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The Development and Impact of VariKeys

For my research project I decided to design and build a circuit that would allow control over certain parameters of my modular synth. I built this synth in the summer of 2024, with schematics and PCBs supplied by various community members in the DIY synth scene on the website [Modwiggler](#). The modular synth community is largely open source, which promotes beginners taking the first step into DIY and developing an understanding of basic circuitry. I was able to obtain the schematics of Serge Tcherepnin's Touch Keyboard (TKB), which is a cult classic in interfaces for modular synths. My main goal was to understand these schematics best I could, and create something similar, but without the pressure sensitive pads of the TKB. My design (the VariKeys) contains seven adjustable voltage dividers that output a specified voltage when an associated button is pressed. An additional trigger output accompanies the voltage outs, which sends a quick "on" signal when any button is pressed. With these seven adjustable voltages, I can play my synthesizer with new temperaments, Western modes or non linear scales.

Nello Barile wrote in "Brand, Selfbranding, Making: The Neototalitarian Relation Between Spectacle and Prosumers in the Age of Cognitive Capitalism" that "...the overlap and integration between the virtual and the real in the so-called end of digital dualism by the Internet of Things (IOT) and other DIY devices such as Arduino, could create a new alliance between physical objects and their symbolic meanings." (53). Unpacking this quote, Barile was implying that with the surrounding source of materials found on the internet combined with affordable

DIY technology like Arduino, consumers could easily become prosumers. On top of this connection, Barile also states that due to the act of shifting to prosumers, consumers thus attain an association to the product they both produce and consume (in the case of DIY synthesis, prosumers build and play). I have been interested in the strong connections instruments builders have to their instrument for awhile now, this quote exactly sums up my fascination. Through the long process of building, and possibly programming an instrument, the builder gains a highly intricate familiarity with the instrument, thus furthering the possibilities of self expression with it. Much like in the building and owning of a home, every crevice of the home is known by who builds it, and when the time comes to repair it, the builder returns to nails they have hammered before, and glue they have watched dry in the past.

I experienced a rather intricate connection to the circuitry I built to compliment my synthesizer. I felt a very heavy weight when pressing a button on the device, as it would often hold not only a new pitch for the improvisation I was performing, but the voltage was often routed to affect the sounding timbre as well. I attribute this connection to the fact that the button I pressed would enable a pitch I adjusted, that was produced by a circuit I designed and built, and sent to a synthesizer I built. By having everything in the ecosystem of sound and signal being built by myself, I felt there was no influence on what is right or wrong. Everything happening in that moment was dictated by myself, and was a product of my being. I felt a connection to the founders of electronic music, Suzanne Ciani, Pauline Oliveros, Eliane Radigue, and others. Ciani said in the film *Sisters With Transistors*, "In electronics, you're not dealing so literally with the architecture of notes or harmonies, those building blocks in classical music… you're dealing with energy.". While figures like Ciani and Oliveros used this raw energy to create an environment of non-judgemental composers as an opposition to male dominated Western music, I feel the

environment it brings for me is rid of the imperialistic nature of Western music. Growing up in the heavily militaristic nature of Texas marching bands, there was a specific way to play my instrument, and experimentation often came with punishment or ridicule. This expectation carried over to my study in composition, I was recommended to only enter classical composition contests, requests for comments on my writing were rejected when the use of technology was involved in its performance, and I was always expected to write for traditional ensembles. Following four years of this almost bureaucratic writing process, I graduated high school and moved on to study music in the north east. Now I am here, building instruments for performance of aleatoric pieces that can last well over an hour, a rather harsh juxtaposition. And so, not only is instrument creation a practice of handiwork, learning, and relationship building, but it is a way of rejecting being told how to write and perform music.

  I plan to further this project, granted the funds are adequate and time is of surplus. The original design plan for the circuit implementation specified that the buttons and adjustment knobs would be mounted on the top left corner of my synthesizer's case. This position would allow for the synthesizer to sit in my lap, with my left hand operating the buttons and right hand free to adjust parameters on the synthesizer. While I believe this arrangement would be beneficial to the seated performer, a guitar strap would be needed for standing (much like Chick Corea playing keytar in the 80s). I think I would rather create two handheld devices with the same concept. Adjustable voltages, activatable by the press of a button. Much like Pamela Z's gesture controllers, the performer could hold the two objects and control the sound being heard with their fingers. While some may believe making these devices wireless is an absolute must, I believe the consideration comes down to aesthetics. The image of long patch cables running from my hands to the synthesizer (perhaps backstage or on a table in front of me) is rather

interesting, and theatrical. I think my next stage of development for this project will be to create

two handheld controllers that are wired to the synthesizer, in an attempt to further emphasize the

interconnectivity pathos I wish to express in my practice.

Works Cited

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