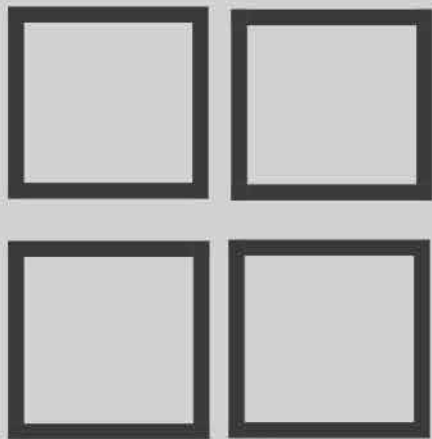


HUMAN/MACHINE / RHYTHM

Regan Bowering

Regan Bowering completed her MA in Popular music Research at Goldsmiths University of London in 2020, which followed her Undergraduate studies in Popular Music, also at Goldsmiths, in 2019. Her current research explores the intersections of popular music history, technology and audiovisual culture, with a particular focus on rhythm in relation to aesthetic and affective experience. During her Masters year, Regan was Editor-in-Chief for the first issue of *Sonic Scope* - a new student journal on audiovisual culture and was named runner up for the IASPM Andrew Goodwin Memorial Prize. Prior to studying, she worked for 9 years in music in a variety of roles including event production, programming and event marketing in addition to performing as a drummer and percussionist.

Regan Bowering. *Goldsmiths, University of London.*



HUMAN/ MACHINE/ RHYTHM

1.1 Welcome!

Thank you for purchasing the Akai MPC60. The Akai engineering team, my engineering team and myself have all worked very hard to bring you a product which we truly believe answers the needs of today's professional musician. I am sure that you'll find that the combination of innovative features, high sound quality, ease of use and attention to detail will be very useful in the process of composition, recording and performing. It has been said that technology has always had a profound influence on art. If this is true, I invite you all to take this piece of technology and use it to change the direction of music for tomorrow. Now let's begin...

Regan Linn

Figure 1: Roger Linn, AKAIMPC60 Operators Manual (1989)

INTRODUCTION: TURN ON THE MACHINE

An intriguing essay prompt, given to us in the final year of my undergraduate degree, challenged us to construct a research essay based on two given terms and one topic of our choosing. Modernism/ Technology/ Machine rhythm set me on a fascinating path via some of the relationships between different technologies, the AKAI MPC for instance, and the shifts in approaches to musical rhythm in styles such as Hip Hop and Techno. Fast forward to a year later, and I'm reading the essay

again for the first time. The writing feels rushed and clunky, the ideas are strung together, and the material has very little room to breathe. There was one section in particular which stuck with me when writing the original piece and I remember feeling disappointed that I did not have the space to dig into it further. If only I could take this fragment of the essay – I thought to myself – I could re-visit it from a different angle to see what other ideas could be teased out and what new understandings of the material could emerge. Wouldn't it be great if I could take the bits I liked from the original essay and create something entirely new?

CUE the imaginary sampler.

One of the key techniques enabled by the design of the AKAI MPC is sampling. Snippets of pre-existing records – such as drum grooves, basslines, recording studio ambience, sonic effects and processing, or even single drum hits – could be fed into the machine. This material could then be looped, layered, juxtaposed with other samples and musical ideas and crafted into a new beat entirely. Drum machines pushed the boundaries of the possibilities of beat making, drumming and composition, forging new temporal, timbral and rhythmic territories. Fragments could be processed, sped up or slowed down, repeated, echoed and reversed in 'in-human' ways, taking the possibilities of rhythm into new sensational directions.

An article by Red Bull Music Academy (Redbullmusicacademy.com, 2016) collated contemporary producer's approaches to sampling through Digital Audio Workstations – now divorced from the drum machine sampler as a material object. The article serves as evidence for the continuing impact of the technology and the creative processes it is associated with. Using historical and contemporary approaches to sampling as a methodology of sorts, I will re-visit my undergraduate essay, select and extract material as 'samples' and snippets of ideas which will be reworked in a new context. In essence, I will remix my old writing in order to refresh my thinking in a cut-up style experiment which will provide a framework to contemplate the changing understandings of the human and the machine, the relationships between the writing process and the (imagined) compositional process of sampling, and to reflect on my experience of revisiting my writing and thinking. Through the juxtaposition, reframing, and synthesis of thoughts from the past with

thoughts of the present, I hope to discover fresh perspectives on the material that I missed the first time around.

A note from revision three:

Taking into consideration the feedback which this essay received during the blind peer review process, it felt necessary to include further instructions to myself as an additional layer of material to input into the imaginary sampler. This will allow me to reflect on each stage of the process as it is happening, therefore bringing the processes of editing, re-writing and re-thinking material to the forefront of the piece. What began as a two-step process has become a three-step process as I approach the work again for the third time, re-working what was already re-worked, developing my ideas in relation to the thoughts of others, and therefore staying true to the fragmented and collaborative nature of the sampling methodology I have already outlined.

PART ONE: INPUT SOURCE MATERIAL

INPUT SOURCE MATERIAL:

MY OLD ESSAY

A re-worked sample from my Undergraduate essay (2019)

Rhythm machines

The arrival of drum machines in the second half of the 20th century made possible new ways of feeling and constructing rhythm in popular music. The Chamberlin Rhythmate (1949) was one of the first, but it wasn't until the late 1970s that drum machines were developed for mass consumption. These machines, and the music they produced, often received criticism for their rhythmic rigidity which was seen as a threat to the more human, natural rhythmic feel of the drummer and the drum set. The LM-1 (1978), designed by Roger Linn, was one of the first machines to incorporate samples of real recorded drums as opposed the synthetic factory

sounds of the earlier machines. Furthermore, musicians could self-program their beats rather than rely on pre-set rhythms. This novel design feature allowed for a more 'human' feel which previous designs had lacked. The Roland TR- 808 and TR-909 and the Oberheim DMX echoed similar developments, but the 1988 Roger Linn designed AKAI MPC60 will be my focus here, particularly in relation to beat making in Hip Hop.



Fig 2. AKAI MPC60

The AKAI MPC's unique velocity and pressure sensitive pads were arranged on the interface in a square of four rows of four (See fig 2. AKAI MPC60), which differed from the linear, step sequence lay out of earlier machines. The 'shuffle' function was a pre-programmed feature first available on the Linn LM-1, followed by the MPC60, that allowed the user to add a swung feel to their drum patterns. This small modification had a monumental impact on popular music, especially since the 1980s. The duration of a sequence, note length, and the amount of swing that could be applied were all determined to some extent by the machine's settings and programming, which potentially limited the possibilities for the production of beats. However, the addition of the swing function and the objects 'playable' design allowed beats to have a more 'human' feel that had been lacking in previous machines.

The AKAI MPC's more intuitive user interface helped to increase the fluidity of the user's workflow. In particular, the addition of touch sensitive pads enabled producers

to physically engage with machine when programming beats in a more embodied and performative way. The tactile nature of this experience was more akin to the act of drumming as it made possible a more dynamic approach to groove production. Further to this, producers could sample pre-existing musical material which expanded the possible limits of rhythmic structure, sound, tempo and groove. A snippet of a bassline could form the basis of a completely new track or a single snare hit could be dissected from the original groove and looped to create an entirely new structure. Music of the past could be brought into close contact with ideas of the present; rhythmic ideas could sonically enmesh and interact in novel ways. The production of a groove could now be achieved through an assemblage that fused the sounds and techniques of the machine with the feel and nuance of human performance and recorded acoustic timbres.

Instruction number one:

Now, select two snippets from step one. Put snippet one to the side and save for later. Take snippet two and dig in a little more.

SAVE SNIPPET ONE.

'A snippet of a bassline could form the basis of a completely new track, or, a single snare hit could be dissected from the original groove and looped to create an entirely new structure. Music of the past could be brought into close contact with ideas of the present; rhythmic ideas could sonically enmesh and interact in novel ways.' (Bowering, 2019).

INPUT SNIPPET TWO.

'The production of a groove could now be achieved through an assemblage that fused the sounds and techniques of the machine with the feel and nuance of human performance and recorded acoustic timbres.' (Bowering, 2019).

To refer to my more recent work conducted during my Masters dissertation (2020), understandings of the human and technology in the latter decades of the 20th Century and into the 21st gravitated toward ideas which saw the human body and technology to be less distinct from each other. Prior to this, the understandings of the human and its 'other' (machines, people who did not fit within the white Western categorisations) were determined by humanist thought, categorised through the understanding that their characteristics were biologically determined and that inherent attributes separated each from the other. Discourses which challenged these earlier ideas of the human became more prominent in the mid 20th Century with thinkers including Foucault, who saw that gender, race and sexuality were a product of the wider structures of power, imposed on the subject by external cultural and ideological forces.

The relationships between the human and technology were re-thought in new ways at a similar moment, for instance McLuhan's (1964) conception of media and Technology as an 'extension of man.' Furthermore, as I mentioned in snippet two, assemblage theory, which originated with Deleuze and Guattari (1980) positioned the human body in a more porous and intertwined relation with technology, wider socio-political systems and dynamics of power. When applied to music, including my example of J Dilla's engagement with the drum machine, the framework of assemblage allows for an understanding of the relationship between the human body and the machine as more fluid and not limited to the physical interactions, but the ideas, techniques and processes used.

Instruction number three:

Return to original source material.

PART TWO: OPERATORS MANUAL



Fig 3 and 4. AKAI MPC60

The machine made human: Busta Rhymes & J Dilla 'Still Shining'

For Hip Hop producers in the 1990s and 2000s in particular, the rhythmic feel or 'bounce' of a beat was integral to the overall aesthetic and was often an important articulation of the producers' individual voice. J Dilla is a particularly important example of the ways in which producers explored what some have called the 'humanising' of the machine in music production. Using the AKAI MPC3000, a later version of the MPC, he developed innovative techniques that emphasised and exploited the machine's functionality, including the shuffle function, or the 'MPC swing.' He combined this function of the machine with his own rhythmic feel using the touch pads and sampling processes such as 'micro-chopping' to create beats. In the Pharcyde's 'Drop' (1995), he incorporated a Beastie Boys sample which was subtly weaved into the main structure of the groove. Through the creative exploration

of the machine, including its potential limitations, J Dilla added new rhythmic vitality to machine-created drumbeats.

The instrumental for 'Still Shining' (1996) demonstrates the boundaries between the human and the machine becoming increasingly blurred through rhythmic ideas and techniques. J Dilla avoids the 4-bar looping feature in order to play through the entire track. The result is fluid and propulsive and the beat constantly plays with flow and motion, but then diverges or holds back. This approach opens up voids within the beat, creating and shaping space for Busta Rhymes, and then playfully stealing it away. J Dilla used the MPC's physical playability, sampling capabilities and shuffle function to create a fluid relationship between the human and the machine, which contributed to the overall production of the groove. Here, the MPC becomes another participator in the generation of groove within the human-technological ensemble.

Instruction number four:

Now, select one more snippet and save it for later.

SAVE SNIPPET THREE.

'In tracks such as Busta Rhymes' 'Still Shining' (1996), he avoided the 4-bar looping feature in order to play through the entire track. The result is fluid and propulsive, and the beat constantly plays with flow and motion, but then diverges or holds back. This style opens up voids within the beat, creating and shaping space for Busta Rhymes, and then playfully stealing it away.'

(Bowering, 2019).

In the musical context described above, prior to snippet three, the technical features (and limitations) of the drum machine were embraced by Dilla, creating a particularly dynamic interaction between the human 'bounce' and the technological limitations of feel, resulting in novel rhythmic results. In the context of my current experiment, how could I transfer a similar approach to my written work, exploring the

relationship between the human body, rhythm and the machine? Technological objects are shaped by how we use them and how others have used them in the past as Sara Ahmed (2019) explains,

‘We learn about something by considering how it is being used, has been used, or can be used. But what seems to point to the future (can be used) can just as easily refer back to the past (has been used). And what has been used in the past can just as easily point us toward the future; if use records where we have been, use can also direct us along certain paths.’ (Ahmed, 2019, 22-23).

Fast forward to 2020 and many of the compositional methods related to the MPC, including the production techniques developed by J Dilla, have continued to inspire composers, drummers, producers and rappers across the globe. The ‘Dilla feel’ continues to be an influential rhythmic technique which articulates Dilla’s rhythmic feel, production techniques, or the drum machine’s functions in a variety of musical contexts. In an article by Red Bull Music Academy, producer Daedelus explained the influence of sampling techniques on his own process: ‘I like to treat everything in my songs like a sample,’ even though he no longer samples from vinyl and works using DAWs. He continues, ‘I really like touching audio and I feel like that is when a DAW operates best, when you are intimately interacting with a sound source. That’s one of the powers of sampling; that at any moment you can start to make twists and turns to the actual audio.’ (Daedelus in RBMA, 2016). In this case, the processes of sampling developed by producers such as J Dilla through technologies like the AKAI MPC are taken and reworked within the context of new, digital software and technologies. Considering these past uses of the machine, and the processes of sampling developed by different producers at different historical moments, I could attempt to apply these ideas and processes to my writing by re-writing the text as if I was producing a musical track, following the guidelines snippet one described:

REPEAT SNIPPET ONE.

‘A snippet of a bassline could form the basis of a completely new track, or, a single snare hit could be dissected from the original groove, to be looped and repeated to create an entirely new structure. Music of the past could be brought into close contact with ideas of the present and these rhythmic ideas could sonically enmesh and interact in novel ways.’

(Bowering, 2019).

What if words were treated like snare hits, basslines and kick drums, and snippets of sentences became rhythmic cells to be repeated or transformed into rhythmic patterns and musical narratives? What would emerge if I approached the text with the sampling process in mind, imagining the sounds and rhythms of the track as well as the sensory engagement between my body and the drum machine? In a similar way, McLuhan speculated the relationship between the human body and the technology of the television as one of ‘sensuous participation’ due to it being ‘profoundly kinetic and tactile.’ (McLuhan, 1964, 345, 456). More directly related to rhythm in music, Kodwo Eshun (1998) described the electronification of rhythm as sensory expansion. To quote from my recent MA dissertation,

‘Tempos and note values could be pushed to new extremes through drum machines and the rhythmic use of synthesisers. Kodwo Eshun describes the ‘humanly impossible’ time of the automatization of rhythm, as ‘rhythmatics’ which ‘opens up the posthuman multiplication of rhythm: the rhythm synthesizer’s spastic pulses seize the body, rewiring the sensorium in a kinaesthetic of shockcuts and stutters, a voluptuous epilepsy.’ (Eshun, 1998, 79, cited in Bowering, 2020, 28).

With these ideas in mind, for the final section I will create a short piece of writing constructed using a fragment from my old essay (see snippet three), in combination with the snippets of ideas I have explored thus far. This will result in an imaginary, sensory engagement with a technological object from the past as an experimental method for re-envisioning my old work.

INPUT SNIPPET THREE.

'In tracks such as Busta Rhymes' 'Still Shining' (1996), he avoided the 4-bar looping feature in order to play through the entire track. The result is **fluid** and **propulsive**, and the beat constantly plays with **flow** and **motion**, but then **diverges** or **holds back**. This style opens up **voids within the beat, creating and shaping space** for Busta Rhymes, and then **playfully stealing it away.**'

(Bowering, 2019).

“===== PLAY/ RECORD (RECORD READY) =====”

I'm at the MPC, the machines' boxy, gloomy exterior staring blankly through me. “===== PLAY =====” The kick drum weaves around the shimmer of the hi-hat, **fluid** meets **propulsive**. It navigates the lower frequencies with a nimble bounce, circling, almost teasing Busta Rhyme's lyrical **flow**. The rhythmic tension draws me in. Now we're in **motion**, in **motion**, in forward, **propulsive motion**, but heavy, pulling me backward as I lean into the groove. My left-hand hovers, awaiting the twitch of my index finger which triggers the almighty THWACK of the snare, chased by the thumb of my right hand - Thu-thu-thud. My lean becomes a nod. I'm moving closer, hunched over and dancing, thinking, feeling with the machine. Busta's **diverging**, his deep inhales of air leave momentary **voids** – 'just a moment, let me take a breather'

“===== PAUSE =====”

“===== RECORD =====”

'RRROAW ROAW ROAW' ...Thu-thud-thud-thud...**Playfully** chasing...Thu-thud-thud. 'Till my dragon baby stop whining, I see my influence still shining.' Thu-thud-thud-thud. Thu-thud-thud-thud. 'RRROAW ROAW ROAW'.... And then he withdraws his words, **playfully stealing them away.**

“===== STOP =====”

“===== REWIND =====”

Instruction number five:

Sample and repeat.

“===== PLAY/ RECORD (RECORD READY) =====”

I’m at my laptop, closing my eyes and placing my fingers on the keys picturing the MPC’s boxy, gloomy exterior. Eyes open, meeting the screen in its illuminated immediacy. Open documents containing work in progress sit beside sticky notes which plan for the future, both of which are framed by my desktop image of a woman’s face inside a 1960s Television set...

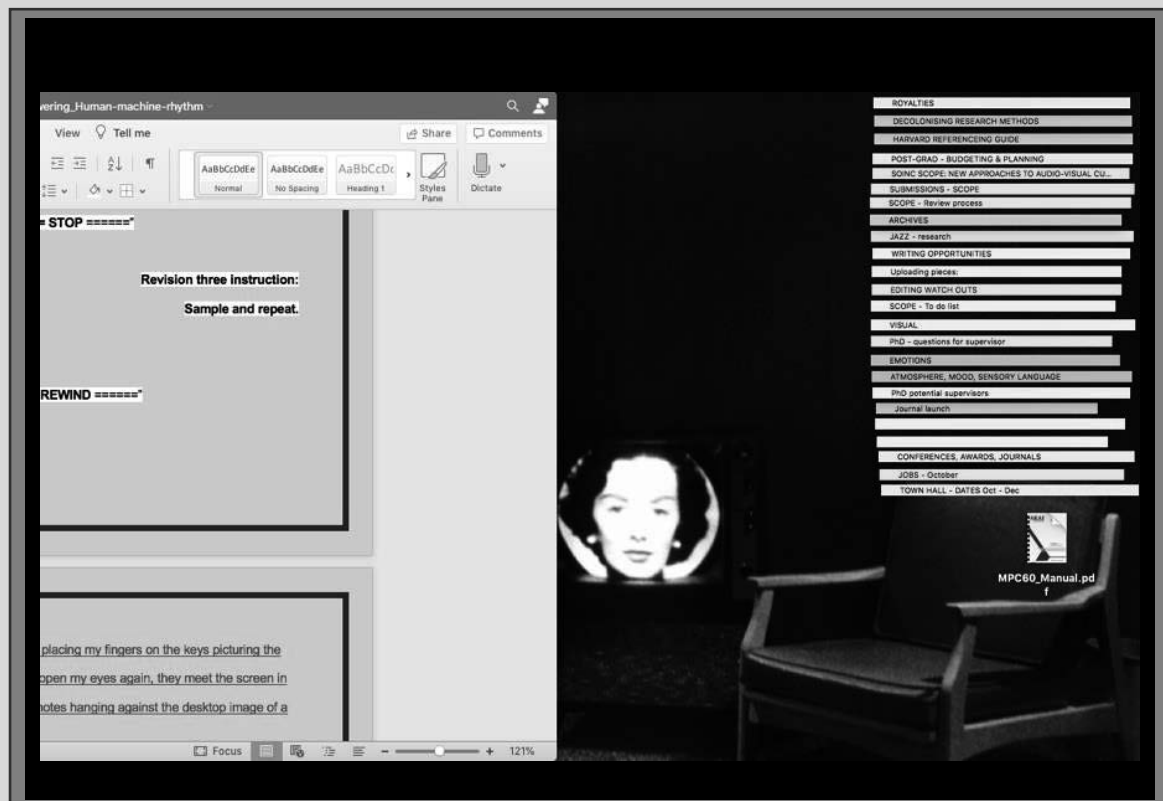


Figure 5. Screenshot of my Laptop.

“===== PLAY =====” The kick drum weaves around the shimmer of the hi-hat, **fluid** meets **propulsive**. The tension draws me in. It navigates the lower frequencies **(the lower frequency hum of the laptop’s inner mechanisms)** with a nimble bounce **(on the space bar)**, circling, almost teasing **(Regan Bowering’s)** Busta Rhyme’s lyrical **(typing) flow**. Now we’re in **motion**, in **motion**, in forward, **propulsive motion**, but weighted down **(by my inbox)**, pulled back, leaning into the groove **(of the sentence)**. My left-hand hovers **(over the left hand side of the laptop keys)**, awaiting the twitch of my index finger to trigger the almighty THWACK of the snare **(of the exclamation mark on beat one)**, chased by the thumb of my right hand - Thu-thu-thud **(on the space bar)**. My lean becomes a nod, closer and hunched over **(piecing together the fragments of a broken conversation – “Your connection is unstable”)**, and now I’m moving, thinking, feeling **(the heat radiate from my overworked software, the clitter clatter of the keys, the smoothness of the metallic-covered casing)** with the machine. Busta’s **diverging**, his deep inhales leave momentary **voids** – ‘just a moment, let me take a breather’ –

(“No connection”)

“===== STOP =====”

CONCLUDING THOUGHTS

By taking the process of sampling, which I explored through the AKAIMPC60 drum machine-sampler, I have attempted to sample and remix my old essay. The purpose of this experiment was to see what would emerge from a creative self-conscious and self-reflective approach to revising my academic work. This method gave me the freedom to bounce off my own ideas or to look at them from a new perspective. The similarities between the writing and re-writing process and the processes involved in sample-based composition may seem abstract, but during this process I found numerous connections between my approach to writing and music production/composition. By conducting the experiment through the drum machine as a

technological object, I was able to incorporate ideas and processes associated with the object and its uses, opening up a conversation between my present work, my past work and the past work of others across the practices of production and writing. In this sense, the collaborative nature of sampling became an important thread through its widening of the discussion between objects, creative practices, academic and non-academic writing and historical periods.

McLuhan's idea of the machine as an extension of the human body allowed me to think of the drum machine in relation to sensory experience and imagination. This became a jumping-off point for the final experiment where I combined the musical processes, writing processes, and technical processes in a sort of stream-of-consciousness exploration. In the last section I repeated this process again and shifted my awareness back to my more immediate present – the laptop I was sitting at to write the essay. At this point, the two objects become intertwined, converging as a stream of processes, material qualities, and musical elements as I experienced them, thus highlighting the multiple temporalities, histories, uses and techniques which intersect as we experience material objects in an increasingly technologised world.

REFERENCES

Ahmed, S. (2019). *What's the use?* Duke University Press.

Anon. (2015). 'Roger Linn on Swing, Groove & The Magic of The MPC's Timing - Page 2 of 3'. *Attack Magazine*. Available at: <https://www.attackmagazine.com/features/interview/roger-linn-swing-groove-magic-mpc-timing/2/> [Accessed January 13, 2019].

Avanti, P. (2013). 'Black Musics, Technology, and Modernity: Exhibit A, the Drum Kit.' *Popular Music and Society*, 36(4), 476-504.

Bowering, R. (2019). 'Technology/ Modernism/ Machine Rhythm.' For the module *Music and Modernities*, Goldsmiths, University of London.

Bowering, R. (2020). 'Machine Pleasures: Rhythm and the Affective Experience of 20th Century Technological Change.' *Masters Dissertation*, Goldsmiths University of London (unpublished).

Chude-Sokei, L.O. (2016). *The Sound of Culture: Diaspora and Black Technopoetics*, Middletown, CT: Wesleyan University Press, 1 – 40.

Dinerstein, J. (2003). *Swinging the machine: Modernity, technology, and African American culture between the World Wars*. Amherst: University of Massachusetts Press.

Eshun, K. (1998). *More Brilliant than the Sun: Adventures in Sonic Fiction*. Quartet Books. London.

Gearslutz.com. (2019). 'DJ Premier on using the swing function.' *Gearslutz*. Available at: <https://www.gearslutz.com/board/rap-hip-hop-engineering-and-production/799726-dj-premier-using-swing-function.html> [Accessed 6 Jan. 2019].

Greene, Paul D, and Thomas. Porcello. (2005). *Wired for Sound: Engineering and Technologies in Sonic Cultures*. Middletown, Conn. Wesleyan University Press.

Henriques, J., Tiainen, M. and Väliäho, P. (2014). Rhythm Returns: Movement and Cultural Theory. *Body & Society*, 20(3-4), pp.3-29.

Jackson, G. (2016). 'Modern Approaches: Sampling,' *Red Bull Music Academy*, Available at: <https://daily.redbullmusicacademy.com/2016/07/modern-approaches-sampling/> Accessed 7 July 2020].

Marshall, Jonathan. W. (2015). 'Staging Critical History Within the Space of the Beat, or What Cultural Historians Can Learn From Public Enemy, NTM, MC Solaar & George Clinton,' *Medianz*, Vol 15(1).

Metafilter.com. (2019). 'Funky Finger Drummer,' *Metafilter*, Available at: <https://www.metafilter.com/107324/Funky-Finger-Drummer> [Accessed 6 Jan. 2019].

McLuhan, M. (1964). *Understanding Media: The extensions of Man*. McGraw-Hill Education. London.

Monson, Ingrid. (1999). 'Riffs, Repetition, and Theories of Globalization,' *Ethnomusicology*, *University of Illinois Press*, Vol. 43(1), 31-65.

Perchard, T. (2011). 'Hip Hop Samples Jazz: Dynamics of Cultural Memory and Musical Tradition in the African American 1990s,' *American Music*, 29(3), 277-307.

Potter, R. (1995). *Spectacular vernaculars: Hip-hop and the politics of postmodernism* (The SUNY series in postmodern culture). Albany: State University of New York Press.

Ramsey, G. P (2003). *Race music: Black cultures from bebop to hip-hop*. University of California press.

Rose, T. (1994). *Black Noise: Rap Music and Black Culture in Contemporary America*. Middletown, Conn: Hanover, N.H.: Wesleyan University Press; Published by University Press of New England.

Scott Walker, L. (2017). 'Instrumental Instruments: MPC60,' *Red Bull Music Academy*. Available at: <http://daily.redbullmusicacademy.com/2017/11/mpc-instrumental-instruments> [Accessed January 14, 2019].

Schloss, J. (2014) *Making Beats: The Art of Sample-Based Hip-Hop*. Wesleyan University Press, 150 – 164.

Stewart, A. (2000). 'Funky Drummer': New Orleans, James Brown and the Rhythmic Transformation of American Popular Music,' *Popular Music*, 19(3), 293-318.

Swiboda, M. (2014). 'When Beats Meet Critique: Documenting Hip-Hop Sampling as Critical Practice,' *Critical Studies in Improvisation - Etudes Critiques En Improvisation*, 10(1), 1-11.

Trask, S. (2019). 'Akai MPC60 (MT Apr 88),' *Muzines*. Available at: <http://www.muzines.co.uk/articles/akai-mpc60/1079> [Accessed 3 Jan. 2019].

Vintagesynth.com. (2019). *Akai MPC60 | Vintage Synth Explorer*. Available at: <http://www.vintagesynth.com/akai/mpc60.php> [Accessed 13 Jan. 2019].

Vintagesynth.com. (2019). *Chamberlin Rhythmate | Vintage Synth Explorer*. Available at: <http://www.vintagesynth.com/misc/chamberlinrhythmate.php> [Accessed 8 Jan. 2019].

Weheliye, A. (2005). *Phonographies grooves in sonic Afro-modernity*. Durham: Duke University Press.

Wilson, S. (2016). 'The 14 Drum Machines That Shaped Modern Music,' *FACT Magazine: Music News, New Music*. Available at: <https://www.factmag.com/2016/09/22/the-14-drum-machines-that-shaped-modern-music/> [Accessed January 5, 2019].

Videography

Akai MPC Software Tutorial - "MPC SWING" drum programming (J Dilla style request) (2013) YouTube video, added by Wolf D [online]. Available at: https://youtu.be/YkVtN_84qys [Accessed January 12, 2019].

Busta Rhymes - Still Shining (HQ) (2011) YouTube video, added by BIOOdYGueriLLA [online]. Available from: <https://www.youtube.com/watch?v=pnWIGskWx68>. [Accessed 14. Jan. 2019].

The Pharcyde - Drop (Official Music Video) (2017) YouTube video, added by PharcydeVEVO [online] Available at: https://www.youtube.com/watch?v=wqVsfGQ_1SU [Accessed 11 Jan. 2019].

Images

Figure 1. Linn, R. (1989). AKAI MPC60 Operators Manual.

Figure 3 and 4. Vintagesynth.com. (2019). *Akai MPC60 | Vintage Synth Explorer*. Available at: <http://www.vintagesynth.com/akai/mpc60.php> [Accessed 14 Jan. 2019].

Figure 5. Bowering, R. (2020). Screenshot of my laptop screen.