



Radio Time Machine

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1 Context

I started my project by defining my triangle. "Time" was the concept/lecture in the series that I found the most interesting, for the two other corners I chose "Music" as my context and "Radio" as my medium. My inspiration to chose these was twofold. As the son of a professional musician music and radio has shaped me a lot during my childhood. The radio was one of my primary source of music listening and recording, making my own mixtapes on cassette tapes. Today my music library has grown to enormous size, spanning over ten thousands track from hundreds of artists, all of which is tagged very thoroughly using ID3-Tags¹. These include not only the standard name, artist and album, but also the exact date of release, or recording. This enables me to put

Artist	Title	Type	Date	Year	Genre	Album	...
Imari)	04:35 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul	2017	
	04:26 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
	03:51 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
	03:16 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
	04:32 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
	02:41 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
	03:28 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
	03:51 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
	02:29 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
Leroy)	01:15 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
	04:13 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
sd)	04:05 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
	03:18 SZA	Ctrl	4 2017 06 09	2017	R&B/Soul		
on & Kilo Kish)	03:17 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	03:18 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	02:38 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	02:58 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	03:47 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	00:51 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
Kucka)	03:08 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	02:53 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	02:54 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	02:58 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	02:40 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	04:41 Vince Staples	Big Fish Theory	1 2017 06 23	2017	Hip-Hop/Rap		
	02:12 Uncommon Nasa	Written At Night	4 2017 08 04	2017	Hip-Hop		
	03:25 Uncommon Nasa	Written At Night	3 2017 08 04	2017	Hip-Hop		
	03:48 Uncommon Nasa	Written At Night	3 2017 08 04	2017	Hip-Hop		
	03:58 Uncommon Nasa	Written At Night	3 2017 08 04	2017	Hip-Hop		
	05:27 Uncommon Nasa	Written At Night	2 2017 08 04	2017	Hip-Hop		
	04:13 Uncommon Nasa	Written At Night	2 2017 08 04	2017	Hip-Hop		
	03:48 Uncommon Nasa	Written At Night	2 2017 08 04	2017	Hip-Hop		
	04:17 Uncommon Nasa	Written At Night	2 2017 08 04	2017	Hip-Hop		
	04:32 Uncommon Nasa	Written At Night	2 2017 08 04	2017	Hip-Hop		
	03:41 Uncommon Nasa	Written At Night	2 2017 08 04	2017	Hip-Hop		
	04:22 Uncommon Nasa	Written At Night	2 2017 08 04	2017	Hip-Hop		
	04:21 BROCKHAMPTON	SATURATION 2	5 2017 08 25	2017	Hip-Hop/Rap		

Figure 1: A snippet of my music library and its tags

the music into a much accurate timeline. At the right side of the triangle, between music and radio, several modern music performance are situated, most importantly John Cage and Karlheinz Stockhausen, who composed several radio-powered compositions, making the radio not only a listening device, but a performance piece. Additionally I contrast the concept of "private music"², where the composition is focused on expressing some aspects of the composers' private life with the traditional concept of a musical performance i.e. "public music", performing pieces that were written, or improvised to share with other people. Your music library is something private, which you chose, in part, to share with others in an order of your choosing. Combining these concept, the Radio becomes a medium of nostalgia and a performance piece expressing the musical tastes of the

¹<http://id3.org/>

²Nyman, M. (1999). Experimental music: Cage and beyond (Vol. 9). Cambridge University Press. Chicago, Chapter 5 Electronic Systems, p. 80

PRIVATE MUSIC

For any number of performers
lasting as long as the source material.

Any kinds and numbers of private sources:
earphones, headphones, viewers, scents,
feelies, food, drink, telephone, etc.

Alternatives:

join in with the private source (not theatrically, but humming along, identifying, guessing)

(Gavin Bryars, Private Music)²

person the music library belongs to over time. It combines an old analogue medium with the opportunities modern technology like digital music and data mining give us.

2 Research, methodology and process

The starting point of my research were the aforementioned modern musician, who first used the radio as a performance piece in the midst of the twentieth century. John Cage's 1956 "Radio Music"³ is a composition in which one to eight people, each with their own radio following sheet music describing how they should turn the frequency and volume dial. The piece, while the movement is always the same, produces a different soundscape each performance, depending on location, time of day, political climate and radio reception. I wanted to replicate this changing performance, but depending on the person using and the state of their music library. Tom Whitwell's "Radio Music"⁴ is a project simulating the analogue radio-powered compositions. It is not a radio, but a sample player that behaves like a radio, with each sample being a different station. This project influenced my artefact a lot and through it I decided to make every year a different station, with every month being a sub-station controlled by a second dial. As the hardware is very sophisticated and I did not have access to a circuitboard printer, I decided to simulate the simulation using a Raspberry Pi⁵ and a touchscreen.

I defined my design opportunities for the artefact as something that is retro and should invoke nostalgia in the user. It should be the bridge between analogue technology and digital music and should come with a program that does the data mining of your music library for you. The Raspberry Pi is the perfect device to host both the controls and the

³http://johncale.org/pp/John-Cage-Work-Detail.cfm?work_ID=161
and <https://vimeo.com/53527521>

⁴<https://github.com/TomWhitwell/RadioMusic>
and <https://vimeo.com/113050279>

⁵<https://www.raspberrypi.org/>

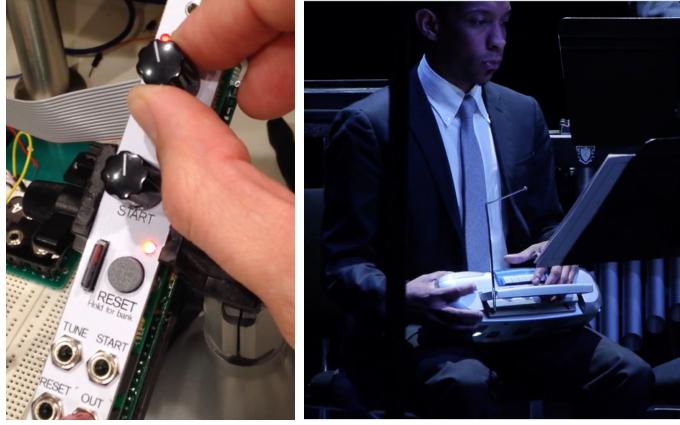


Figure 2: Performing on the digital simulation of a radio (left)⁴ and on an actual radio (right)³

data mining, as it is small, has all the relevant ports and can run Python code easily. By inputting any mass storage device into the USB-Port and running the program, the music library is scanned and the different radio stations are created. For each month of each year the songs are randomly shuffled and added to the matching station, these can be accessed by the dials on the touchscreen. The case design is inspired by the recent trends of digital retro radios released in the last few years. On the front there



Figure 3: Amazon results for "Retro Radio" show a clear trend

are two elements split evenly, the speaker on the left and the controls on the right. As the controls are simulated in my case, the design invokes two different association depending on the state of the artefact. While the device is off the touchscreen looks like a cassette player, while it is on it displays the two dials. The speaker used is a portable bluetooth speaker, which I chose for both portability and quality. It saves spaces for cable management and enables an alternate way of controlling the radio by connecting your computer to the box and running the program locally, this is especially useful for music libraries that exceed most storage devices. Shape wise I followed the retro trend again , insetting the front with slight rounded corners on the top. The material was supposed to be light pine wood for the front and slightly darker wood for the sides, spray painted a retro blue, similar to the one that is the background of the report, but

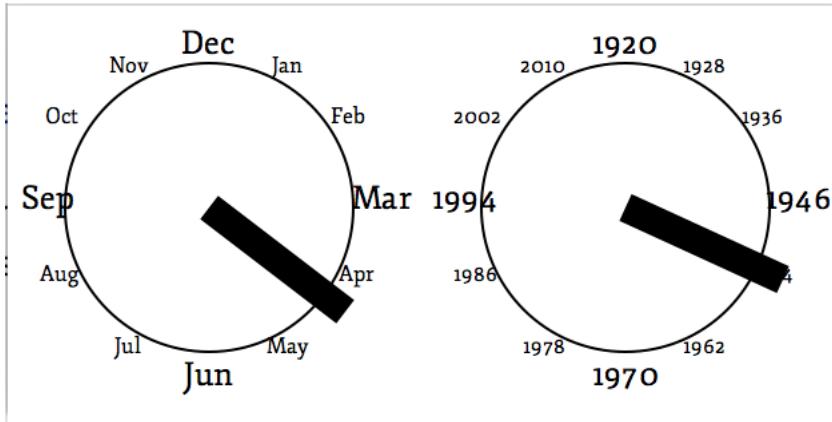


Figure 4: The right dial is the station represented by the year, the left dial is the month

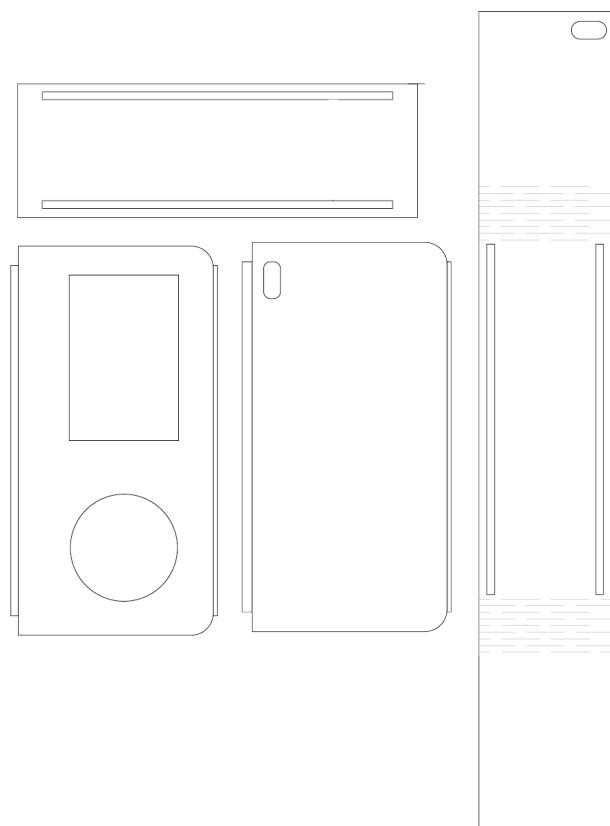


Figure 5: The planned Design of the radio

due to unforeseen circumstances the lasercutting facilities where not available to me and the artefact had to be finished in foamboard.



Figure 6: The finished artefact

3 Reflection

There are several challenges I faced that could be improved in a next design iteration. The biggest one is adding more context to the time period, which would require more user input. Luckily the id3 tag system is extendible and tags like mood, political climate or significant history period could be manually added. Looking at the distribution of the dates in my music library a simple dial underlay of when I was born and when my parents were born would reveal what types of music stuck with me them, my childhood or my adolescents. A third dial, a different labelling, or overlays/underlays would help the users and the listeners put their library into a personal or even global context. Through the help of the digital aspect, those dials could be interchangeable and modular, even user defined. An obvious improvement is the material and accuracy of the design in the finished product, due to the inaccessibility to the lasercutter and the improvement of the cable management to allow all kinds of USB-Sticks to fit without a extension cord.