate something like Phase Plant. It was to make an inspiring, spontaneous synthesizer with a distinct sound and a simple interface.



User interface



User interface (modulation tab)



Internal signal path



## Acknowledgements

“Liquid OS” contains a spoken word sample from *The Matrix Reloaded* (2003), and a spoken word sample from *Serial Experiments Lain* (1998). Both appear at approximately 3:10.

“UPLOAD” contains a heavily processed sample from What So Not’s remix of “Innerbloom” by Rüfüs Du Sol. It appears as a layer in the chord texture in the opening section.

“Dirt Physics” contains a collection of samples recorded by my classmates from Matt Sargent’s class “The Recording Studio as a Compositional Tool.”

All other sounds were either sourced from royalty free sample packs or synthesized from scratch.

Thank you to Matt Sargent and Sarah Hennies for pushing me aesthetically, and for helping me craft the flow of the album.

Thank you to July Bushee for help with the cover art, and for sharing the excitement with me <3