

Me & My Rhythm Box

primusluta

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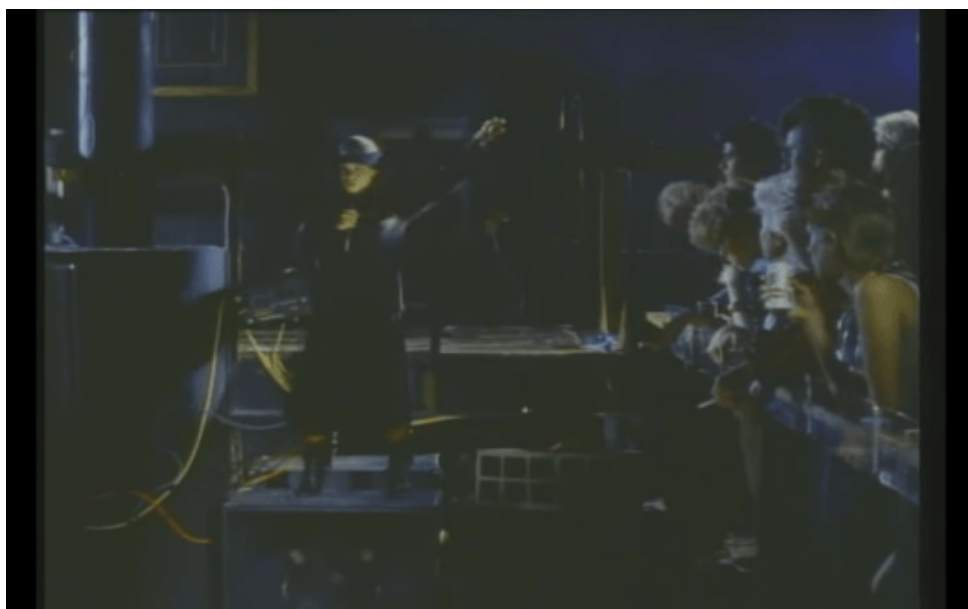
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Abstract

I'm fortunate to have quite a few friends with eclectic musical tastes, who continually expose me some of the best, albeit often obscure, sources for inspiration. They arrive as random selections sent with a simple "you'd appreciate this" note attached. Good friends that they are, they rarely miss the mark.

Keywords

Music (Subfield), Aesthetics, Article, Digital Media, EDM, Film/Movies/Cinema



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I'm fortunate to have quite a few friends with eclectic musical tastes, who continually expose me some of the best, albeit often obscure, sources for inspiration. They arrive as random selections sent with a simple "you'd appreciate this" note attached. Good friends that they are, they rarely miss the mark. Most intriguing is when a cluster of things from different people carry a similar theme, converging to a need on my part for some sort of musical action.

The Inspiration

A few years back I received a huge dump of gigabytes of audio and video. Within it were some concert footage and performances this friend and I had been discussing; I consumed those quickly in an effort to keep that conversation going. Tucked amidst that dump however, was a copy of the movie *Liquid Sky*. I asked the friend about it because the description of the plot—"heroin-pushing aliens invade 80's New York"—led me to believe it wasn't really my thing (not a big fan of needles). Although my friend insisted I'd enjoy it, it took me several months if not a whole year before I finally pressed play.



<https://youtu.be/S9-n9gpFVpk>

Even though *Liquid Sky* was not my favorite movie by any measure, it was immediately apparent to my ears why my friend insisted I check it out. The film's score was performed completely on a [Fairlight CMI](#), capturing the synthesized undercurrent of the early 80's New York music scene, more popularly seen in the cult classic [Downtown 81](#), starring Jean Michel Basquiat. While the performances in that movie are perhaps closer to my tastes, none of them compare to one scene from *Liquid Sky* that I fell in love with, instantly:

https://youtu.be/Q_9YevapaPU

The song grabbed me so much, I quickly churned out a cover version.

<https://soundstudiesblog.com/wp-content/uploads/2016/08/mnm.mp3>

Primus Luta “Me & My Rhythm Box (V1)”

While felt good to make, there remained something less than satisfying about it. The cover had captured my sound, but at a moment of transition. More specifically, the means by which I was trying to achieve my sound at the time had shifted from a DAW-in-the-box aesthetic to a live performance feel, one that I had already begun writing about [here on Sounding Out! in 2013](#). Interestingly, the inspiration to cover the song pushed me back to my in-the-box comfort zone.

It was good, but I knew I could do more.

As I said, these inspirations tend to group around a theme. Prior to receiving the *Liquid Sky* dump, I had received an email out of the blue from [Hank Shocklee](#), producer and member of [the Bomb Squad](#). I’ve been a longtime fan, and we had the opportunity to meet a few years prior. Since then he’s played a bit of a mentoring role for me. In the email he asked if I wanted to join an experimental electronic jazz project he was pulling together as the drummer.

I was taken aback. [Hank Shocklee asking me to be his drummer](#). Honestly, I was shook.

Not that I didn’t know why he might think to ask me, but immediately I started to question whether I was good enough. Rather than dwell on those feelings, though, I started stepping up my game. While the project itself never came to fruition, Shocklee’s email led me to building my drmcrrshr set of digital instruments.



A year or so later, I ran into Shocklee again when he was in Philadelphia for [King Britt's Afrofuturism event](#) with mutual friend artist [HPrizm](#). By this

time I had already recorded the “Me and My Rhythm Box” cover. Serendipitously, HPrizm ended up dropping a sample from it in the midst of his set that night. A month or so later, HPrizm and I met up in the studio with longtime collaborator [Takuma Kanaiwa](#) to record a live set on which I played my drmcrrshr instruments.

<https://soundstudiesblog.com/wp-content/uploads/2016/08/hptkpl.mp3>

Primus Luta x HPrizm x Takuma Kanaiwa – “Excerpt”

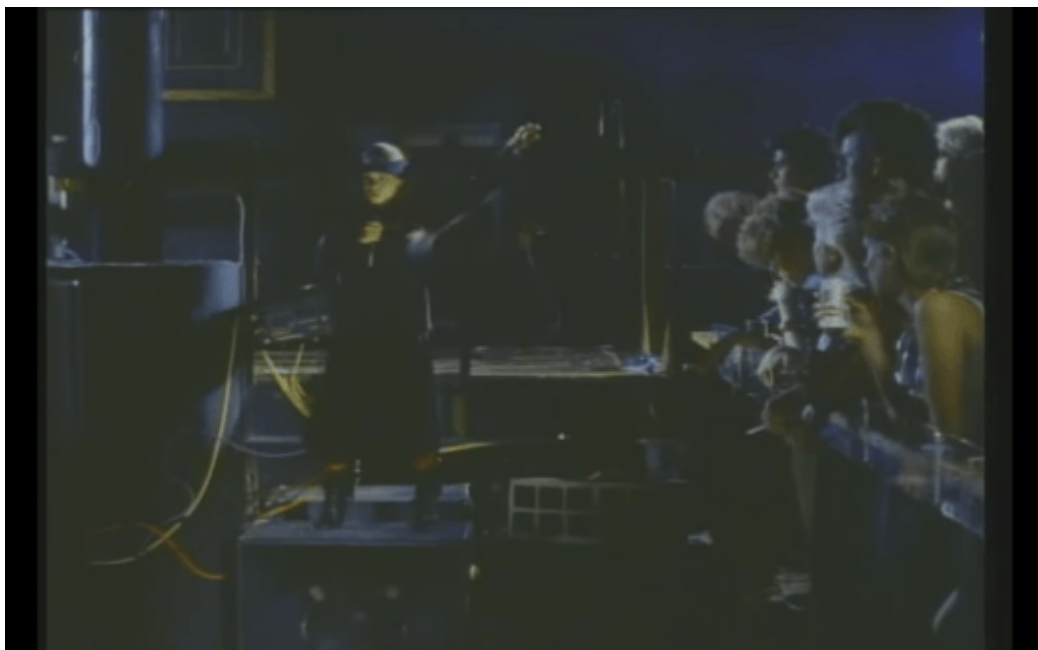
Not too long after, I received an email from NYC-based electronic musician [Elucid](#), saying he was digging for samples on this awesome soundtrack. . .*Liquid Sky*.

The final convergence point had been hanging over my head for a while. Having finished the first part of my “[Toward a Practical Language series on Live Performance](#)” series, I knew I wanted the next part to focus on electronic instruments, but wasn’t yet sure how to approach it. I had an inkling about a practicum on the actual design and development of an electronic instrument, but I didn’t yet have a project in mind.

As all of these things, people, and sounds came together—*Liquid Sky*, Shocklee, HPrizm, Elucid—it became clear that I needed to build a rhythm box.

The History

What stands out in Paula Sheppard’s performance from *Liquid Sky* is the visual itself. She stands in the warehouse performance space surrounded by 80’s scenesters posing with one hand in the air, mic in the other while strapped to her side is her rhythm box, the Roland CR-78, wires dangling from it to connect to the venue’s sound system. She hits play to start the beat launching into the ode for the rhythm machine.



Contextually, it's far more performance art than music performance. There isn't much evidence from the clip that the CR-78 is any more than a prop, as the synthesizer lines indicate the use of a backing track. The commentary in the lyrics however, hone in on an intent to present the rhythm box as the perfect musical companion, reminiscent of comments [Raymond Scott](#) often made about his desire to make a machine to replace musicians.

My rhythm box is sweet

Never forgets a beat

It does its rule

Do you want to know why?

It is pre-programmed

Rhythm machines such as the CR-78 were originally designed as accompaniment machines, specifically for organ players. They came pre-programmed with a number of traditional rhythm patterns—the standards being rock, swing, waltz and samba—though the CR-78 had many more variations. Such machines were not designed to be instruments themselves, rather musicians would play other instruments *to* them.

CR-78 COMPURHYTHM **Deluxe rhythm with 64 presets and a programmable microcomputer to create your own beats.**

With the exciting new CR-78, you're only limited by your own imagination. This dramatically different rhythm machine has its own programmable micro-computer which lets you memorize any rhythm you arrange for recall at the touch of a button. In addition, you have 34 different preset rhythms, including 16 for rock and disco. And if this wasn't enough, it has a system of fast operating controls providing 11 different variations, fade-in, fade-out, tempo, accent, and 14 different instrument voices. Other features include trigger out for synchronizing synthesizers or sequencers, remote control, and a handsome wood cabinet.

- Rhythms: Rock 1 A/B, Rock 2 A/B, Rock 3 A/B, Rock 4 A/B, Rock 5 A/B, Rock 6 A/B, Disco 1 A/B, Disco 2 A/B, Bossanova A/B, Samba A/B, Mambo, Chacha, Beguine, Rhumba, Waltz A/B, Shuffle A/B, Slow Rock A/B, Swing A/B, Fox Trot, Tango, Control Rhythm A/B
- Voices: Bass Drum, Snare Drum, Rim Shot, Hi-hat, Cymbal, Maracas, Claves, Cow Bell, High Bongo, Low Bongo, Low Conga, Metal Beat, Tambourine, Guiro
- Dimensions: 300(W) × 205(H) × 265(D)mm (11.8" × 8.1" × 10.4")
- Weight: 4.8kg (10.6 lbs.)
- Cabinet Finish: Printed Plywood Finish
- Accessory: Connection Cord (2.5m with pin-plug adaptor), Memory Write Switch (TS-1)



WS-1
SWITCH
FOR CR-78



In 1978 when the CR-78 was introduced, rhythm machines were becoming quite sophisticated. The CR-78 included automatic fills that could be set to play at set intervals, providing natural breaks for songs. As with a few other machines, selecting multiple rhythms could combine patterns into new rhythms. The CR-78 also had mute buttons and a small mixer, which allowed slight

customization of patterns, but what truly set the CR-78 apart was the fact that users could program their own patterns and even save them.



TR-808 (top) and TR-909

By the time it appeared in *Liquid Sky*, the CR-78 had already been succeeded by other CR lines culminating in the CR-8000. Roland also had the TR series including the TR-808 and the TR-909, which was released in 1982, the same year *Liquid Sky* premiered.

In 1980 however, [Roger Linn's LM-1](#) premiered. What distinguished the LM-1 from other drum machines was that it used drum samples—rather than analog sounds—giving it more “real” sounding drum rhythms (for the time). The LM-1 and its predecessor, [the Linn Drum](#) both had individual drum triggers for its sounds that could be programmed into user sequences or played live. These features in particular marked the shift from rhythm machines to drum machines.

In the post-MIDI decades since, we’ve come to think less and less about rhythm machines. With the rise of in-the-box virtual instruments, the idea of drum programming limitations (such as those found on most rhythm machines) seems absurd or arcane to modern tastes. People love the sounds of these older machines, evidenced by the tons of analog drum samples and virtual and hardware clones/remakes on the market, but they want the level of control modern technologies have grown them accustomed to.

<https://vimeo.com/177695521>

Controlling the Roland CR-5000 from an Akai MPC-1000 using a custom built converter

The general assumption is that rhythm machines aren't traditionally playable, and considering how outdated their rhythms tend to seem, lacking in the modern sensibility. My challenge thus, became clearer: I sought out to build a rhythm machine that would challenge this notion, while retaining the spirit of the traditional rhythm box.

Challenges and Limitations

At the outset, I wanted to base my rhythm machine on analog circuitry. I had previously built a number of digital drum machines—both sample and synthesis-based—for my [Heads collection](#). Working in the analog arena allowed me to approach the design of my instrument in a way that respected the limitations my rhythm machine predecessors worked with and around.

By this time I had spent a couple of years mentoring with [Jeff Blenkinsopp](#) at [The Analog Lab](#) in New York, a place devoted to helping people from all over the world [gain “further understanding the inner workings of their musical equipment.”](#) I had already designed a rather complex analog signal processor, so I felt comfortable in the format. However, I hadn't truly honed my skills around instrument design. In many ways, I wanted this project to be the testing ground for my own ability to create instruments, but prior experience taught me that going into such a complex project without the proper skills would be self defeating. Even more, my true goal was centered more around functionality rather than details like circuit board designs for individual sounds.

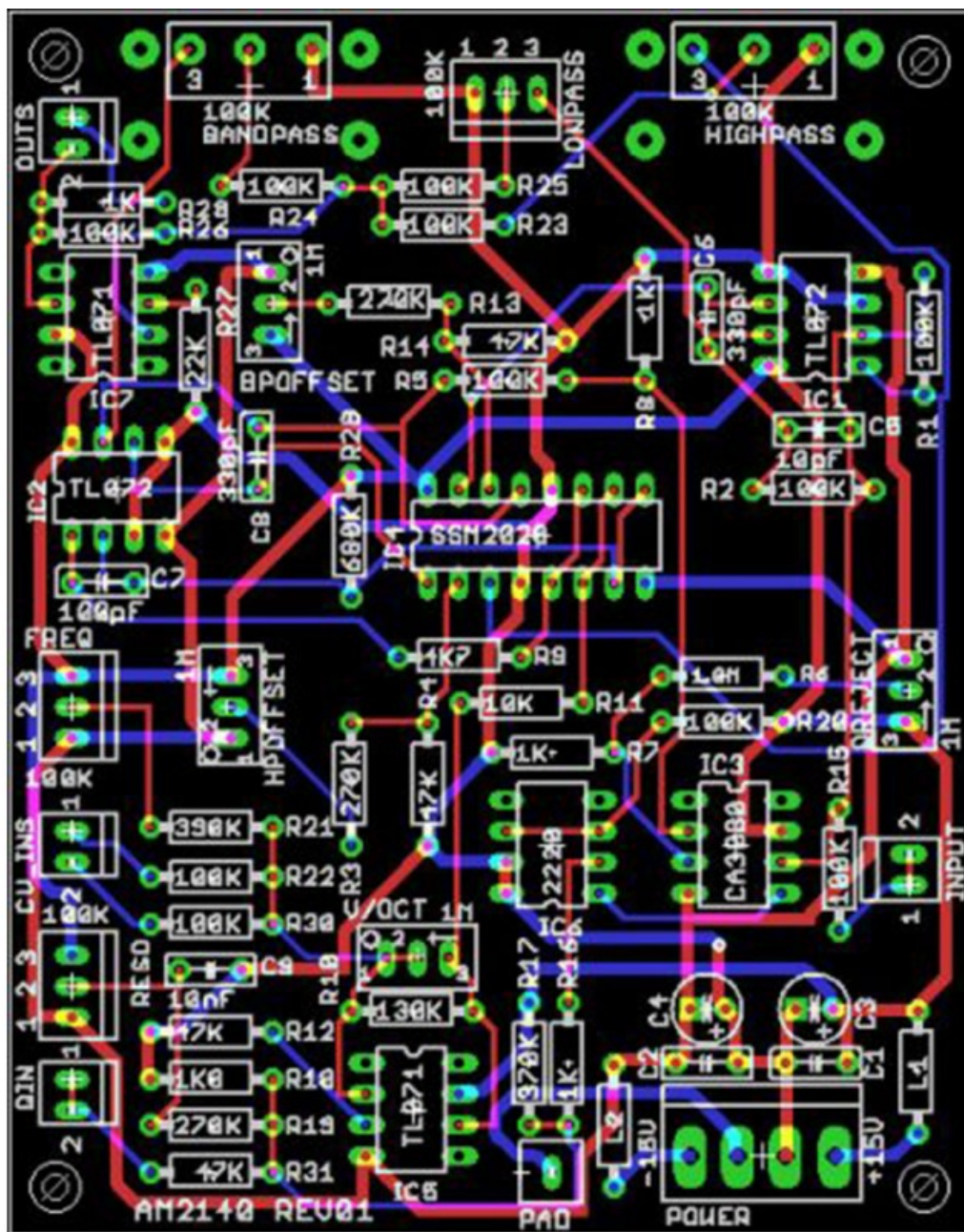
To avoid those rabbit holes—at least temporarily, I've since gone full circuit design on my analog sound projects—I chose to use DIY designs from the modular synth community as the basis for my rhythm box. That said, I limited myself to designs that featured analog sound sources, and only allowed myself to use designs that were available as PCB only. I would source all my own parts, solder all of my boards and configure them into the rhythm machine of my dreams.

Features

The wonderful thing about the modular synth community is that there is a lot of stuff out there. The difficult thing about the modular synth community is that there's a lot of stuff out there. If you've got enough rack space, you can pretty much put together a modular that will perform whatever functionality you want. How modules patch together fundamentally defines your instrument, making module selection the most essential process. I was aiming to build a more semi-modular configuration, forgoing the patch cables, but that didn't make my selection any easier. I wanted to have three sound sources (nominally: kick, snare and hi-hat), a sequencer and some sort of filter, which would all flow into a simple monophonic mixer design of my own.

For the sounds I chose a simple [kick module from Barton](#), and the [Jupiter Storm unit from Hex Inverter](#). The sound of the kick module was rooted enough in the classic analog sound while offering enough modulation points to make it mutable. The triple square wave design of the Jupiter Storm really excited me as it had the range to pull off hi-hat and snare sounds in addition to other percussive and drone sounds, plus it featured two outputs giving me all three of my voices on in two pcb sets.

Filters are often considered the heart of a modular set up, as the way they shape the sound tends to define its character. In choosing one for my rhythm machine the main thing I wanted was control over multiple frequency bands. Because there would be three different sound sources I needed to be able to tailor the filter for a wide spectrum of sounds. As such I chose the AM2140 Resonant Filter.



The AMS2140 PCB layout, based on the classic eMu filter

I had no plans to include triggers for the sounds on my rhythm machine so the sequencer was going to be the heart of the performance as it would be responsible for any and all triggering of sounds. Needing to control three sounds simultaneously without any stored memory was quite a tall order, but fortunately I found the perfect solution in the amazing [Turing Machine modules](#). With its expansion board the Turing machine can put out four different patterns based on it's

main pattern creator which can create fully random patterns or patterns that mutate as they progress.

The Results

I spent a couple of weeks after getting all the pcb's parts and hardware together, wiring and rewiring connections until I got comfortable with how all of these parts were interacting with each other. I was fortunate to happen upon a vintage White Instruments box, which formally housed an attenuation meter, that was perfect for my machine. After testing with cardboard I laid out my own faceplates, which and put everything in the box. As soon as I plugged it in and started playing, I knew I had succeeded.

<https://vimeo.com/177695536>

Early test of RIDM before it went in the Box

I call it the RIDM Box (Rhythmically Intelligent Drum Machine Box). I've been playing it now for over two years, to the point where today I would say it is my primary instrument. Almost immediately afterward I built a companion piece called the Snare Bender which works both as a standalone and as a controller for the RIDM Box. That one I did from scratch hand wired with no layouts.



My current live rig with the RIDM Box and the Snare Bender (on the right)

While this is by no means a standard approach to modern electronic instrument design (if a standard approach even exists), what I learned through the process is really the value of looking back. With so much of modern technology being future forward in its approach, the assumption is that we're at better starting positions for innovation than our predecessors. While we have so many more resources at our disposal, I think the limitations of the past were often more conducive to truly innovative approaches. By exploring those limitations with modern eyes a doorway opened up for me, the result of which is an instrument like no other, past or present.

I will probably continue playing the two of these instruments together for a while, but ultimately I'm leaning toward a new original design which takes the learnings from these projects and fully flushes out the performing instrument aspect of analog design. In the meantime, my process would not be complete if I did not return to the original inspiration. So I'll leave you with the RIDM Box version of "Me & My Rhythm Box"—available on my library sessions release for the instrument.



Primus Luta is a husband and father of three. He is a writer and an artist exploring the intersection of technology and art, and their philosophical implications.



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