

**Behind the Beat: Technical and Practical Aspects of
Instrumental Hip-Hop Composition**

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Michael A. D'Errico

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ADVISER: Joseph Auner

ABSTRACT

From DJ Premier's beat productions in the early '90s to Kanye West's live performance at the 2010 Video Music Awards, the Akai MPC has long been considered standard sampling technology in any hip-hop production studio. Expanding upon the various techniques developed by pioneering hip-hop DJs—including beat-juggling, cutting, and mixing—the MPC introduced a much wider range of possibilities regarding not only the manipulation of individual samples, but their assemblage into a musical composition as well. Furthermore, the expansion of the machine has coincided with the musical development of the hip-hop tradition, as producers have responded and reacted to changing technological trends with increasingly innovative trends in performance practice.

Through analyses of several tracks by DJ Shadow, Madlib, and Flying Lotus, this paper will fill a major gap in hip-hop scholarship by exploring both the technical aspects of the music's construction as well as how these producers have responded and reacted to the changing characteristics of the MPC throughout its development. In exposing diverse technical and musical trends that have received little attention from scholars, this paper hopes to provide a missing link to the way we analyze hip-hop music and culture.

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INTRODUCTION: NOTES ON THE “UNDERGROUND”

At first glance there are simply dire predictions based on easily aroused prejudices against new technologies. Yet there are also phases of settlement in which formerly innovating technologies have been absorbed and only the currently new forms are a threat.¹

In his headlining performance at the 2010 MTV Video Music Awards, Kanye West surprised many by a performance of his new song, “Runaway,” which he introduced by sequencing the musical tracks on an Akai MPC 2000XL sampler/drum machine. Positioned as the literal center of the stage through a minimal set design to which the TV viewer was introduced a bird’s eye view camera angle, the device stood next to Kanye on a small Greek architectural column. After each verse and chorus West walked back to the MPC and drummed out some short vocal phrases on the machine’s pads, foregrounding the physical, percussive nature of the beatmaking process. Indeed, in those short moments concluding the award ceremony millions of MTV viewers around the world witnessed, perhaps for the first time, what goes on behind the beat of hip-hop, through the exhibition of a primary form of its production. This almost fetishistic focus on a piece of musical hardware was a far cry from the apology to Taylor Swift that many expected of West—after the 2009 incident in which he stormed the stage while Swift was giving her acceptance speech—and it also differed sharply from the bombastic drum extravaganza that he gave the audience two years earlier.

Initially, the press did not know how to respond. *Pitchfork* was perhaps the only major music news outlet that attempted to explain the details of the device’s usage, as

¹ Raymond Williams, *Television: Technology and Cultural Form* (Hanover and London: Wesleyan University Press, 1974), 133.

they noted, “Kanye made his own beat onstage with a drum machine.”² It was not until February of 2011 that the *New York Times* elaborated on this shallow statement, describing Kanye “playing an MPC 2000XL and triggering a series of piano notes, recorded drum sequences and Rick James vocal samples.”³

Yet even as the *New York Times* provided some much needed fundamental insight on the device, their surface-level description ultimately reflected an etic perspective that ended up implicitly reinforcing the notion of the Akai MPC as a specialized tool for “underground” hip-hop producers. These *instrumental* beatmakers have established a unique subgenre in hip-hop, asserting their “authenticity” through music technologies and production techniques that have stemmed from a distinct musical lineage of producers and DJs of the past, including Grandmaster Flash, the RZA of the Wu-Tang Clan, and J Dilla, just to name a few.⁴ Speaking from this perspective of the hip-hop culture, countless hip-hop blogs and webzines praised Kanye for his use of the MPC, as hip-hop magazine *XXL* tweeted about the event, “There is an MPC on the VMA stage. Makes me proud to be a part of hip-hop.” One commenter responded to a video post of the performance writing, “This is hip-hop at its best. I mean the fool pulled out the MPC and rocked the crowd like a true MC would.”⁵

² Ryan Dombal, “Video: Kanye and Other VMA Highlights,” <http://pitchfork.com/news/40025-video-kanye-and-other-vma-highlights/> (accessed October 17, 2010).

³ Jon Caramanica, “Lots of Beats, but No Drum in Sight,” <http://www.nytimes.com/2011/02/13/arts/music/13beatmachine.html> (accessed February 16, 2011).

⁴ Words such as *essential*, *canon*, and *tradition* are introduced with quotation marks so as to avoid essentializing or homogenizing hip-hop as a single, absolute cultural entity. I use them extensively only to acknowledge that many music-making processes in hip-hop have been handed down explicitly, through oral traditions, as well as implicitly, through technological changes and other historical constructs—as I explain in this thesis.

⁵ Adegoke Ademoye, comment on “Kanye West featuring Pusha T: Runaway (2010 MTV VMA Performance),” Davis Huynh on Hype Beast Blog, comment posted September 13, 2010,

It is understandable why Kanye chose literally to put this mythical gem of hip-hop technology on a pedestal for the 2010 VMA performance. The release of his 2008 album *808s and Heartbreaks* left his more straight-ahead hip-hop fans feeling confused and betrayed by the perceived overuse of autotune and “inauthentic” digital synthesizers, some fans reacting in disturbingly hateful rants.⁶ Furthermore, getting mixed up in the gossip of popular media through the incident with Taylor Swift at the 2009 VMAs seemed to further undercut West’s status as an “underground” artist who is true to the origins of hip-hop. Using the MPC, a device that has long been a secret weapon in the hip-hop producer’s arsenal as well as a marker of “underground” authenticity, served as a way to reconcile his current status as a popular artist with his musical roots.⁷ Yet, Kanye’s performance stands as just one of the ways in which hip-hop producers and DJs use technology as a means of positioning themselves within an “authentic,” “real” hip-hop lineage.

While the *New York Times* article asserts that the key to using the MPC as a live tool is “thinking about it with enough dimension... physical dimension, but also technical dimension... a skill that can be enhanced by an understanding of how to tweak what goes on inside the machine,” they—like most writers on hip-hop culture—do not attempt to

<http://hypebeast.com/2010/09/kanye-west-featuring-pusha-t-runaway-2010-mtv-vma-performance/> (accessed October 17, 2010).

⁶ Assertions of “authenticity” and “realness” are just one aspect of the many social meanings generated by technology. Similarly, technology carries many racial, gendered, and class connotations. As an anonymous user of the RapRadar.com forums wrote, “THIS HOMO NIGGA DID HIS THING BUT AUTOTUNE AT THE END WAS AN EPIC FAIL!!!!” thus positing the use of technology as a simultaneously masculinizing and emasculating social force <http://rapradar.com/2010/09/12/kanye-west-x-pusha-t-debut-runaway-at-vmaw/> (accessed October 17, 2010).

⁷ In this way it is interesting to note that West dedicated the VMA performance to his mother, thus affirming the event as identifying with a “roots” tradition. <http://rapfix.mtv.com/2010/09/12/kanye-vma-performance-mother/> (accessed October 17, 2010).

probe these issues.⁸ The purpose of this study is to expand current understandings of hip-hop in academic scholarship by dealing with the technological devices used by DJs and producers in the compositional processes of beatmaking in “underground” instrumental hip-hop. In this thesis I will argue that as technologies used to produce hip-hop music develop along with the spread of the culture itself, producers and DJs utilize the new tools as extensions of previous technologies and cultural practices, always attempting to assert perceptibly “authentic” identities in line with specific hip-hop traditions. In looking at changes in technical design and practice I will reveal not only the ways in which the production styles and performance practices in hip-hop expand as a result of the processes I will discuss in the next paragraph, but also the ways in which discourses surrounding the culture have limited our conceptions of the stylistic diversity of hip-hop’s musical history.

It is not a goal of this study to impose essentialist claims of authenticity onto a single branch of instrumental hip-hop. On the contrary, I hope to simply shed light on specific popular trends and developments that are particularly recognizable at this moment in the evolution of the music. My use of terms such as “authentic,” “underground,” “real,” and “commercial” should not be interpreted as fixed definitions and descriptors of actual musical communities but rather fluid terms that change based on the chronology, geography, and—most significant to my thesis—technology of the individuals making the assertions. What it means to “keep it real” differs between countries, regions, shared communities (physical, cultural, virtual), and historical

⁸ Jon Caramanica, “Lots of Beats, but No Drum in Sight,” <http://www.nytimes.com/2011/02/13/arts/music/13beatmachine.html> (accessed February 16, 2011).

traditions of producers and DJs.⁹ Of course, this does not mean that we should treat the terms arbitrarily, as in Paul Harkins' shallow description of the term "underground" as "a nebulous and problematic term that inhibits a comparative exploration of genres and styles in favour of a narrow focus on 'perceived non-mainstream cultural and economic space.'"¹⁰ At a fundamental level, this definition is accurate in pinpointing the epistemic roots of the term, but the negative connotations of the definition deny a discussion of the complexities of the term as it is used in an experiential context. By placing the term first and foremost in the context of how the various producers and DJs I discuss appropriate it, I hope to highlight the contradictory nature of the term while recognizing the intense value that musicians place on it, as this sentiment drives much of their creative work.

A further qualification is needed for the category "instrumental hip-hop" as well. As I use the term throughout this thesis, it should be recognized fundamentally as a distinct subgenre of hip-hop music that intentionally leaves out the rap element.¹¹ By this I do not mean instrumental versions of rap songs, but rather beat tapes and mixtapes that are created specifically as a way of highlighting the technical skill of the producer or DJ. Furthermore, I am locating both of these terms in the context of the hip-hop tradition in which terms such as producer (connoting the "studio" beatmaker) and DJ (connoting the "live" beatmaker) become interchangeable. A "producer" is not just the studio engineer

⁹ For an in-depth discussion of the importance of geographical location in the construction of hip-hop identities, check out Murray Forman, *The 'Hood Comes First: Race, Space, and Place in Rap and Hip-Hop* (Middletown, CT: Wesleyan University Press, 2002).

¹⁰ Paul Harkins, "Microsampling: From Akufen's Microhouse to Todd Edwards and the Sound of UK Garage," in *Musical Rhythm in the Age of Digital Reproduction*, ed. Anne Danielsen (Burlington, VT: Ashgate, 2010), 178.

¹¹ Whereas Schloss (2004) views the primary aesthetic binary of hip-hop to occur between "live" and "sampled-based" hip-hop production, I hope to problematize this distinction by introducing specific trends in "instrumental hip-hop" that allow for the expansion of who and what gets to be considered "hip-hop."

or manager of the recording sessions—as he or she may be in other popular music styles—but also the studio beatmaker *and* the “live” DJ showcasing his or her material. In this context, while it is arguable that the terms are rooted in specific technologies—the DJ being tied to turntable practice and the producer to hardware sampling practice—the space of the “live” performance *immediatizes* not only the turntable performance, but the hardware sampler as well. Upon examination of the historical relationship between “liveness” and mediation, Philip Auslander describes these two concepts in terms of “a relation of dependence and imbrication rather than opposition. That the mediated is engrained in the live is apparent in the structure of the English word ‘immediate.’”¹² Indeed, the audience of a “live” “underground” instrumental hip-hop performance expects to come away from the experience with a deeper understanding of studio processes of beat construction.

In this way, “liveness” is generated through a mediating process in which the technology is foregrounded and made “opaque” for the viewer. Ragnhild Brovig-Hanssen has defined this process of “opaque mediation,” which includes “direct exposure of editing tools or processing effects, the ‘musical’ use of technological glitches or side effects and the obvious deployment of samples.”¹³ This process naturalizes the technology for the audience, literally making the “live” experience more “real.” As Philip Auslander writes, “live performance thus has become the means by which mediatized representations are naturalized, according to a simple logic that appeals to our nostalgia

¹² Philip Auslander, *Liveness: Performance in a Mediatized Culture* (London and New York: Routledge, 2008), 56.

¹³ Ragnhild Brovig-Hanssen, “Opaque Mediation: The Cut-and-Paste Groove in DJ Food’s ‘Break’,” in *Musical Rhythm in the Age of Digital Reproduction* (Burlington, VT: Ashgate, 2010), 159.

for what we assumed was the im-mediate.”¹⁴ Kanye West’s VMA performance is a perfect example of this process of naturalization through immediatization, studio producer as “live” DJ.

The historical trajectory of instrumental hip-hop begins with solo turntablists such as Grandmaster Flash and Afrika Bambaataa, who—while they also created music for rap groups which they were a part of— defined the core aesthetics of hip-hop composition through the creation of solo mixtapes that showcased the technological capabilities of the turntable.¹⁵ As sampling technologies developed and became more affordable in the late 1980s and early 90s, hip-hop entered what became known as its “golden era,” defined by the strong relationship between the rapper and the beatmaker. In this context, producers such as DJ Premier from Gangstar and Prince Paul from De La Soul used turntables alongside popular samplers such as the Akai MPC and E-Mu SP-1200 to create instrumental mixtapes with a specific audio quality (12-bit sample resolution) and performance practice that continues to define the sound of “underground,” “old-school” hip-hop to this day. In the absence of a rapper, these DJs, beatmakers, and their audience developed a specific set of values and aesthetics that were shaped by the capabilities and limitations of turntable and sampling technologies, as well as the user’s ability to transcend these limitations. In this way, “authentic” hip-hop production was from the beginning defined by what technologies were used, as well as the ability of the producer to expand on these technologies through individual skill and technological manipulation.

¹⁴ Philip Auslander, *Liveness: Performance in a Mediatized Culture*, 2nd ed. (New York: Routledge, 2008), 43.

¹⁵ An insightful discussion of the musical practices of early hip-hop culture can be found in David Toop, *Rap Attack 2: African Rap to Global Hip-Hop*, 2nd ed. (New York: Serpent’s Tail, 1991).

As I shall discuss, as hip-hop culture expanded into a national cultural phenomenon through the dissemination of recordings, documentary films, and movies, authenticity and “realness” became powerful tools with which to establish one’s individual identity against the emerging “commercial”—and thus inauthentic and “fake”—cultural trends. Of course, similar to assertions of “authenticity,” what or who is considered “commercial” is variable based on chronology and geography. Each beatmaker that I discuss creates their work against perceived “commercial” artists of their time, who they view as conformist sell-outs. Along with the commercial dissemination of hip-hop culture through various media outlets, the 1990s witnessed the expansion and gradual democratization of the samplers, drum machines, and sequencers used to make beats. New technological tools thus led to a strong aesthetic tension in the compositional process of the hip-hop producer; while offering fresh creative possibilities to showcase individual style, changing technologies simultaneously threatened to remove the process of composition from its “authentic” roots in turntablism.

The body of this study consists of three case studies that focus on specific producers of instrumental hip-hop, the technologies they employ to make beats, and how their utilization of these technologies reshapes and redefines what we come to know of as the hip-hop tradition. The case studies chart a chronological trajectory with each producer representing important moments in the development of beatmaking technologies as well as the dissemination of hip-hop culture across geographic boundaries and genre categories. In addition to providing specific geographic, chronological, and aesthetic frameworks for each producer, I will include a technical discussion of specific production tools favored by the producer combined with musical analyses of how these tools are

used to construct the beat. Together, these elements combine to form an assertion of “authenticity,” and it is from these assertions that we can understand historical performance practice in hip-hop on a larger scale.

Central to this discussion is my view that technology, geography, chronology, and aesthetics combine to articulate where a particular producer stands in relation to the perceived hip-hop “canon,” in a statement that is very much an assertion of authenticity and identity. For the arbiters of hip-hop authenticity, everything from what type of turntable, drum machine, or sampler is used, to the type of sounds that are chosen for sampling and the general affect or “feel” of the beat serve to mark one’s style as unique. My central concern is with the ways in which the interfaces and internal designs of the hardware change, and how musicians integrate these technologies into the aesthetic style of hip-hop by negotiating between *emerging* technologies, technical practices, and individual styles, and the *essential* cultural practices and traditional styles that have been created and constructed throughout the history of the music.

The first section will deal with DJ Shadow, an LA-based DJ and producer who emerged from the early ‘90s “golden era” of hip-hop with a series of instrumental mixtapes that showcased turntable technique as well as an impressive affinity for “crate digging,” or the ritualistic process of seeking out compositional sources in vinyl record collections. As a white, suburban youth making beats just as hip-hop music was reaching international recognition, Shadow represented a specific white “commercial” consumer base in hip-hop culture.¹⁶ Yet his advanced turntable skills, utilization of drum loops

¹⁶ While “objective” data-measuring services such as Soundscan found that the hip-hop consumer base was approximately seventy percent white from 1996 to 2001, Bakari Kitwana has questioned this statistic as a hegemonic tool for the erasure of race in public discourse in *Why White Kids Love Hip-Hop* (New York: Basic Civitas Books, 2005).

from the *Ultimate Breaks & Beats* vinyl record series, and his use of samples from early 80s hip-hop films such as *Wildstyle*, also marked Shadow as a dedicated member of the hip-hop “underground,” in which knowledge of the tradition as well as individual skills mark one as authentic, against the “commercial” Other. Focusing on his 1996 album, *Endroducing...*, my analysis will show how he uses the Akai MPC sampler as an extension of the turntable by utilizing technical and compositional processes that blur the distinction between the two.

The second section will focus on Madlib, an African-American LA-based producer who has gained media attention since the new millennium for his collaborations with underground hip-hop icons J Dilla (*Champion Sound*) and MF Doom (*Madvillainy*). As a member of Stones Throw records—a record label that prides itself on musical diversity, providing its listeners with obscure knowledge of various musical traditions—Madlib has released a diverse body of work under multiple aliases including Quasimoto, Yesterday’s New Quintet, Sound Directions, Young Jazz Rebels, as well as a jazz trio under his real name, The Otis Jackson Jr. Trio. My analysis will focus on the work of perhaps his most popular alias, The Beat Konducta, observing the ways in which Madlib uses a newer model of the MPC—the MPC 4000—to expand processes of sample manipulation and sequencing possibilities. I will expand on Adam Krims’s notion of the “hip-hop sublime” to include not only the ways in which dense combinations of musical layers create conflicts in the realm of pitch and timbre, but rhythm as well.¹⁷ The discussion will thus focus on the ways in which advances in the technology itself allow

¹⁷ The “Hip-Hop Sublime” was first introduced by Adam Krims at a 1996 interest panel on Marxism at the 1996 annual conference of the American Musicological Society. It was further developed in his book, *Rap Music and the Poetics of Identity* (New York: Cambridge University Press, 2000) as well as the essay “The Hip-Hop Sublime as a Form of Commodification” in the collection, *Music and Marx: Ideas, Practice, Politics* (New York and London: Routledge, 2002).

for complex microrhythmic sequencing and digital signal processing that highlight the performative nature of sampling and sequencing. My notations hope to provide the hip-hop scholar with new analytical tools rooted in the compositional processes utilized by the producers and DJs themselves, as well as shed insight on the manner in which producers and DJs assert “authentic” identities in the absence of the turntable.

For Madlib, an “authentic” hip-hop identity is aligned with an “authentic” black identity through the use of samples from blaxploitation films, jazz, and funk music of the 1970s. Sample sources are particularly important in asserting “authentic” identities through technologies of sonic reproduction, as Tricia Rose writes of the process, “it affirms black musical history and locates these ‘past’ sounds in the ‘present’... these soul artists have been placed in the foreground of black collective memory.”¹⁸ Madlib’s close relationship with Black music of the past thus offers a historically circular view of the ways in which specifically African-American identities are performed in hip-hop music. Rose’s idea of co-performance is particularly important here, as the “performative resonances” that result from the process of sampling highlight the aural continuity that exists between the sampled musician and the hip-hop producer.¹⁹

The final section of the thesis will examine the work of Flying Lotus, an African-American, LA-based producer who founded the Brainfeeder musicians collective in 2008. The artists on this record label—Daedelus, Teebs, Ras G, and Nosaj Thing, to name a few—come from diverse backgrounds of electronic dance music while remaining rooted in the downtempo, bass-heavy aesthetics of the hip-hop tradition. While they continue to make beats for rappers, this group of young producers has emerged in recent

¹⁸ Tricia Rose, *Black Noise: Rap Music and Black Culture in Contemporary America* (Hanover, NH: Wesleyan University Press, 1994), 89.

¹⁹ *Ibid*, 78.

months as international electronic music pioneers making instrumental hip-hop with a new set of technological tools and methods. Flying Lotus in particular has, as I will discuss, utilized the Monome, a grid-based MIDI and OSC controller, as well as the Akai MPD, both as extensions of sample-chopping technologies first introduced by the MPC. Contrary to the “analog” aesthetics of many traditional hip-hop producers, many of these producers have integrated laptops into their setup, running new tracker-based DAWs such as Ableton Live as an integrated workstation with their hardware controllers. While their use of various technical devices—as well as their diverse dance music influences—has made it hard to pin them down and categorize them as strictly “hip-hop,” their technical skill, understanding of sample manipulation, and well-integrated live sets have introduced a fresh approach to hip-hop production that expands on the work of previous producers through evolving technical practices, thus reinventing “authentic” traditions in the context of digital software previously perceived as “inauthentic.”

As I noted previously, this is not the first attempt at explaining the compositional processes of hip-hop producers. However, much of the previous scholarship surrounding beatmaking in hip-hop culture tends to deal primarily with music analytical and sociological concerns. In her definitive sociohistoriography of hip-hop, *Black Noise: Rap Music and Black Culture in Contemporary America*, Tricia Rose defines the larger cultural implications of the “break” and “cut” in the hip-hop style as they pertain to engineering methods in the studio.²⁰ In his essay “Rhythm, Rhyme, and Rhetoric in the Music of Public Enemy,” Rob Walser uses musical analysis and Western notation to

²⁰ Ibid.

explain how Public Enemy layers samples to create a hip-hop composition.²¹ While these key texts helped to define and legitimize the study of hip-hop in musicological and ethnomusicological scholarship, they naturally tended toward a defensive rhetoric then needed in order to justify their research, and thus avoided specific details of technical practice as it relates to cultural practice.

In *Rap Music and the Poetics of Identity*, Adam Krims attempts to reconcile general hermeneutic concerns with the specific analysis of hip-hop songs, detailing a thorough genre system for rap music as well as a method of notation known as the “layering graph.”²² Like Walser, this research method is a further attempt to bring the compositional process of hip-hop into the realm of traditional Western analysis, as the issues he addresses relating to his notational method deal with traditional aspects of music analysis, mainly form and pitch. In this context his system works quite well, as it notates the complexities of sample juxtaposition and the resulting tonal dissonance. However, in my discussion of Madlib I will expand upon his analysis to include the difficulties of notating what I will call rhythmic dissonance.

While the previous texts have come from musicological and sociological perspectives, Joseph G. Schloss’s *Making Beats: The Art of Sample-Based Hip-Hop* is a seminal ethnographic approach to hip-hop production.²³ This text still stands as the most comprehensive ethnography of hip-hop beatmaking, dealing with many core aesthetic issues in the music including sampling ethics, vinyl collecting, as well as issues of

²¹ Robert Walser, “Rhythm, Rhyme, and Rhetoric in the Music of Public Enemy,” *Ethnomusicology* 39.2 (1995): 193-217.

²² Adam Krims, *Rap Music and the Poetics of Identity* (New York: Cambridge University Press, 2000).

²³ Joseph G. Schloss, *Making Beats: The Art of Sample-Based Hip-Hop* (Middletown, CT: Wesleyan University Press, 2004).

compositional “authenticity.” Notational concerns are voiced, although briefly, Schloss dealing with them in the form of a highly effective grid that mirrors the technological interface better than previous forms of hip-hop notation. Yet minor issues remain in both his limited ethnographic sample as well as the lack of discussion around the inner workings of specific technical devices. While he works with a large number of beatmakers in his research, these musicians all fit within a specific genre category, that being what has come to be considered “the golden era” of hip-hop production. As I discussed earlier, this ethnographic sample expresses one of the many assertions of “underground realness,” and should therefore be considered a single vein of hip-hop’s branch of “authenticity.” While no doubt reflecting the nature of the fieldwork, it is important to keep in mind larger issues of technological method and cross-genre fusions that have resulted from broader compositional processes.

As one can see from this brief critical review, the scholarship surrounding the processes of making music in hip-hop is centered around more “traditional” issues of musical analysis, such as notation, compositional form, and basic sociohistoriographic issues related to hip-hop music *as* culture. Without ignoring these significant concerns, my research methods will expand upon this literature by focusing on the characteristics of specific devices related to the phenomenology of beatmaking—the process of composition as it occurs both “live” and in the studio—as well as how producers use these compositional processes to define themselves within the tradition of hip-hop composition. In this way, illustrations of the features of the devices, musical analyses, and musical notation will serve as a tutorial for the reader, highlighting both the

processes of composition as well as the inner workings of the technological devices that are at the core of this remarkable aural tradition.

Furthermore, I will expand upon previous methods of hermeneutic historiography by dealing with the ways technology has been used to define the musician and his or her music in the context of past and current forms of musicking. The goal of these research methods is to provide not only a detailed look at current “underground” processes of hip-hop beatmaking that have yet to be dealt with in musicological or ethnomusicological studies, but to shed new insight on the tradition of hip-hop itself by exploring the ways technological mediations and negotiations have been happening throughout the history of the genre. In doing this, my project is at once analytical, hermeneutic, as well as a form of decentered historiography that hopes to open up the much needed discussion of what constitutes “underground” *instrumental* hip-hop production while also challenging dominant trajectories of the musical style that have focused on voices and text.

Since I will be dealing primarily with the musician’s interaction with technological processes and secondarily with the ways in which these processes constitute specific cultural identities in hip-hop, my conceptual framework will come from not only hip-hop scholarship, but studies in technological systems of use and similar branches of cultural studies. Many of these texts, such as Paul Théberge’s *Any Sound You Can Imagine: Making Music/Consuming Technology*,²⁴ Mark Katz’s *Capturing Sound: How Technology Has Changed Music*,²⁵ and Paul D. Greene and Thomas Porcello’s

²⁴ Paul Théberge, *Any Sound You Can Imagine: Making Music/Consuming Technology* (Hanover, NH: Wesleyan University Press, 1997).

²⁵ Mark Katz, *Capturing Sound: How Technology Has Changed Music* (Berkeley and Los Angeles: University of California Press, 2004).

essay collection *Wired for Sound: Engineering and Technologies in Sonic Cultures*²⁶ have proved useful in dealing with the perennial tension in studies of technology since the time of Heidegger; the balance between structural technological control and the user's individual agency. Greene brings up a particularly useful question when he asks the reader to connect the inner logic of a particular technology to the social history in which the technology is embedded. The means by which this connection is made constitutes an assertion of "authenticity," and has considered across musical genres by popular music scholars Simon Frith²⁷ and Richard Middleton.²⁸

Of course, in dealing with a diverse range of compositional approaches, I will build on many important theories and concepts from hip-hop scholarship. In order to open the discussion on the core aesthetics of hip-hop as developed from turntablism, I will expand on Rose's cultural interrogations of the "break" and the "cut" by framing these concepts in the context of the changing technologies I discuss throughout the thesis. As I move to the music of Madlib, I will deal with the ways in which advances in sampling technology are mediated by producers who hold on to traditional hip-hop practices and aesthetics. In this section I will expand on Krims's notion of the "hip-hop sublime" to include not only the ways in which dense combinations of musical layers create conflicts in the realm of pitch and timbre, but rhythm as well. The discussion will thus focus on the ways in which advances in the technology itself allow for complex rhythmic sequencing and digital signal processing.

²⁶ *Wired For Sound: Engineering and Technologies in Sonic Cultures*, edited by Paul D. Greene and Thomas Porcello (Middletown, CT: Wesleyan University Press, 2005).

²⁷ Simon Frith, *Performing Rites: On the Value of Popular Music* (Cambridge, MA: Harvard University Press, 1996).

²⁸ Richard Middleton, *Studying Popular Music* (Philadelphia: Open University Press, 1990).

Since all of these artists are still actively engaged in making music, I will incorporate a sizable portion of secondary ethnographic research including written and video interviews from periodicals and other news outlets, album reviews, and twitter posts, thus highlighting the immediacy of this cultural phenomenon, as well as the ways in which these artists are positioning themselves in various cultures of electronic music, specifically hip-hop. In the same manner as the hip-hop culture itself, it is my goal to bring this study full-circle, examining the ways in which emerging trends in hip-hop production act to both expand and renew past methods and technologies.

“Realness” in hip-hop music today finds itself at an interesting cultural crossroads. So-called “commercial” rappers such as Lil Wayne, Drake, and Eminem continue to dominate the Top 40 charts, thus defining the genre in a very specific way for many listeners, while “underground” musicians and audiences from various hip-hop subcultures and specific geographies continue to shape their own brands of the culture as ideological resistances to these trends. Here, musical and cultural practices are constantly being negotiated between the seemingly opposing poles of “commercial” and “underground” styles, each of which include interpretations of what constitute “real” hip-hop culture. Yet these ideological binaries are not always actualized in reality. The importance of expressing individual style in light of perceived “mainstream” success is perhaps the defining factor of the hip-hop generation, “commercial” or “underground.” For this reason, my goal is not to highlight the ways in which we can fix the identity of hip-hop artists with a single label, but rather to illuminate the way these assertions of identity work at the technical and practical level of beatmaking. While key hip-hop scholars have worked to stress the importance of specific geographic styles and subgenres

in the culture, the desire to group one of the largest global musical cultures into a single homogenous unit has prevented a deeper study of the ways in which this music is constantly being shaped in complex and cross-cultural ways. While I have made it clear that I will be dealing with “underground,” “instrumental” hip-hop producers, it is my goal to show that developments in production style have actually worked to break down many of these labels and genre categories.

I. ENDTRODUCING... THE AKAI MPC

Sometimes a new technological device leaves more noticeable traces of its use than a familiar one, and producers/sound engineers have dealt with this reality in a variety of ways. While some have tried to conceal the traces of a new device by making it work like familiar equipment did, others deliberately expose them, often to the extent that the new device becomes a sonic trademark for a specific time.²⁹

The Akai MPC has long been considered standard sampling technology in any hip-hop production studio. Expanding upon the various technologies developed by pioneering hip-hop DJs—including beat-juggling, cutting, and mixing—the MPC introduced a much wider range of possibilities regarding not only the manipulation of individual samples, but their assemblage into a musical composition as well. Furthermore, the expansion of the machine has coincided with the musical development of the hip-hop tradition, as producers have responded and reacted to changing technological trends with increasingly innovative trends in performance practice.

Through analyses of several tracks by DJ Shadow and Madlib, the first two sections of my thesis will fill a major gap in hip-hop scholarship by exploring both the technical aspects of the music's construction as well as how these producers have responded and reacted to the changing characteristics of the MPC throughout its development. The dual compositional approaches presented—that of the traditional DJ and producer—offer a complete account of the artistic development of the music, while acknowledging the influence of historical tradition on past and present production. Also, by focusing on works of instrumental rather than lyric-based hip-hop, the particularly significant techniques can be more clearly represented for the listener.

²⁹ Ragnhild Brovig-Hanssen, "Opaque Mediation: The Cut-and-Paste Groove in DJ Food's 'Break'," in *Musical Rhythm in the Age of Digital Reproduction*, ed. Anne Danielsen (Burlington, VT: Ashgate, 2010), 174.

In exploring the diverse technical and musical trends that have received little attention from scholars, this paper hopes to provide a missing link to the way we analyze hip-hop music and culture. With a basic understanding of the producer's compositional approach and the devices that have been so central to this process, we are presented with an immense wealth of knowledge with which to apply theoretical and analytical as well as aesthetic methodologies across multiple disciplines.

In *Rap Attack 2*, a pioneering book on the history of hip-hop culture from its origins to 1992, David Toop summarizes some significant changes in early production technologies:

The reason why rap changed its sound so dramatically in the latter half of the '80s was due to the development of relatively low priced digital samplers with enough memory to hold and loop a few bars of music. By the '90s, these samplers could run multiple loops of long or short sections of music simultaneously, along with drum sound samples and other noises, all of which could then be saved onto floppy disc to be kept as the producer's personal library of signatures. This was a massive progression from Grandmaster Flash cutting up "Adventures on the Wheels of Steel" in the studio, or Jam Master Jay running one section of Bob James' "Mardi Gras" under a drum machine beat.³⁰

Toop introduces two key concepts in this quote: first, the importance of the invention of the digital sampler and drum machine to hip-hop music, and second, the results of these technologies as "progressions" from previous methods of hip-hop composition. The MPC was not the first hybrid drum machine/sampler—a title held by E-Mu's SP-1200 created in 1986. But with its rubber pad triggers and the ability to chop a sample into discrete fragments, the MPC was certainly the first to encourage stylistic practices from previous technologies, most obviously the percussive "cuts" and "breaks" of the turntables (figs. 1 and 2). As Mark Katz writes, "the impact of a new technology arises from the difference

³⁰ David Toop, *Rap Attack 2*, 2nd ed. (New York: Serpent's Tail, 1991), 191.

between it and that which supersedes, improves upon, or extends and the way users respond to those differences.”³¹ Paul D. Greene expands upon this notion to include not only the technology being superseded but the musical community as well, writing that “every technology brings with it a particular logic... this logic reflects its particular social history.”³² Examining the technical use of these devices will thus reveal significant details of the musical aesthetic of hip-hop, as well as the culture itself.



[Fig. 1] Akai MPC 60



[Fig. 2] E-Mu SP 1200

The MPC was immediately embraced by hip-hop artists for its ability to extend the capabilities of the turntable, while at the same time allowing producers to retain a compositional approach that defined the social and musical community of hip-hop. Before the MPC, hip-hop producers were limited in their ability to integrate the *performative* qualities of the drum machine with those of the turntable, as Jam Master Jay’s method described in Toop’s quote—drum machine *with* turntable—serves as an example of these limits. With a strong sense of tradition and a willingness to experiment with and manipulate new technologies to their own cultural ends, beatmakers throughout

³¹ Mark Katz, *Capturing Sound* (Berkeley and Los Angeles: University of California Press, 2004), 4.

³² Paul D. Greene, “Introduction: Wired Sound and Sonic Cultures,” in *Wired for Sound: Engineering and Technologies in Sonic Cultures* (Middletown, CT: Wesleyan University Press, 2005), 22.

the history of hip-hop have managed to integrate evolving technologies with their own hip-hop tradition. It is with this understanding of hip-hop as a constantly developing musical tradition, fostered by human agents very much in dialogue with the technology of its day, that I will approach my analyses.

In framing an analysis of DJ Shadow's 1996 album *Endtroducing...*, it may be helpful to recognize the composer for his strong dedication to what we may recognize as the hip-hop "canon." At a 2010 performance at Boston's *House of Blues*, Shadow stated "being a hip-hop DJ for twenty-six years now, hip-hop has taught me valuable musical and life lessons." In both his recordings and live performances, he approaches his art with a keen eye for what the "essential" DJs of the past have done, and how they have created the musical and social *processes* that help us recognize the culture. Joseph Schloss furthers this idea of hip-hop pedagogy: "the most practical educational approach is to recapitulate the form's musical evolution to ensure that each important technique is mastered before moving on to the next one."³³ DJ Shadow views himself in this sense as a DJ first and foremost, and it is this artistic self-identity that helps him define how he approaches technologies such as the MPC.

Endtroducing... stands as a particularly effective monument in instrumental hip-hop due to the fact that it was created using a single turntable and an MPC 60 at a time when digital "overproduction" in the genre was seemingly becoming the industry standard. The use of the turntable grounds DJ Shadow in an "underground," authentically "old-school" canon, as he invokes the ritualistic process of crate-digging in his liner notes, stating that "this album reflects a lifetime of vinyl culture."³⁴ The album cover

³³ Schloss, 43.

³⁴ DJ Shadow, *Endtroducing...*, liner notes, Island Records, 1996, CD.

highlights the communal, yet introspective aspect of “digging,” as two teenagers stand back to back with their heads in the crates (fig. 3).



[Fig. 3] Endtroducing... album cover

The opening track “Best Foot Forward” may be viewed as homage to mixing pioneer Grandmaster Flash in both technique and content, as the constant, rapid cuts between various musical sources along with the frequent use of turntable techniques such as baby scratches and more virtuosic scribbles hint back to Flash’s own groundbreaking 1981 mix “The Adventures on the Wheels of Steel.”³⁵ “Best Foot Forward” is in fact establishing DJ Shadow in the tradition of mixtape culture, which holds an essential lineage from not only Flash’s mix but also Afrika Bambaataa’s “Death Mix,” as well as DJ Premier’s “DJ Premier in Deep Concentration.” As Shapiro writes, “the mixtape is emblematic of hip-hop’s basic guiding principle: the flow and juxtaposition are everything. If history is

³⁵ For in-depth discussions of common turntable techniques, check out Peter Shapiro, “Deck Wreckers,” in *Undercurrents: The Hidden Wiring of Modern Music* (New York and London: Continuum, 2003) and Mark Katz, “The Turntable as Weapon,” in *Capturing Sound* (Berkeley and Los Angeles: University of California Press, 2004).

indeed over, then the aesthetic of the mixtape has become post-history's over-arching narrative."³⁶ Indeed, Shadow's basic compositional approach involves extending the processes of mixing and juxtaposing samples that DJs had previously done with multiple turntables. In this way, *Endtroducing...* promotes a constant blurring of technique between turntable and MPC, as we shall see in my analysis.

A basic overview of the MPC 60 will reveal its fundamental capabilities, allowing us to see exactly what DJ Shadow was working with in constructing *Endtroducing...* It is a sampler first and foremost, packaged as an empty unit to which the user "samples" his or her own sounds from an external stereo input. Once a sound is sampled, it can be trimmed to various lengths, chopped up into discrete regions, and/or assigned to any of the sixteen rubber pads on the front interface for "live" playback. The device contains a total of two pad banks (sixteen pads per bank), resulting in a total of thirty-two possible samples at a time. Hitting the pads will then play the sample from a given position, the sample becoming its own instrument. With the built-in sequencer, the user can record and overdub any number of pad performances, juxtaposing and layering as many tracks as the limited memory (a single 1.44 mb floppy disk) would allow. The capabilities of the device as well as its limitations are the focus of my analysis, revealing the ways in which the user interacts with the device by connecting the cultural practice of the sampler to the "authentic" cultural identities created by the turntables.

The most significant technological advancement that the MPC 60 offers is a vast expansion of the possibilities of juxtaposition. While previous DJs could only mix as many samples as the number of turntables they had—Flash stands as somewhat of a

³⁶ Peter Shapiro, "Deck Wreckers," in *Undercurrents: The Hidden Wiring of Modern Music* (New York and London: Continuum, 2003), 174.

legend for his ability to mix with three turntables — with the MPC 60 Shadow could assign individual samples to each of the sixteen pads of the machine. As mentioned earlier, with two pad banks this allowed him to hold as many as thirty-two samples in any given program. Interestingly enough, because device memory limited the total length of samples that could be held at a time to a total of thirteen seconds, Shadow’s work even more closely resembles the work of previous DJs who utilized a juxtaposition of short sample stabs and one-bar loops from vinyl records.

Far from simply emulating the sonic limitations of the turntable however, Shadow uses the capabilities of the MPC to counteract these limitations. An example may be heard in “The Number Song,” in which the basic musical foundation is a sample of a short guitar tone. Shadow chops off the initial attack of the sample and loops the remainder, thus producing a drone effect that could not be achieved on the turntable. This attempt to revisit the limitations of the turntable in the context of the newer media of the sampler highlights Brian Eno’s notion that “even the ‘weaknesses’ or the limits of tools become part of the vocabulary of culture... what was once thought most undesirable about these tools became their cherished trademark.”³⁷ In creatively expanding upon the limitations of the turntable and the MPC, Shadow’s performance practice and aesthetic reflects the technically subversive logic behind instrumental hip-hop composition.

Aside from allowing the juxtaposition of multiple samples, the MPC allowed Shadow to sequence these juxtapositions in a narrative format that reflects Shapiro’s conception of “flow” in the mixtape. “Building Steam With a Grain of Salt” follows a

³⁷ Brian Eno, “The Revenge of the Intuitive: Turn Off the Options, and Turn Up the Intimacy” *Wired* 7.1, January, 1999, http://www.wired.com/wired/archive/7.01/eno_pr.html (accessed January 22, 2011).

basic ABA structure with very definable themes—which may be referred to by their technical “MPC” name, sequences—organized in eight-bar segments (fig. 4).



[Fig. 4] “Sequence” Mode, allowing *track selection* (individual part of overall pattern/sequence), *sequence number and name* (individual pattern/sequence of overall song), *track “program” selection* (sample “program” used to make the individual track), *tempo* (tempo of individual sequence), *bar length* (measure length of individual sequence), and more. Screenshot taken from author’s MPC

The A section builds these sequences by layering various piano and vocal samples until a drum break occurs exactly halfway through the piece, transitioning to the B section which contrasts most noticeably by switching its core sample content from piano to guitar.

Toward the end of the piece we return to the beginning solo piano, and the piece fades out in the same way we were introduced to it. Many of the pieces throughout the album follow a similar cyclic structural form that could be considered a musical way of “endroducing.”

Organizing his pieces by layering samples in this very precise and structured way could not be done by a single DJ with two turntables. However, this method is actually suggested by the specific setup of the MPC sequencer. With no visual map or grid sequencer—common tools in sequencer hardware and software today—the MPC allowed the user to choose individual sequences, consisting of anything from single samples to full musical sections such as a verse or a chorus, and arrange them as a vertical list in which it could be decided how many times each sequence would repeat itself before it

moved on to the next sequence on the list. For example, in the following diagram, “Song01” would begin with four repeats of a two bar loop—titled “Beat 1”— at 80 beats per minute, followed by two repeats of a two bar loop—titled “Beat 2”—at 92 beats per minute. “Song01” ends with eight repeats of a two bar loop—titled “Beat 3”—at 108 beats per minute, resulting in a song that lasts a total of 28 bars (fig. 5).

Now: 001.01.00		01-Song01		[00:00:00:00]	
STEP	J(SEQ)	SEQUENCE	REPEAT	BARs	TOTAL
1	80.0	01-Beat 1	4	2	8
2	92.0	02-Beat 2	2	2	12
3	108.0	03-Beat 3	8	2	28
4		(end of song)			

RECORD
CONVERT
DELETE
INSERT

[Fig. 5] “Song” Mode allows the user arrange individual sequences in a formal order. In addition to programming the form of the song, the arrangement of sequences can be recorded live by moving between song sections in an improvisatory manner

This method of sequencing improved upon the imprecision that could result from mixing with two turntables, while also freeing up the producer to deal with more specific musical details. In Shadow’s case, this meant expanding upon the traditional significance of the hip-hop “break,” as we shall see in the following discussion.

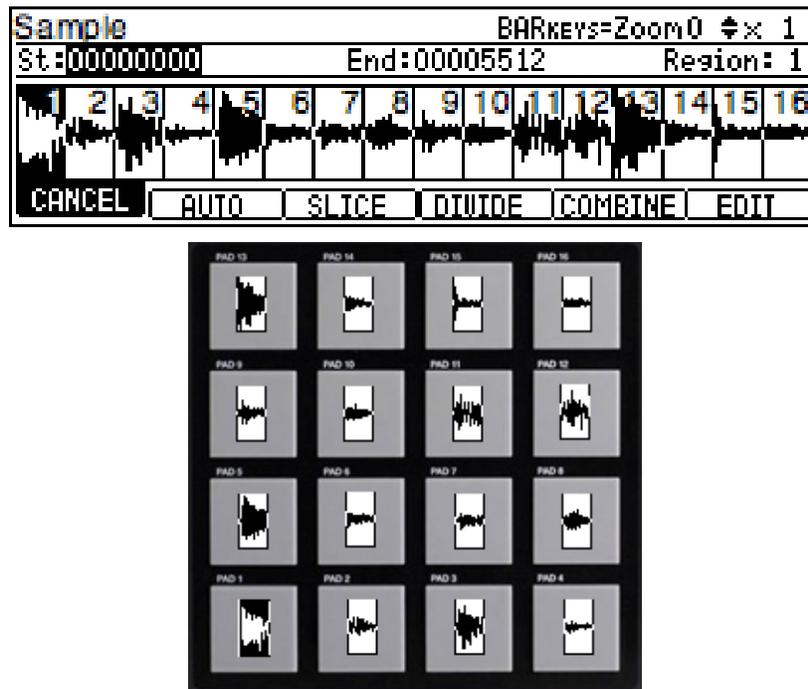
PERFORMATIVE AUTHENTICITY AND THE HIP-HOP BREAK

Producers have developed an approach to authenticity that is characterized by a sort of aesthetic purism; certain musical gestures are valued for aesthetic reasons, and one’s adherence to this aesthetic confers authenticity.³⁸

One of the foundational musical gestures in the instrumental hip-hop tradition is the ability to isolate or manipulate the breakbeat. Prior to the invention of the MPC, the sampled break was isolated by either juggling the beat between two turntables with the same record on each, or programming the rhythms of the sampled break on a drum

³⁸ Schloss, 64.

machine which would play synthetic drum sounds.³⁹ In either case, “live” manipulation of the break was impossible except in the context of a solo turntablist performance. The most important development of the MPC was its ability to chop a sample into separate regions that could then be assigned to pads, as this allowed compositional control of any discrete moment of the sample with a speed that is impossible to achieve by cutting a vinyl record (fig. 6).



[Fig. 6] “Trim” Mode allows the user to “chop” a sample into discrete regions. The resulting sample “chops” are then converted to an instrument “program” that can be played percussively using the MPC pads. Chopping up the “Sample” above allows one to use fragments of the sample as an instrument. “Program” mode allows the user to edit individual synthesis parameters of the sample fragments (see fig. 8).

As a drum machine as well, the rubber pads on the front interface of the MPC allowed the producer to play these pads as they would have played a drum machine.

The concept of the MPC as a drumset of sorts is very prominent among hip-hop producers. After sampling multiple short sounds, or “stabs,” producers would often layer

³⁹ Toop’s *Rap Attack 2* offers a basic documentary account of the use of drum machines and turntables in hip-hop from the mid-1980s.

these “one-shot” samples onto a single pad, resulting in a heavier percussive sound. Layering samples in this manner is referred to as “drum-layering,” and the way producers manipulate, tune, and filter individual sounds often result in what is labeled as a producer’s “drums” as opposed to a sample from another sound source. Writing on his use of the MPC, MF Doom says “I consider myself a drummer if anything. Drums are the centerpiece of the song.”⁴⁰ In the beginning of “Building Steam With a Grain of Salt,” DJ Shadow includes a recording of an interview from an old instructional percussion video, in which the teacher says, “I’d like to just continue to be able to express myself as best as I can... I am a student of the drums. I am also a teacher of the drums.” In his *New York Times* article “Lots of Beats, but No Drum in Sight,” Jon Caramanica writes “most MPC performers agree that a drumming background is essential to handle the machine.”⁴¹ Producers are not, however, basing their own performances on the practices of the “live” drummers they are sampling, rather they are reinterpreting the idea of a “drummer” to include drum machine performances previously thought of as dehumanizing.⁴² Throughout *Endtroducing...* DJ Shadow redefines the break precisely in his manipulation of it as an extension of what it means to be a “human” drummer.

Throughout the first half of “Building Steam With a Grain of Salt,” the drum part is heard as an unchanging loop that could just as well have been played from a vinyl breakbeat compilation or even the E-Mu SP sample looper. However, at 2:44—approximately halfway through the piece—the other instruments drop out and we hear

⁴⁰ Andrew Mason, “MF Doom Interview,” *Wax Poetics*, 31 (2008).

⁴¹ Jon Caramanica, “Lots of Beats, but No Drum in Sight,” <http://www.nytimes.com/2011/02/13/arts/music/13beatmachine.html> (accessed February 16, 2011).

⁴² The Society for the Rehumanization of American Music has coined the phrase “Drum Machines Have No Soul” as part of their “moral” campaign <http://www.danielchamberlin.com/article.py?id=1089839497.83.0.864462396951>

the first drum break on the record. The first two bars of the break remain unchanged, yet in the third measure we hear a beat of 32nd note kick drums followed by a 16th note upbeat on beat three leading to four more 32nd note kick drum hits. The next measure is even more chopped up, as the same pattern from beat three of the previous measure is orchestrated between snare and kick drum, resulting in a rapid alternation between samples (fig. 7).



[Fig. 7] First four bars of the drum break from “Building Steam With a Grain of Salt”

After a couple more bars of sample chopping, the final two bars of the break include a series of 32nd note patterns that crescendo and decrescendo as they move across the sample pads.

By chopping up the original two bar break and assigning it across the sixteen pads of the MPC, DJ Shadow ends up with an eighth note fragment of the break on each pad, ascending from the first kick drum hit to the final ride cymbal hit on the “and” of beat four in the second measure (fig. 8).

Tr: 1 :Pgm:02-AmenBrother		(DRUM)	Play: POLY		
MIDI IN	PAD	SAMPLE	CHOP	LEVL	TUNE
36	C_1	A01 AmenBrother-01	--	80	+00.00
37	C#1	A02 AmenBrother-02	--	80	+00.00
38	D_1	A03 AmenBrother-03	--	80	+00.00
39	D#1	A04 AmenBrother-04	--	80	+00.00
SAMPLE		AMP	FILTER	PITCH	LFOMUTE
					OUT/FX

[Fig. 8] “Program” Mode displays the combination of samples which results from the “Trimming”/ “Chopping” process. As you can see, each pad (A01, A02, etc.) is assigned an individual region of the chopped sample. Various parameters such as amplitude, filter frequency, and pitch can be edited individually, as seen in the bottom tabs (note: the “Amen Brother” break is not the drum beat used by Shadow in “Building Steam,” but it will show up in my discussion of Flying Lotus in chapter three)

By hitting each individual pad, he is able to trigger individual sounds from very specific moments of the break, isolating each drumset sound from the original. By setting the quantize function—thus standardizing the timing of each sequence—to 32nd notes, the MPC will then synchronize each of Shadow’s drum hits on a given track to the nearest 32nd note of the beat. In the process of internally recording the sequence on the MPC, multiple polyrhythms can be juxtaposed using the “overdub” function, which can be turned on and off as the loop plays.

In conjunction with this quantize function Shadow uses a button labeled “Note Repeat” to repeat looped sample hits in the timing that the quantize function is set at. For example, to hold the first pad down while holding down the note repeat button and quantize set to 32nd notes would result in a stream of 32nd note kick drum hits in perfect timing with the master tempo of the sequence. Since the MPC pads are pressure sensitive, gradually applying more pressure to an individual pad will create a crescendo effect, as reducing pressure will create a decrescendo (fig. 9).



[Fig. 9] From “Building Steam With a Grain of Salt,” note crescendo on beat three

In utilizing concepts of expansion and contraction, combined with the method of orchestrating rhythmic ideas around the “drumset,” Shadow’s performance in this drum break is reminiscent of the way jazz drummers manipulate simple rhythmic ideas. The break actually bears striking resemblance to the way Joe Morello orchestrates a simple rhythmic idea between snare and kick drum on the famous recording of Dave Brubeck’s “Take Five.” Listening to the piece in this way, we may hear the virtuosic skill with

which Shadow manipulates the drums, a performance practice that could not be achieved by cutting up a sample with turntables and one that presents a much more “live” picture of what is going in the music than we may typically expect from a complex machine such as the MPC. Furthermore, in visualizing Shadow’s performance we are reminded of Steven Connor’s idea of “umbilical continuity,” in which a sampled sound retains a tactile relationship with its source.⁴³ Tricia Rose’s notion of “performative resonances” echoes this relationship, noting that sounds and performances in one time or location retain some connection to those sounds or performances which are influenced or “sampled” in another time or location.⁴⁴ These concepts highlight another important connection between the MPC pads and the vinyl record on the turntable, as the performative processes of each device ground themselves in a physical, “live” equivalent. The physical “scratch” of the record aurally connotes the needle grinding against vinyl, while the pounding of the MPC pads aurally highlights the percussive nature of the performance. In each instance, the listener is encouraged to engage in the “liveness” and immediacy of the performance, whether that performance is actually “live” and immediately present, or if it is the product of a studio process. I will further problematize the phenomenology of “liveness” as it relates to the hip-hop aesthetic as I discuss Madlib and Flying Lotus in the coming chapters.

Aside from physical and sonic similarities of the devices, *Endroducing...* promotes a constant blurring of technique between turntable and MPC. While “Building Steam” may be heard exclusively as a product of the MPC, the following track, “The Number Song” is approached from the perspective of DJ practice. Although samples are

⁴³ Veit Erlmann, “But What of the Ethnographic Ear?,” in *Hearing Cultures: Essays on Sound, Listening, and Modernity*, edited by Veit Erlmann (Oxford and New York: Berg, 2005), 9.

⁴⁴ Rose, 78.

manipulated they are not manipulated as a primary performance in the track. As the drumbeat is chopped and sequenced, it ultimately serves as the backdrop to the primary performance of Shadow's turntables. Drum breaks, which occur frequently throughout this track, serve as a musical foundation for the virtuosic turntable scratching and sample drops that he records over them. In the last minute of the song we hear an extended drum break that is quite busy rhythmically, but toward the end of it we hear the snare of the snare drum turn off in mid-performance, followed by a turntable stop which reminds the listener that we have just been listening to a vinyl record. In this way, DJ Shadow blurs the distinction between not only turntable technique and MPC technique, but also between the performance of himself as producer and the performance of those he has sampled.

While the previously mentioned tracks may serve as two perspectives on hip-hop production representing opposite sides of a compositional spectrum—either manipulating the sample with a sampler or with a turntable—the next track problematizes this binary as Shadow reimagines a turntable technique within the specific context of the MPC. At 2:36 of “Changeling,” we hear a two bar drum break with a flute riff over it along with a “choppy” effect applied to the drums. This popular turntable technique, known as the transformer, gives the impression that the music is alternately turning on and off, and can be achieved in multiple ways. Flicking the phono/line switch at the top of the mixer rapidly, moving the upfader which controls track volume up and down, as well as crossfader techniques such as the crab or the twiddle will achieve the same result. However, the incredibly fast rate at which this effect occurs—allowing us to hear the “chops” in successions of 32nd notes—suggests that the effect was achieved by using the

crab technique, in which the DJ drags four fingers along the crossfader at the cut-in point (where we begin to hear the sample) while the thumb acts as a spring providing resistance to the drag of the fingers. Yet if this is the case, the rhythmic precision and control with which the effect is carried out is almost too precise for even the most skilled DJ to pull off. The fact that the break is only two bars may provide an explanation, but the question remains: how exactly did Shadow pull this off?

Later in the piece, at 4:35, two musical events occur in succession, pointing us to the answer. First, the keyboard sample that has been present throughout quickly shifts down in pitch without changing tempo, eventually fading away, and second, the drum break we heard previously comes back and for fifty seconds we hear the transformer effect applied to the beat along with the rhythmic variations akin to what we heard in “Building Steam.” Neither of these musical events could have been achieved by a single turntablist. Dropping the pitch of a sample on the turntable would have resulted in a simultaneous decrease in tempo, while I have already shown that the rhythmic variations achieved by way of the MPC pads are technically impossible using just a turntable, never mind the inhuman precision and endurance that would be required to perform a transformer effect at this rate for a minute. What is actually happening here is an intentional operator error on the part of DJ Shadow.

One of the most innovative functions of the MPC was its ability to reduce the pitch of a sample without altering the tempo, in a process known as “patch phrasing.” After the user chops a sample into discrete regions by way of the trimming function, the machine then has the ability to stretch each individual sample region to accommodate for any change in tempo. In order for this function to work, each sample region must be

perfectly trimmed so that only one sound occurs in each region, and within that region the sound must be trimmed to be triggered directly at the start of the sample's waveform. For example, "patch phrasing" a drum beat would involve trimming each sound so as to isolate every individual drum hit on the very moment that you hear the attack of the sound. If this is not done carefully enough, a "stutter" effect will be created which aurally reflects the gap that results between sample regions from the inability of the machine to stretch the waveform.⁴⁵ By chopping the one bar drum break of "Changeling" into thirty-two separate, yet improperly trimmed regions, DJ Shadow achieves the transformer effect without having to risk developing tendonitis, while also allowing him to create rhythmic variations on top of the "transformed" break. Shapiro describes the transformer scratch as the origin of hip-hop's "chopped-up" style, and it is through DJ Shadow's use of it—which connects technique and practice of the turntable to the MPC—that we may understand the importance of this device for the tradition of instrumental hip-hop.⁴⁶

In this analysis of *Endtroducing...* we have observed the "purist" aesthetic with which DJ Shadow approaches hip-hop composition. The use of the "physical" hardware device against the computer software equivalent and the constant tributes to "essential" DJs and "canonical" hip-hop performance practice are the most obvious characteristics of what we may broadly define as "underground" hip-hop. Yet it is in the final tracks of the album that a strong ideology defending this position presents itself, with very real emotional significance attached to it. This musical "rant" begins with the track "Why Hip-Hop Sucks in '96," in which a two bar funk loop with a synthesizer lead occurs for a mere forty seconds; a musical style hinting at the influence of West Coast gangsta rap

⁴⁵ For an extensive discussion of the concept of "Glitch" in electronic music, check out Caleb Kelly, *Cracked Media: The Sound of Malfunction* (Cambridge, MA: MIT Press, 2009).

⁴⁶ Shapiro, "Deck Wreckers," 168.

created by Dr. Dre, in which simple yet very laid back vintage synth lines are layered over P-Funk samples. The only other musical event which occurs in this track is a voice—which sounds strikingly similar to Snoop Dogg—echoing a phrase that summarizes the perceived ambition and goals of many rappers who were entering the hip-hop community at the time: “It’s the money.”

The racial implications are clearly reflected in these contrasting cultural positions. As a white producer, Shadow is able to assert his “undergroundness” by appealing to a sort of “indie” subjectivity that simultaneously asserts and rejects its African-American influences. This process has been discussed by Susan McClary in the context of London rockers appropriating early African-American blues artists, and it has more recently been portrayed in the rockumentary *It Might Get Loud*: Jack White plays the “authentic” rock musician whose art came about as a simultaneous fetishization of Son House and a rejection of the black and Hispanic hip-hop and house music of his childhood.⁴⁷ In this context, white artists are able to assert a stance of alterity as a primary selling point of their “artistry.” Meanwhile, the public identity of professional African-American artists is a constant dialogue between individual artistry and socio-historically constructed racial stereotypes—a process that has defined African-American popular music since the early twentieth century. In the final moments of *Endroducing...*, Shadow’s stance as “underground” becomes more than just an ideology of alterity, expanding into larger questions of what it means to be “human” in a mass-mediated culture.

At 4:33 of the penultimate track of the album “Napalm Brain/ Scatter Brain,” the break is reconceived one last time in a somewhat sarcastic way. While the break begins

⁴⁷ Susan McClary, “Thinking Blues,” in *Conventional Wisdom: The Content of Musical Form* (Berkeley and Los Angeles: University of California Press, 2000).

with rapid 16th note hi-hats panning back and forth, other drums quickly enter, building a dense, driving polyrhythmic beat which is quite uncharacteristic of the melancholic mood of the rest of the album. Furthermore, the sampled drums used in this break are more synthetic sounding than those used in the rest of the album. Musically, Shadow is satirizing the popular use of preset sample packs—presampled collections of drum sounds sold commercially—while poking fun at the common practice of drum sequencing that developed during this time which utilized complex polyrhythms in a very repetitive, “inhuman,” and dynamically stagnant way.

As this sequence progresses for over three minutes, the more ethereal samples that have thus far characterized the sound of the album begin to fade back into the mix, eventually causing the drums to drop out completely, leaving the listener alone in a lush soundscape of slowly moving strings and warm synth sounds. We have left the dance club now, and we are alone in a much more introspective environment. The drums fade back in toward the end of the track for a few seconds, but quickly fade back out, leaving us with the final track of the album as well as DJ Shadow’s question for the current hip-hop generation: “What Does Your Soul Look Like?”

With *Endroducing...* DJ Shadow reveals an existentially divided self. His virtuosic mastery and integration of various technologies have gained him respect and legitimacy as an agent of positive change in the hip-hop “underground,” yet this striving for progress is continuously balanced by the very real social and musical ethics of creativity and performance that his somewhat “purist” tradition imbues. Shapiro writes of the album as “a melancholic journey through hip-hop’s short history that showed both

how much had been gained and how much had been lost.”⁴⁸ It is this constant dialectical tension between the creative process of the individual and a tradition that provides social definition and collective identity, that marks hip-hop as a cultural process and which gives it such vibrancy and life.

The nostalgic melancholy at the core of *Endroducing...* signifies upon the double meaning of the album title itself. On one hand, this work iconically marked the end of the era of the turntablist as a dominant figure of cultural change. The rise of the rapper as a cult personality was gaining ground in both the commercial and underground realms of hip-hop, as the turntablist became a background figure who provided a novelty opening show before the rapper made his presence. However, the other side of *Endroducing...* signaled a “passing of the torch” of sorts, as it musically—and technologically—introduced the producer as the fifth element of the hip-hop culture. Rather than cynically embracing what many considered to be the death of a youth culture, a new generation of beatmakers has worked within the perceived conformity of the hip-hop media industry to carry the music toward a brave new world.

⁴⁸ Shapiro, “Deck Wreckers,” 175.

II. MADLIB “THE BEAT KONDUCTA” AND THE “HIP-HOP SUBLIME”

The continuing core of [hip-hop] ideology is that raw sounds are more authentic than cooked sounds. This is a paradoxical belief for a technologically sophisticated medium and rests on an old-fashioned model of direct communication—A plays to B and the less technology lies between them the closer they are, the more honest their relationship and the fewer the opportunities for manipulations and falsehood.⁴⁹

For DJ Shadow, the major aesthetic dilemma involved negotiating a musical space for the hardware sampler in the context of a tradition that placed absolute canonical status on the turntables. *Endroducing...* thus mediates the perceived compositional “purity” of the turntables and the emerging digital hardware devices represented by the MPC 60. However, as the ‘90s reached their end, hip-hop witnessed the twilight of its “Golden Age” as the culture became a global phenomenon, diversifying its scope to encompass the values and ideologies of youth cultures around the world.⁵⁰ In this context, the “underground” hip-hop stance permeated across geographic lines as an ideology of alterity, in contrast to a mythical “mainstream” hip-hop, which reflected the perceived uniformity of an emerging globalized world. For producers establishing themselves as solo instrumental hip-hop musicians during this time—The RZA of The Wu-Tang Clan, Q-Tip of Tribe Called Quest, J-Dilla, or Madlib, for example—the debate over aesthetic “realness” no longer took place between the turntable and the hardware device, but rather

⁴⁹ Simon Frith, “Art Versus Technology: The Strange Case of Popular Music,” *Media, Culture & Society* 8 (1986): 266-7.

⁵⁰ For studies on hip-hop culture around the world, check out *Global Noise: Rap and Hip-Hop Outside the USA*, ed. Tony Mitchell (Middletown, CT: Wesleyan University Press, 2002), Ian Condry, *Hip-Hop Japan: Rap and the Paths of Cultural Globalization* (Durham and London: Duke University Press, 2006), and Ian Maxwell, *Phat Beats, Dope Rhymes: Hip-Hop Down Under Comin’ Upper* (Middletown, CT: Wesleyan University Press, 2003). For studies on cross-cultural hip-hop within the United States, check out *Reggaeton*, eds. Raquel Z. Rivera, Wayne Marshall and Deborah Pacini Hernandez (Durham and London: Duke University Press, 2009), and Nitasha Tamar Sharma, *Hip-Hop Desis: South Asian Americans, Blackness, and a Global Race Consciousness*, eds. Ronald Radano and Josh Kun (Durham and London: Duke University Press, 2010).

between hardware devices such as the MPC, and their digital software equivalents that reside on computer workstations.

Giving up the title “DJ” from their names, these artists embrace their primary role as “beatmakers.” As many of their monikers suggest—MF Doom as “Metal Fingers,” or Madlib as the “Beat Konducta”—removing the title DJ from their alias is a way of asserting their identity as progressive “post-turntable” artists who focus their energies solely on sample-based, instrumental hip-hop. This section of my thesis will focus on Madlib’s use of the MPC 4000 as an alternative to emerging computer software production tools. As he states, “my studio’s basic; mad records. I don’t have no computers, I don’t have any big setups people have. I just have a 303 sampler, or SP 12, or whatever I use, and just records. That’s all I need. I mean, I buy new things like an MPC, but it’s still basically the same. I’ll be having no computer setup or 24 tracks and none of that Pro Tools.”⁵¹

The challenges and limitations of utilizing hardware over software work to assure his legitimacy as a hip-hop producer who has paid his dues, but lacks the strong background in turntable DJing, as he states, “people just think they need computers and things to do the work for them, but I do my stuff the old school way, the hard way, you know what I’m sayin’?”⁵² Despite their status as standard tools for a wide variety of contemporary rap-based hip-hop, “commercial” or “underground,” digital audio workstations such as Pro Tools, Reason, and Ableton Live are still viewed by many *instrumental* hip-hop purists in a negative light, as the digital nature of the software is blindly conflated with ease of use and therefore lack of both skill and performative

⁵¹ Adrian Schraeder, “Interview with Madlib,” Urban Smarts, <http://urbansmarts.com/interviews/madlib.htm> (accessed December 28, 2010).

⁵² Ibid.

“authenticity.” Many rock musicians parallel this attitude; Jack White’s “anti-technology” stance in the recent rockumentary *It Might Get Loud* stands as a perfect example of the ways in which assertions of authenticity through technology occur in both rock and hip-hop culture. As he states, “technology is a big destroyer of emotion and truth. It doesn’t do anything for creativity. Yeah, it makes it easier, but it doesn’t make you a more creative person. That’s the disease you have to fight in any creative field: ease of use.”⁵³ For both Madlib and Jack White, issues of technological authenticity revolve around multiple binaries: digital vs. analog, virtual vs. physical, and most implicitly machine vs. human. Ultimately, their “alternative” stance mixes the latter half of these dualisms into an essential form of “humanness” defined by a specific type of physicality and presence, which can only be achieved by making the technological device as transparent as possible.

In chapter three I will complicate this argument, but for now I will focus my discussion on the ways in which Madlib exploits the limitations of the MPC 4000 as a positive challenge in the compositional process. Through an analysis of a number of beats from his *Beat Konducta* mixtape series, I will show how Madlib’s unique approach to emerging hardware sampling technologies allows him to solidify his own position in the instrumental hip-hop tradition, particularly through the perceived immediacy and visceral nature of hardware devices in contrast to their digital software counterparts. Through a dissonant combination of various musical layers—characteristic of what Adam Krims calls the “hip-hop sublime”—we can hear how Madlib is technically creating what Katz

⁵³ *It Might Get Loud*. DVD. Directed by Davis Guggenheim. 2008; Los Angeles, CA: Sony Pictures, 2009.

calls “performative quotation... a work with the qualities of performance.”⁵⁴ Key strategies in achieving this *affect* include exploiting the “mechanical” properties of the machine by way of quantization and rhythmic placement of samples, a unique approach to chopping samples, and an extensive use of digital signal processing techniques.

THE MIXTAPE/ THE BEAT TAPE

A brief framing of Madlib’s *Beat Konducta* beat tape series may help us place him along a particular lineage in the “underground” instrumental hip-hop tradition, while also introducing his essential compositional approaches. Currently in its seventh volume, the *Beat Konducta* mixtapes typically consist of about thirty short instrumental hip-hop tracks organized around themes based on where the source material came from; volumes one and two being excerpts from blaxploitation movie scenes, three and four Indian music, five and six a tribute to late producer and mentor, J Dilla, and volume seven to the music of Africa.

These themes alone mark Madlib as a dedicated “digger” of records, Lisa Blanning describing his production role as a “music librarian, curator, guide, archivist... a breaks conservationist and protector of hip-hop’s future, stockpiling the natural resources of the music.”⁵⁵ The idea of the producer as a librarian relates to the more philosophical attitude toward “digging” in hip-hop explicitly described in DJ Shadow’s “vinyl basement” scene in the documentary *Scratch*. As Shadow describes the vinyl archive as “a pile of broken dreams,” he implicitly acknowledges the potential of the “digger” to rediscover and reinvent the meaning of past music for the contemporary

⁵⁴ Katz, 143.

⁵⁵ Lisa Blanning, “Crate Mass Experiment,” *Wire* (2009), 33, 38.

listener.⁵⁶ In a process akin to Byron Werner's "vinyl anthropology... establishing a database of forgotten music of the past," for both Shadow and Madlib, the complete process of hip-hop production from digging for records to sampling and sequencing contributes to an act of communal resurrection and revitalization of past traditions.⁵⁷

Unlike DJ Shadow, however, Madlib reflects the growing community of beatmakers with no strong background in traditional turntable DJing. In this context, his compositional method is distinct from that of the DJ in that the manipulation of the sample and the fundamental groove become the focal points, as opposed to the narrative formal structure that DJs typically apply to their mixtapes. Furthermore, while Shadow's compositional methods pay homage to the "great" DJs of the past, Madlib's approach places him along a distinct compositional lineage set by his friend and fellow beatmaker, J Dilla. As I will show in my analysis, the resulting production style is a product of both the growing community of producers using hardware-based sampling technologies as well as the evolution of these devices in the context of the instrumental hip-hop tradition.

From the first track on his opening installment in the series Madlib asserts his enduring connection to the tradition of sample-based hip-hop. In titling the piece, "The Comeback," he pays homage to James Brown, the most sampled artist in hip-hop music and whose "Funky Drummer" has been chopped up by everyone from Public Enemy to Aphex Twin. Mark Katz notes the "double-voicedness" implicit in this "digital form of signifying," as the virtuosic sampling and looping of this common breakbeat serves to "draw upon and honor the work of the hip-hop DJ."⁵⁸ Furthermore, an opening vocal sample over a downtempo soul sample establishes the producer's unending connection to

⁵⁶ *Scratch*. DVD. Directed by Doug Pray. 2002; New York: Palm Pictures, 2002.

⁵⁷ Werner, quoted in Taylor, 99.

⁵⁸ Katz, 154-5.

the culture—“This is dedicated to all those niggaz who held it down... From the birth of this whole shit to the now success of this whole shit.”

Using blaxploitation film soundtracks and other music from the post-Civil Rights era as primary source material further solidifies his connection to multiple cultural identities, both racial and musical. Joanna Demers describes Motown songwriter and producer Norman Whitfield as an “architect of the ‘ghetto’ sound, using blues scales and jazz instrumentation to invoke idioms that represent traditional black American music,”⁵⁹ while Brian Ward notes that “much subsequent black popular music continued this impetus to code ‘blackness’ acoustically, choosing the ghetto as the centre of African-American identity.”⁶⁰ For Madlib, sampling blaxploitation film music from the 1970s is a way of asserting a simultaneous black and “underground” hip-hop identity, a strategy we can hear throughout the album. Upon completion of the opening vocal shout-out, a short section of scratching fades away as the soul sample—taken from a Dee Dee Sharp track off of the Philadelphia soul label, Cameo—increases in volume and sets itself up as the dominant content of the piece at 0:24. It is here that we start to hear the diverse compositional techniques at work.

EXTENDING DEVICE MEMORY/ EXTENDING THE “BREAK”

While DJ Shadow focuses his sample manipulation on the drum break—assigning individual “chopped” drum hits from the break to each of the sixteen pads on the MPC—Madlib applies this method to much longer samples as well as instrumental sections of a piece, as long as the expanded memory of the MPC 4000 (up to 500 gigabytes) allows. In the case of “The Comeback” (at 0:24) we first hear four bars of the sampled song, which

⁵⁹ Demers, 44.

⁶⁰ Ward 1998, 346-8.

set up the basic theme to be manipulated. The fifth bar continues the same chord progression, but on the “and” of beat one we hear a vocal sample pronounce “Why?” only to be cut off immediately on the second beat, which continues the chord progression from the third and fourth bars of the original theme. Madlib has thus chopped up several discrete moments from the sampled song and assigned these quarter note fragments to each of the sixteen pads, and it is because of this chopping that the voice gets so abruptly cut off on the second beat of the bar (fig. 10).



[Fig. 10] MPC 4000 front panel: “The Comeback” utilizes a four-bar sample which, when chopped and distributed amongst the sixteen pads of the MPC, results in a quarter note fragment on each individual pad (numbers denote musical position in a 4/4 bar). Madlib “performs” the sample by moving between rows of the device, thus resulting in further sample fragmentation.

The rest of the piece continues in this manner, Madlib “conducting” variations of the original theme by manipulating isolated fragments throughout. While the memory of the MPC 60 would never have allowed this breadth of fragmentation, the internal memory of the MPC 4000 could handle much more sampled material at a time.

Aside from increasing the length and breadth of sampled material in his beats, the increased device memory has also influenced the formal structure of his beat tapes. While DJ Shadow’s compositional style involves the creation of a linear narrative by way of fragmented sample juxtapositions, Madlib embraces a more microscopic approach in which longer sample segments are repeated in a circular manner, thus dissecting the various elements of the individual pattern. After a significant amount of tension has been built through extended repetitions of the first sample, it is replaced by a second, highly contrasting sample which gives the beat a feeling of release.

An example of this affective technique is heard in “Beat Provider (Through the Years),” a one-minute track off of volume five of the *Beat Konducta* series. The first moments of the track consist of the brief section of the sampled material that leads into the one-bar loop that follows. This short portion of the beat reminds the listener that Madlib is taking his sample from a larger source, as well as highlighting the connection between the resulting beat and the original sample—not only do we hear a voice in the original song shout “Through the years” as a lead into Madlib’s loop, the connection is furthered by the track title of the same name. The one-bar loop that follows this introduction consists of a tense, rapid bass line employing wide leaps beneath a thick chordal texture of brass instruments. Throughout the eighteen repetitions of this loop, the listener’s ear is able to dissect microscopic elements of the single sample, including the

slight tonal disparity between the guitar and horn parts, as well as the urgent nature of the bass part. Contrastingly, the entrance of the second sample at 0:48 creates an atmosphere of release through longer note lengths and legato phrasing, stretched throughout a two-bar phrase. After only two repetitions of this pattern, we return to the initial one-bar loop.

In *Rap Music and the Poetics of Identity*, Adam Krims' defines the "hip-hop sublime" as an aural effect of beatmaking invoked through "layers marked by clashing timbral qualities."⁶¹ However, Madlib's use of the sample as a unitary entity highlights these processes at work in the original source material rather than the juxtaposition of multiple sources. It should be noted that we are not hearing this sampled material in a fragmented, chopped-up way, but rather as a coherent loop. In this way, Madlib foregrounds the most basic process of "digging" for sample sources, in which the producer dissects each individual sample through multiple listens, rigorously searching for the perfect moment to sample. As DJ Kool Akiem states, "sometimes, I'll put a loop on and let it play for, like, two or three days. It probably sounds strange to a lotta people, but you get to hear stuff that the musician didn't try to put in there."⁶² The "microscopic" aspect of this compositional practice is most directly reminiscent of the intense detail with which turntable DJs approach beat juggling, in which a short phrase is looped by "juggling" it between two turntables. While the limited memory of sampling technologies such as the SP-1200 and the MPC 60 prevented this technique from being recreated, the expanded memory of the MPC 4000 allowed it to happen with multiple samples within the same song, a process emphasized throughout many of Madlib's beat tapes. This general trend reflects a larger phenomenon I hope to emphasize throughout this thesis,

⁶¹ Krims, *Rap Music and the Poetics of Identity*, 73.

⁶² Quoted in Schloss, 137.

that of the “hip-hop communities effort to invest a new technology—samplers—with the cultural cachet of an older one—turntables.”⁶³

DIGITAL SIGNAL PROCESSING

In addition to the benefits of a larger internal memory (RAM) and greater hard drive capacity, the MPC 4000 contained an internal effects board that allowed for a quick and rather intuitive method of digital signal processing. While we may typically think of “effects” as something foreign to hip-hop—a technique more applicable to other forms of electronic dance music or psychedelic rock perhaps—it is significant to note that “(DJ Kool) Herc also added electronic sound effects.”⁶⁴ However, as the tradition of Dub reggae—of which Kool Herc was a product—typically applied effects *to the surface* of the music, what we witness in Madlib’s approach is an application of effects that internalizes the logic of the effect parameters. As Théberge writes, effects are “no longer seen as a separate operation applied to a sound, rather, the effect becomes an inherent characteristic of the sound itself.”⁶⁵ Madlib’s process of sample chopping and sequencing thus becomes a manipulation of a manipulation, as the juxtaposition of separately “effected” samples creates an aural perception of “massive, virtually immobile and incompatible layers of sound, selectively and dramatically brought into conflict with each other.”⁶⁶ This is a defining feature of Krims’ “hip-hop sublime,” and— through the use of digital signal processing on an *internal* level—it gives the impression of creating an acoustic space and bass presence akin to the feeling of a “live” hip-hop show.

⁶³ Schloss, 52.

⁶⁴ Cheryl L. Keyes, *Rap Music and Street Consciousness* (Urbana: University of Illinois Press, 2004), 55.

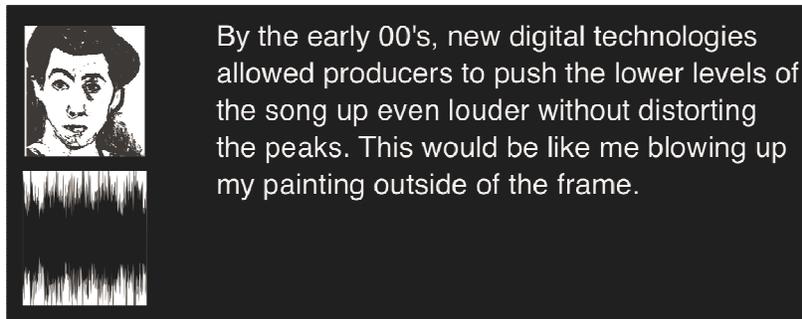
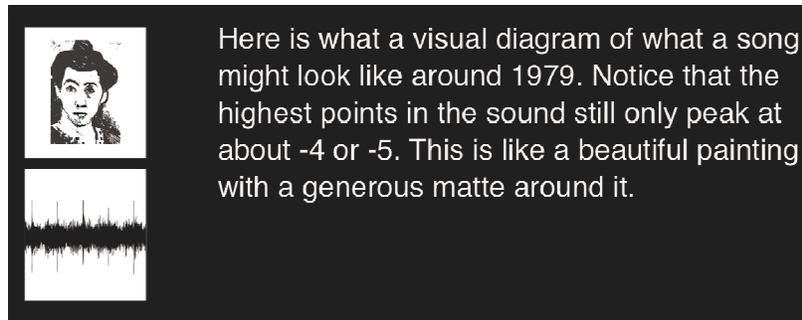
⁶⁵ Théberge, 210.

⁶⁶ Krims, *Rap Music and the Poetics of Identity*, 54.

Although digital signal processing in the MPC 4000 was an advance from the MPC 60, it was limited in that only two effects, denoted as either AB or CD, could be applied to a given track at a time. Compression—long considered standard use in hip-hop and popular music in general—was even more limited in its use, as an application of this effect in a stereo sound field took up either AB or CD, therefore inhibiting the use of other effects. However, it is from this limitation that Madlib has exploited the MPC 4000 compressor, producing a distinctive “bounce” to his beats and reinforcing the subliminal aspects of the hip-hop “sound.”

If there is one reason why compression has become so popular on commercial radio, it is because of its role as a dynamic “equalizer.” It works by boosting volume and frequency levels to a standard “threshold,” while decreasing actual dynamic range, and in this way proves more useful to the mobile listener—automobile driver, casual iPod listener—who experiences ambient noise that could interfere with audio signals possessing a wide dynamic range, such as those of many classical recordings. Historically, this trend to increase the overall volume of recorded sound has become known as “The Loudness Wars,” as demonstrated by the following NPR feature titled “A Visual History of Loudness: Why Your Music is Getting Louder, and Why it’s a Problem.”⁶⁷ (fig. 11)

⁶⁷ Christopher Clark, “The Loudness Wars: Why Music Sounds Worse,” <http://www.npr.org/templates/story/story.php?storyId=122114058> (accessed February 4, 2011).



[Fig. 11] Christopher Clark diagrams the chronological effects of “The Loudness Wars”: the transparency of the top waveform is conflated with a “beautiful painting” while the opacity of the bottom diagram is described as a distorted representation of the recorded sound.

The aesthetic value of the earlier recording lies in its transparency and perceived openness, while the opacity of the later recording is described as a distorted representation of the recorded sound, seemingly removing the artistic frame. While I disagree with Clark’s position, his stance certainly reflects the “classical” ideals of clarity and precision. In this context, heavy compression in hip-hop music reverses Clark’s analogy by placing value on opacity and taking up space both visually and aurally, reflecting the music’s origins as primarily public, collective, and literally loud. By boosting the threshold of the compressor, as well as adjusting the ratio, attack, and release levels, Madlib overuses the internal compressor of the MPC 4000, giving the music an aggressively dynamic ebb and flow akin to Tricia Rose’s idea of “working in

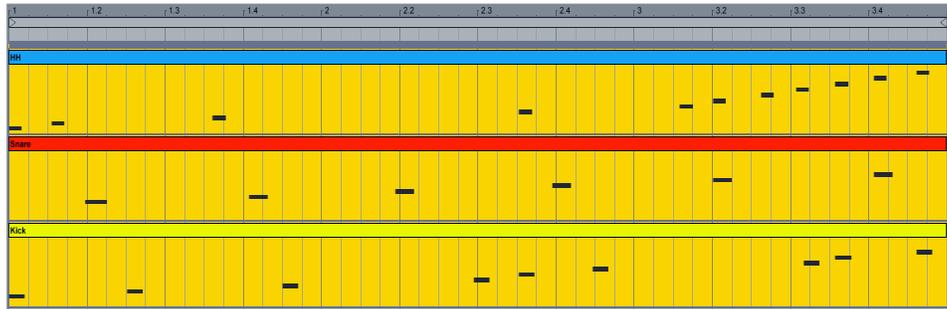
the red.”⁶⁸ This technique is heard in full force on the second track of the *Beat Konducta* series, “The Payback”—as yet another homage to the godfather of soul—in which bass frequencies momentarily overshadow the rest of the mix upon their entrance. By setting the attack levels fairly low, with release high and threshold very high, the track possesses a wave-like quality as distinct timbres and frequencies gradually crescendo into the mix, sometimes—in the case of the harsh cymbal crashes on the “and” of beat four—to an extreme degree.

Whereas Krims describes the “hip-hop sublime” as manifesting itself when “massive, virtually immobile and incompatible layers of sound are selectively and dramatically brought into conflict with each other” *at the level of tonality*, Madlib’s exploitation of the compressor expands this notion through extreme contrasts of frequency, amplitude, and rhythmic dissonance. The “micro” aspect of Madlib’s production style is enhanced by his heavy use of compression, which creates a musical complexity at what Anne Danielsen calls the “microrhythmic” level, focusing on “timbral and dynamic aspects of rhythm.”⁶⁹ Whereas most theorists deal with rhythm only at the “attack-point” level—assuming the onset of the sound directly coincides with the rhythmic moment of “attack”—compression affects the sound at the timbral level, and thus shapes our perception of the microrhythmic level. In what Danielsen describes as the “beat-bin model” of rhythmic perception, “pulse is no longer a series of points in time,

⁶⁸ Rose, 75.

⁶⁹ Anne Danielsen, “Chapter 1: Introduction: Rhythm in the Age of Digital Reproduction,” in *Musical Rhythm in the Age of Digital Reproduction* (Burlington, VT: Ashgate, 2010), 9.

because each beat is thought to have both a shape and a duration... differing rhythmic events may be regarded as located within the same beat.”⁷⁰ (fig. 12)



[Fig. 12] “Beat Deconstruction” of “The Payback” done in Ableton Live: basic percussion parts (from low to high: kick, snare, hi-hat) are isolated by converting transient peaks in the original waveform into MIDI piano roll notation. This allows one to see the microrhythmic deviation—from the fixed temporal grid (located at the top of the diagram)—of each part. The irregularity of “attack-points” is largely due to the way in which heavy compression deceives the listener’s perception of the rhythm. In other words, the “gestural” sound—as the sound is actually heard—may differ from the “figural” sound—as Madlib sequenced the rhythms into the MPC.⁷¹

The resulting “feel” of the “The Payback” is thus circular, as distinct, rhythmically “loose” polyrhythms become normalized through the looping of the beat. When a rhythmically dissonant moment is repeated, what was previously a rupture in the coherence of the groove becomes transitional material, enhancing the effect of the anacrusis and solidifying the stability of the beat. Although holistically “stable,” Danielsen notes however, that the “‘feel’ aspect of the groove is almost overdone” leading to what she calls “the exaggerated rhythmic expressivity of the machine”: a wobbly, seasick circularity only stabilized by its own repetition.⁷² Applying this to the beat-bin model of rhythmic perception, Kristoffer Carlsen and Maria A.G. Witek note,

⁷⁰ Anne Danielsen, “Chapter 2: Here, There, and Everywhere: Three Accounts of Pulse in D’Angelo’s ‘Left and Right’,” in *Musical Rhythm in the Age of Digital Reproduction* (Burlington, VT: Ashgate, 2010), 33.

⁷¹ The concept of “Beat Deconstruction” is introduced by Pat Cupo, Dubspot music production school teacher, in the context of a beat by Flying Lotus. The tutorial may be found here: <http://blog.dubspot.com/ableton-live-video-tutorial-beat-deconstruction-flying-lotus/>

⁷² Danielsen, “Chapter 1,” 1.

“the high degree of micro[rhythmic] complexity entrains an overarching attending rhythm... this creates its ‘wobble,’ whereby the main pulse is not expressed as single points in time but as wider pulse regions that incorporate all of the attacks falling within them.”⁷³ The ability of the groove’s circularity to “entrain” the listener’s perception of rhythm thus reflects Rose’s conception of the loop as “equilibrium inside the rupture. Rap music highlights points of rupture as it equalizes them.”⁷⁴

At the phenomenological level of aurally experiencing the beat, this equilibrium is expressed through the visual-physical notion of a groove’s “bounce.” As Schloss writes, “producers must balance the requirement of precision with the requirement that the rhythm be conducive to dancing (a quality often characterized by hip-hop heads as having ‘bounce’).” While Krims attempts to capture this process of equilibrium through his detailed “layering graph,” this method is unable to recognize the microrhythmic and microtemporal aspects of hip-hop grooves, instead functioning in a discourse related to standard music notation (SMN), which assumes that a strict temporal and rhythmic framework actually exists in the first place.⁷⁵ On the contrary, the “bounce” of Madlib’s beats is much more intrinsically connected to the timbral qualities of the groove, as well

⁷³ Kristoffer Carlsen and Maria A.G. Witek, “Chapter 4: Simultaneous Rhythmic Events with Different Schematic Affiliations: Microtiming and Dynamic Attending in Two Contemporary R&B Grooves,” in *Musical Rhythm in the Age of Digital Reproduction* (Burlington, VT: Ashgate, 2010), 66.

⁷⁴ *Ibid.*, 70.

⁷⁵ This statement comes from an ongoing debate in music theory literature on how to conceptualize rhythm in groove-based music. Key texts that engage in this discussion include Mark Butler’s *Unlocking the Groove* (2006) and the essay collection edited by Anne Danielsen, *Musical Rhythm in the Age of Digital Reproduction* (2010).

as—as I have shown—the processes of its construction which, as Danielsen notes, occur at the microlevel “where much of the most creative work actually takes place.”⁷⁶

At the level of standard music notation (SMN), the “bounce” of a track such as “The Payback” is virtually impossible to notate. While traditional Western notation can capture the core aural materials of the loop, it cannot represent the visceral ebb and flow that results from the overuse of the hardware device’s compression. Waveform analyses and spectrographs provide a visual stimulus that reflects the perceived immediacy of the beatmaking process on the MPC, but ultimately fail in that the compressed waveform is physically too opaque. While the sensual impact of the groove is described by the waveform, its lack of transparency fails to prescribe the content of the loop. I tend to subscribe to Mark Butler’s position on transcription as neither prescriptive or descriptive, but rather analytical, in that “each transcription should be understood as one interpretation of what happens in a passage.”⁷⁷ Indeed, this approach adheres most closely to the interface of the device itself, whose multiple screens—as I have previously shown—offer an interpretative flexibility and a multiplicity of compositional processes.

RHYTHMIC QUANTIZATION

As Iyer notes, “in groove-based contexts, even as the tempo remains constant, fine-scale rhythm delivery becomes just as important a parameter as tone, pitch, or loudness. All these musical qualities combine dynamically and holistically to form what some would call a musician’s ‘feel.’”⁷⁸ While extreme levels of compression enhance the

⁷⁶ Anne Danielsen, “Chapter 1: Introduction: Rhythm in the Age of Digital Reproduction,” in *Musical Rhythm in the Age of Digital Reproduction* (Burlington, VT: Ashgate, 2010), 8.

⁷⁷ Mark Butler, *Unlocking the Groove: Rhythm, Meter, and Musical Design in Electronic Dance Music* (Bloomington: Indiana University Press, 2006), 22.

⁷⁸ Vijay Iyer, “Embodied Mind, Situated Cognition, and Expressive Microtiming in African-American Music,” *Music Perception* 19.3 (2002): 398.

subliminal aspect of the groove on a dynamic level, Madlib's unique approach to rhythmic quantization has altered the structure of the groove on a more metrically dissonant level. Tom Silverman of Tommy Boy records writes of how "the 808 (early Roland drum machine) forced you to program in a hip-hop style... You couldn't program in real time... you had to drop the beats into a certain framework. Everything sounded ultra-mechanical. That's partly how the hip-hop sound originated."⁷⁹ In fact, it is this "ultra-mechanistic" quality—which has been standardized by "commercial" hip-hop producers—that Shadow parodied in the break from "Napalm Brain/ Scatter Brain," thus poking fun at the use of commercial presets and a "dehumanized" rhythmic feel in computer music software such as Fruity Loops. Théberge's idea of digital instrument users as industry consumers is thus further problematized, as Rose states: "rap music uses rhythmic forces informed by mass reproduction technology, but in ways that affirm black cultural priorities that work against market forces."⁸⁰ Exploiting the liberating quantization capabilities offered by emerging hardware sampling devices thus becomes a way of asserting an "underground" identity against the perceived conformity and seemingly mechanistic rhythmic structures of "commercial" hip-hop.

With the MPC 4000, Madlib could turn off the quantize function to create a more "live" sounding performance, a practice common among the new school of "underground" producers of which he is certainly a part. As MF Doom says, "I turn the quantize off, most of the time I don't even use the sequencer at all. You hit the sample, and then you ain't looping it. You just hitting it. But you hit it a little different every time.

⁷⁹ Tom Silverman, quoted in Theberge, 198.

⁸⁰ Rose, 72.

When you capture that, that's like a snapshot of the most rawest, your livest session right there.”⁸¹

Madlib further achieves a distinctive hip-hop “bounce” through a highly detailed manipulation of sample placement. The increased ability to carry out differing quantize levels across tracks, as well as the detailed precision with which this could be carried out, helped to create a distinct groove which could not be achieved with previous technology. One of Akai's selling points for the 4000 was its ability to place samples along a spectrum of 960 parts per quarter note, whereas an MPC 60 only allowed 96 ppq. What this basically means is that the specific placement of individual samples or drum sounds are freed from the “ultra-mechanical” quantization constraints of devices such as the TR-808 or the MPC 60. Furthermore, if individual tracks are strictly quantized they may be set to independent “timing correct” values, including eighth notes, eighth note triplets, 16th notes, 16th note triplets, etc. In this way, a kick drum track may have an eighth note swing feel while the hi-hat part above it plays straight 16th notes, creating a unique feel which Blanning, in her seminal 2009 Madlib interview, describes as “swinging infectiously.”⁸² This process is explicitly heard in the track “Dirty Hop (The Shuffle),” from volume five of the *Beat Konducta* series, as a muted bass synth pattern lays down steady triplets under a hi-hat pattern constantly alternating between quarter-note triplet and 16th note figures (fig. 13).

⁸¹ Mason, 120.

⁸² Blanning, 35.

“Dirty Hop (The Shuffle)” (0:44)

Musical score for the first section of "Dirty Hop (The Shuffle)" (0:44). The score is in 4/4 time and features four staves: Hi-Hat, Synthesizer (slightly behind the beat), Muted Bass (slightly detuned), and Snare/Kick. The Hi-Hat part consists of four eighth-note triplets, each marked with a '3' above the notes. The Synthesizer part plays a steady eighth-note figure, with arrows below the notes indicating a slight delay from the beat. The Muted Bass part plays a steady eighth-note figure, also marked with '3' above the notes, and is noted as being slightly detuned. The Snare and Kick parts provide a simple rhythmic accompaniment.

“Dirty Hop (The Shuffle)” (1:25)

Musical score for the second section of "Dirty Hop (The Shuffle)" (1:25). The score is in 4/4 time and features four staves: Hi-Hat, Synthesizer (slightly behind the beat), Muted Bass (slightly detuned), and Snare/Kick. The Hi-Hat part alternates between eighth-note triplets (marked with '3') and a dotted eighth note followed by a sixteenth note. The Synthesizer part continues with a steady eighth-note figure, indicated by arrows below the notes. The Muted Bass part continues with a steady eighth-note figure, marked with '3' above the notes, and is noted as being slightly detuned. The Snare and Kick parts provide a simple rhythmic accompaniment.

[Fig. 13] Hi-Hat alternating between eighth-note triplet and sixteenth note figure

A rhythmically ambiguous synth line initially provides a straight eighth note figure that—as a result of its placement ahead of the beat, as well as a slight shuffle applied to the rhythm—contains a certain swing of its own. Yet, as the track progresses this figure momentarily becomes a dotted eighth to a 16th note figure (fig. 14).

“Dirty Hop (The Shuffle)” (1:11)

The musical score is for the track "Dirty Hop (The Shuffle)" at 1:11. It features four staves: Hi-Hat, Synthesizer (slightly behind the beat), Muted Bass (slightly detuned), and Snare Kick. The key signature is one sharp (F#) and the time signature is 4/4. The Hi-Hat part consists of a series of eighth notes with beams, some marked with 'x' to indicate a specific sound. The Synthesizer part starts with a straight eighth-note figure, indicated by arrows pointing to the right, and then shifts to an implied 3:2 clave rhythm, with a '3' above the notes indicating a triplet. The Muted Bass part follows a similar pattern, with a '3' above the notes indicating a triplet and the text "(slightly detuned)" below. The Snare Kick part consists of a simple eighth-note pattern.

[Fig. 14] Synthesizer figure shifts from a straight eighth-note figure to an implied 3:2 clave rhythm. The gradual nature of the shift as well as the microrhythmic laziness of the figure suggests Madlib performed this track with the quantization turned off

Through an analysis of Madlib’s approach to digital signal processing and quantization, we arrive at a characteristic of the new school of “underground” hip-hop production that articulates not only a much closer connection to African musical practices, but also the African-American musical tradition which hip-hop embodies. Indeed, Madlib’s constant references to Africa and Afro-futurist imagery (for example: *Beat Konducta in Africa* mixtape, verbal and aural references to Sun-Ra, sampling West African drumming) act as an essentialization of hip-hop as an *African-American* art form in order to reclaim “authentic” hip-hop as “authentic” blackness. In what George Lipsitz terms “strategic essentialism,” Madlib is portraying an essentialist vision of “real” blackness “that overlooks the heterogeneity of the group in order to build unity around common needs and desires.”⁸³

As I have shown throughout this chapter, Madlib’s music appeals to this “strategic essentialism” through a “micro” approach to the West African concept of

⁸³ George Lipsitz, *Dangerous Crossroads: Popular Music, Postmodernism and the Poetics of Place* (London and New York: Verso, 1994), 62.

“multimeter.” In this context, the “clashing of rhythmic accents and the creation of cross-rhythms” is achieved by highlighting the presence of technology in the process of musical production; a key concept which has become a fundamental concept in hip-hop and electronic dance music scholarship.⁸⁴ Kies writes of hip-hop’s “inner time” as an “unmeasurable but consciously experienced” feel for the beat,⁸⁵ while Shapiro writes of New Orleans music in which “regimentation and swing existed in tense communion.”⁸⁶ It is precisely this “syncopation, ‘grooviness’, ability to play off the beat (ahead, behind, in between), without forgetting where the music is” that defines the “feel” of hip-hop, and it is the ability of producers to create this very “humanistic” feel with what have been perceived as “ultra-mechanical” devices that establishes hip-hop as a distinct African-American tradition with a musical aesthetic of its own.

⁸⁴ Olly Wilson, “The Significance of the Relationship between Afro-American Music and West African Music” *The Black Perspective in Music* 2.1 (Spring 1974), 7.

⁸⁵ Kies, 140.

⁸⁶ Peter Shapiro, “Automating the Beat,” in *Undercurrents: The Hidden Wiring of Modern Music* (New York and London: Continuum, 2003), 133.

III. “KEEPIN’ IT REAL”: “LIVENESS” AND THE EXTERNALIZATION OF THE DIGITAL INTERFACE

Did not everything between us begin with a reproduction? Yes, and at the same time nothing is more simply false, the tragedy is there. –Derrida⁸⁷

The stories that I have told thus far are very much digital histories. In the myth of hip-hop’s origins, the turntable stands as the ultimate symbol of “realness,” aesthetic authenticity, and adherence to compositional traditions. As a literal “analog” to the cultural-historical roots of the music, the turntable carries the weight of a musical tradition thirty-years young, constantly developing itself through a self-reflexive turn to its own past. The spinning record reflects the circular nature of the culture, as well as the constant historical presence of the past exemplified by the DJs ability to physically position him or herself at any point of the cycle through the compositional methods of turntablism. Contrastingly, the binary world of 1s and 0s reflected in the digital sample is a literally fragmented environment in which the sound itself is chopped into discrete moments in the process of its creation. In this context, the digital world has always represented a threat to the link between the “canonical” past and the “commercial” present of hip-hop performance practice.

Yet—as I have shown throughout my thesis—rather than asserting definitive breaks with past forms of hip-hop production, instrumental hip-hop producers have utilized emerging digital hardware devices as extensions of turntable technique and aesthetic practices developed in the early days of the culture. “Golden Age” producers such as DJ Premier and DJ Shadow negotiated the first drum machine/samplers into the context of hip-hop production by integrating them into a turntable setup and adopting

⁸⁷ Jacques Derrida, *The Postcard*, trans. Alan Bass (Chicago: University of Chicago Press, 1987), 9.

vinyl scratch techniques to the context of digital sample chopping. As sampling technology developed, producers such as the RZA and Madlib gave up the turntable altogether, renegotiating the “underground” hip-hop sound through the exploitation of a single hardware device. In each case, producers using digital hardware have asserted “authentic” identities as hip-hop artists by extending notions of physicality, “liveness,” and immediacy from the turntable to the hardware-sampling device.

However, the digital divide has yet to be fully traversed for instrumental hip-hop producers, as many purists in the tradition currently see authentic performance practice and aesthetic “realness” to be rooted in the perceived physicality of hardware samplers such as the MPC. While the technological resistance to digital computers is most obviously seen as a way for “underground” producers such as Madlib to preserve what they perceive as dying cultural forms, we may return to the Raymond Williams quote from the start of this thesis to note the contradiction in this process of resistance: “At first glance there are simply dire predictions based on easily aroused prejudices against new technologies. Yet there are also phases of settlement in which formerly innovating technologies have been absorbed and only the currently new forms are a threat.”⁸⁸ The entire trajectory of my thesis reveals this process of negotiation; the MPC, initially perceived as a threat to “canonical” forms of production such as the turntable, eventually took the place of the turntable as the primary tool in resisting emerging computer-based software production technologies. In this context, the software of the digital audio workstation—a virtual studio in which composition seems to shift from the physical stage to the computer screen—signifies a “simply false” means of beat production, lacking the “live” element of the hardware device.

⁸⁸ Williams, 133.

In the final section of my thesis I will provide a more recent case study on Flying Lotus, a beatmaker from the Los Angeles-based “Brainfeeder” music collective. Utilizing the laptop digital audio workstation Ableton Live, Flying Lotus negotiates emerging technologies by externalizing the digital software interface through MIDI and OSC hardware controllers, thus (re)creating a sense of “liveness” first introduced by the turntable. While certainly creating new possibilities for production, these devices—which include the Akai MPD and the Monome—simultaneously retain the inner logic and suggested performance standards of previous devices such as the Akai MPC, Roland TR-808, and even the turntable. By externalizing the digital interface, Flying Lotus reveals to his audience the inner logics of not only these technological devices, but the core aesthetics of hip-hop composition as well.

It is no coincidence that every artist I have discussed thus far hails from Los Angeles. As the myth of hip-hop’s origins is firmly established in New York, the West Coast hip-hop scene has always stood as a metaphorically “progressive” binary to their “traditional” East Coast counterparts. In a manner reflecting the ideology surrounding the hip-hop “battle,” this geographical divide has been embraced by hip-hop musicians as a way of foregrounding technical skill as well as asserting individual cultural identities. The attitude of machismo surrounding the hip-hop battle is explored by Katz, as he writes, “in DJ battles, competition is often direct, aggressive, and public, embodying a stereotypically masculine adversativeness.”⁸⁹ As a general metaphor for hip-hop culture, the “battle” often takes place across cultures, geographies, and—as Katz makes clear—genders. Assertions of “authentic” identities thus work to navigate aesthetic choices in

⁸⁹ Mark Katz, “Men, Women, and Turntables: Gender and the DJ Battle,” *The Musical Quarterly* 89.4 (2006): 586.

hip-hop music as it spreads across cultural identities or geographies. In this sense, technological changes and aesthetic style in hip-hop production have typically found their root in West Coast producers reacting to their East Coast counterparts, from Dr. Dre to DJ Shadow, Madlib, and most recently, Flying Lotus. Yet, while DJ Shadow and Madlib view authentic production technique in stylistic terms—expanding on past musical styles on a textual, sample-based level—Flying Lotus asserts his own unique hip-hop identity in the more phenomenological context of the live performance, utilizing a hardware controller known as the MPD to externally control the software interface of Ableton Live.

“HOW DO YOU KNOW HE’S NOT PLAYING PAC-MAN WHILE HE’S SUPPOSED TO BE DJING?”

Across the many genres of electronic dance music, the use of the laptop in a live setting has always created anxieties among those who view DJing as primarily a physically “live” activity. The recent popularity of the digital audio workstation software, Ableton Live, has refueled many of these perennial debates. In a recent ethnography of Australian DJ culture, Ed Montano’s informants reveal many of these anxieties, often with particular reference to Ableton Live. DJ Illya states, “playing off laptops is rubbish... from where I’m sitting, it’s shit. There doesn’t seem to be much skill or effort in it, it’s all loaded and simulated... Would you know if the DJ is actually doing anything, or just hitting a button? It’s computerized, the tracks can be made to be the same speed, there’s no skill involved.”⁹⁰ DJ John Devecchis echoes the more humorous concern surrounding laptop performance as he asks, “How do you know the DJ is even playing? How do you know he’s not playing a pre-recorded set? How do you know he’s

⁹⁰ Ed Montano, “How do you know he’s not playing Pac-Man while he’s supposed to be DJing?”: technology, formats and the digital future of DJ culture,” *Popular Music* 29.3 (2010): 408.

not playing Pac-Man while he's supposed to be DJing?"⁹¹ Summarizing his own views of Ableton software, Montano writes that "rather than generating any seismic shift in the concept of DJing, Ableton Live will most likely remain primarily as a tool for studio composition and arrangement."⁹² In the following section I will counter this argument, describing the inner workings of the Ableton Live interface followed by a description of the MPD hardware, thus revealing how the program has been utilized as an alternative to turntablism as a viable live performance tool.

At its basic level, Ableton may be seen as a combination of a "tracker" software program and a collection of audio editing tools. As a "tracker," the visual interface moves both vertically and horizontally: individual tracks are arranged horizontally, while vertical rows represent different sections of a song or variations on a specific instrumental part (fig. 15). Each individual block of the resulting musical grid can be filled with musical content of various sorts, from a short instrumental loop to an entire song. After constructing a "live set," the interface is graphically represented as multiple layers of blocks of musical content reminiscent of a colorful Lego building block construction. In a live performance setting these blocks can be triggered in any manner; songs may be organized in a descending fashion with each musical section representing a vertical row, or musical ideas may be triggered in a non-linear fashion in which blocks from disparate columns are juxtaposed.

⁹¹ Ibid, 410.

⁹² Ibid, 411-12.



[Fig. 15] Ableton Live “Session View”: colored columns represent individual tracks, colored blocks are musical patterns, vertical rows contain specific “scenes” (verse, chorus, bridge, etc.). Instrument and FX editors are located below the grid. Note the Drum (Instrument) Rack at the bottom left

To the left of the musical grid is the master sample and instrument library as well as the contents of the users entire hard drive, from which various MIDI and audio instruments and effects may be selected. Beneath the window of the musical grid is another empty window into which these audio effects and instrument editors can be dropped. As individual tracks are selected the contents of this window shift based on the editing input for each track—the contents of which are chosen from the master library—allowing the user to edit multiple track effects and other instrument information without leaving the macro “session view” window. As the title “Live” suggests, this “open” interface reflects the digital producers perennial desire for an immediate connection to the contents of his or her medium. Indeed, we may even describe the improvisational potential of the Ableton interface as constituting an environment of “hypermediacy”; a space William Mitchell characterizes as “privileging fragmentation, indeterminacy, and

heterogeneity and... emphasizing process or performance rather than the finished art object.”⁹³ In a recent interview, David Downs of The A.V. Club asked FlyLo if all of his shows were improvised, to which he responded, “Oh yeah man, I don’t know where we’re going. That’s been the most fun, figuring out where we can take it. Some people know parts to the set but I don’t play the same way every night. It’s so much fun to come up with combinations. You get yourself in these pockets and tangents. I’m remixing my shit every night.”⁹⁴

Yet, the notion that compositional processes of hip-hop production could become performative in a “live” sense contradicts the common belief in sample-based hip-hop as a primarily studio-based art form. As Schloss writes, “live performance does not serve as a significant model for the producers’ aesthetic. Conversely, live performances of hip-hop are rarely concerned with reproducing any specific processes from the studio; the studio recording is simply played. Sample-based hip-hop is a studio-oriented music.”⁹⁵ Furthermore, the interface itself is not a strong enough guarantor of “Liveness” for many, as the question for the audience remains, “how do you know he’s not playing Pac-Man when he’s supposed to be DJing?” In this context, the producer must ask him or herself “how do I highlight the performative processes for the audience?”

For most DJs and producers, the question centers on the question of figure versus gesture. In this context, “figure” constitutes the intended musical idea as sequenced, mixed, or programmed into the technological device, while “gesture” constitutes the

⁹³ William J. Mitchell, *The Reconfigured Eye: Visual Truth in the Post-Photographic Era* (Cambridge, MA: The MIT Press, 1994), 8.

⁹⁴ David Downs, “Interview with Flying Lotus,” The A.V. Club, <http://www.avclub.com/articles/flying-lotus,41012/> (accessed January 3, 2011).

⁹⁵ Schloss, 42.

sounding musical idea as heard through the output of the device.⁹⁶ Andrew Schloss (2003) argues that performers of electronic music should find ways of making the causal relations between gesture and sound evident to audiences, whereas Caleb Stuart (2003) argues that audiences for laptop music should be educated to surrender their desire for spectacle and accept that its performativity exists only on the aural plane.⁹⁷ For producers such as Flying Lotus, it is the physicality of the gesture which defines notions of presence and “Liveness,” and which connect him to a more extensive tradition of hip-hop performance and DJing.

In a 2010 *Hearty Magazine* interview, Hana May asked FlyLo, “It seems producers are starting to have a more important live element to their careers, more live shows and touring. Why do you think this is happening?” to which he responded, “we have the technology that’s available to us and that plays a huge role in it.”⁹⁸ Indeed, since the advent of Ableton Live, hardware developers have introduced numerous devices that have allowed producers and DJs to control the software interface through an external hardware machine. A particularly successful model comes from Akai, who combined the sixteen-pad design of its own MPC series with a set of eight knobs and eight faders, creating the MPD midi pad control unit. As a standalone unit the device is useless, as it is powered via the computer’s USB port and configured to control various elements of the software interface to which it is connected. In the context of Ableton Live, knobs and faders can be assigned to anything from individual track volume to effects send or

⁹⁶ Refer back to my analysis of Madlib’s microrhythms (fig. 12) for an introduction to the theoretical “figure/gesture” discussion.

⁹⁷ Discussed in Auslander, 98.

⁹⁸ Hana May, “Interview with Flying Lotus,” *Hearty Magazine*, <http://heartymagazine.com/features/flying-lotus-interview-photos> (accessed January 3, 2011).

monitor mix levels, while the pads can cue individual tracks or musical sections, activate and deactivate effects, or control drum sounds (fig. 16).



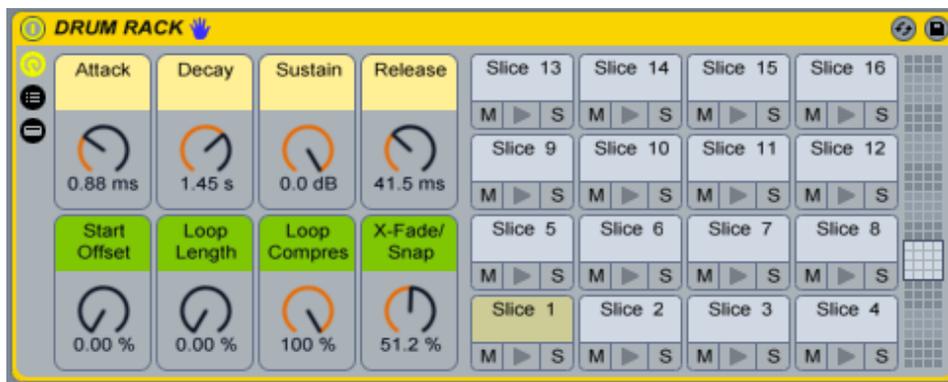
[Fig. 16] Akai MPD 32: transport controls located at bottom right, tap tempo and note repeat functions to the left of the pads, quantize settings located above pads in yellow

Extending the MPC interface, the MPD contains note repeat, tap tempo, and timing correct features, as well as the primary transport buttons to control device playback—stop, play, record. As is the case with the MPC, these features work particularly well in the context of “live” drumming, as I discuss in my analysis of DJ Shadow. The Ableton Live software equivalent to the MPC is the Drum Rack: a four by four grid into which sampled sounds may be dropped, and the most common device used in conjunction with the MPD. After slicing a sample into discrete regions using the Live audio “warping” function, the resulting chops can be assigned to individual blocks in the

Drum Rack. From here, the hardware controls of the MPD can be used to play the sample set live in a similar manner as the MPC, essentially externalizing the digital software interface onto the hardware controller (fig. 17, 18, and 19).



[Fig. 17] Ableton Live “Sample Warp”: after chopping up the sample, individual slices (numbered) are dropped into the Drum Rack below



[Fig. 18] Ableton Drum Rack: knobs to the left control sample parameters, while blocks to the right represent individual segments of the sliced sample



[Fig. 19] MPD Interface: slices of the drum rack are controlled by the pads of the MPD (waveforms have been edited into this picture by the author)

In many ways, the combination of the MPD hardware with the Ableton software interface acts to foreground the technological apparatus of production, thus enhancing the feeling of presence and “Liveness” in performance. In this process of what Ragnhild Brovig-Hanssen calls “opaque mediation,” “the listener’s focus is directed not only toward what is mediated but also the act of mediation itself,” typical forms of which include “the direct exposure of editing tools or processing effects, the ‘musical’ use of technological glitches or side effects and the obvious deployment of samples.”⁹⁹ As Auslander writes, “performers emphasize that the apparatus of reproduction is a constitutive element of their liveness,”¹⁰⁰ while Margaret Morse states, “a machine that ‘interacts’ with the user can produce a feeling of ‘liveness’ and a sense of the machine’s agency.”¹⁰¹

However, as the physical hardware is made present through its opacity, the digital software is often made transparent in order to achieve a greater degree of immediacy. Simon Penny describes the resulting “transparent interface”: “*transparent* means that the computer interface fades into the experiential background and the analogy on which the software is based is foregrounded. If the software is ‘intuitive,’ it is only intuitive because the [hardware device] is a culturally familiar object.”¹⁰² In this way, FlyLo’s use of the external hardware device actually gives the impression of naturalizing the digital software, making it more immediate and “live.” The fact that the MPD is designed as an

⁹⁹ Brovig-Hanssen, 159.

¹⁰⁰ Auslander, 57.

¹⁰¹ Margaret Morse, *Virtualities: Television, Media Art, and Cyberculture* (Bloomington: Indiana University Press, 1998), 15.

¹⁰² Simon Penny, ed. *Critical Issues in Electronic Media* (Albany, NY: State University of New York Press, 1995), 55.

obvious extension of the MPC actually confers aesthetic “realness” and authenticity to a digital software production process previously seen as “fake.”

Marshall McLuhan writes that “a new medium is never an addition to an old one, nor does it leave the old one in peace. It never ceases to oppress the older media until it finds new shapes and positions for them.”¹⁰³ Auslander echoes this sentiment in the realm of performativity, as he writes, “musicians achieve and maintain the effect of authenticity by continuously citing in their music and performance styles the norms of authenticity for their particular subgenre and historical moment.”¹⁰⁴ Just as DJ Shadow utilized the MPC 60 as an extension of the turntable and Madlib utilized the MPC 4000 and SP-303 as extensions of earlier sample technologies, FlyLo utilizes the MPD as an extension of all of these technologies. Reflecting Williams’ idea of technological resistance “in which formerly innovating technologies have been absorbed and only the currently new forms are a threat,”¹⁰⁵ I would agree with Brovig-Hanssen’s idea that “what is initially perceived as opaque mediation can later be taken for transparent.”¹⁰⁶ Indeed, an analysis of FlyLo’s use of the MPD in a live setting reveals this process of remediation as crucial to the negotiation of the digital audio workstation into the tradition of hip-hop composition.

¹⁰³ Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: New American Library, Times Mirror, 1964), 158.

¹⁰⁴ Auslander, 84.

¹⁰⁵ Williams, 133.

¹⁰⁶ Brovig-Hanssen, 163.

“BREAKING” THE DIGITAL DIVIDE

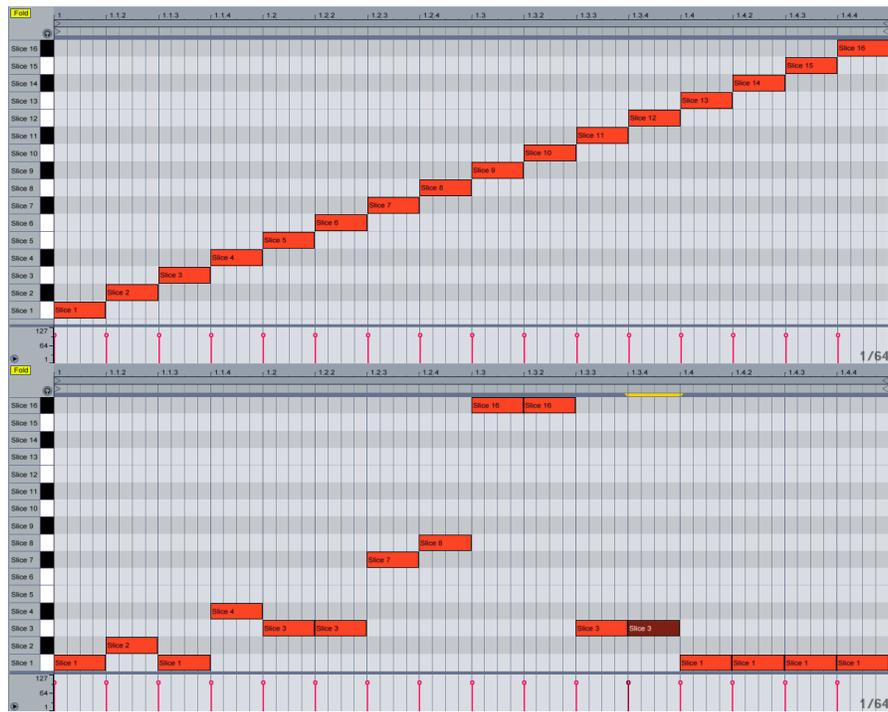
In a short video clip of his 2009 performance at the Belgian electronic dance music venue, De Kreun, FlyLo uses the MPD to engage the audience in a live drum break.¹⁰⁷ Beginning at 8:25, FlyLo shifts the audience’s attention from the laptop to the MPD as he uses the “tap tempo” button of the device to increase the tempo of the current groove. As I mentioned in my analysis of DJ Shadow’s *Endtroducing...* the tap tempo button has traditionally been used as a studio technique in the process of creating drum sequences that sound “live,” despite the fact that they are created in the isolated environment of the studio. The physicality of the performance is aurally implied—in the sense that it sounds like a drum performance—but the lack of a visual element weakens the sensual connection between the performer and the listener. In the live context of FlyLo’s performance, the audience has a visual cue for the physical manipulation of the digital audio, resulting in a moment of aesthetic acknowledgement in the form of a cheer.

The physicality of the performance is highlighted once again at 8:32, as FlyLo adapts the transformer effect—a technique, as we have seen in chapter two, taken from turntablism—to the faders of his MPD as a method of introducing the drum break. After cueing up the drum loop with one of the device’s pads, he engages in a rapid succession of upward motions on one of the eight faders, resulting in the audience hearing only quarter-note chops of the drum break for two bars. When he finally lets the loop play through in its entirety, the sample is revealed to be the “Amen Brother” break: a drum loop taken from a song by The Winstons of the same name, and one of the most sampled drum breaks in the history of hip-hop music. This break acts as a confirmation of hip-hop authenticity for the trained audience ear, highlighting FlyLo’s understanding of the

¹⁰⁷ Video can be found at <http://www.youtube.com/watch?v=IJ4FvdC6xY0>

tradition, thus further drawing the listener into the process of the performance. For the next twenty seconds, FlyLo gradually increases the tempo of the music while simultaneously using the upfaders of the MPD to mute musical tracks in the mix. At 8:58, he applies the transformer effect once again, this time to the vocal track, as a way of transitioning into a “live” drum break at 9:06.

As I mentioned earlier, the Ableton Drum Rack is a virtual simulation of the MPC interface, with sixteen sample blocks arranged as a four by four grid. In FlyLo’s drum break, the pads of the MPD momentarily shift the segment of the drum pattern that is played, disrupting the already looping pattern with short bursts from other points of the loop. A diagram of the MIDI notation taken from the Drum Rack displays how this process unfolds, revealing the fragmented nature of the break (fig. 20).



[Fig. 20] MIDI Notation of the sliced drum break: (Above) individual segments of the break play consecutively from slice 1 to slice 16, looping upon completion. (Below) Each time a pad on the MPD is struck—while this MIDI loop is playing—that pad will disrupt the progression of slices in the MIDI track. The break will continue to play regardless of what pad on the MPD is hit or whether a pad is hit at all

In many ways, the core process of this manner of drum editing is taken from the logic of the turntable scratch, which employs quick cuts to temporarily displace the moment on the record in which the listener finds him or herself. However, no matter how “broken” the break gets, the fragmentation that results from this process of “cutting” never actually stops the loop. In fact, James A. Snead argues that the “cut” actually provides a sense of circulation and equilibrium in hip-hop culture: “If there is a goal... it is always deferred; it continually ‘cuts’ back to the start, in the musical meaning of a ‘cut’ as an abrupt, seemingly unmotivated break with a series already in progress and a willed return to a prior series.”¹⁰⁸ While FlyLo’s drum break is aurally heard as a process of fragmentation, the physicality and “liveness” of its presentation connote circularity, thus strengthening notions of authenticity derivative of the constantly changing identity of instrumental hip-hop composition.

Baba Brinkman asserts that “hip-hop seizes media technology as its basic tools, *immediatizing* them on stage.” Yet, as I have throughout this thesis, the history of hip-hop production is rather one of *remediation*, in the sense of Bolter and Grusin’s definition of the term as “the representation of one medium in another.”¹⁰⁹ What we are witnessing in FlyLo’s “live” drum break is a representation of the inner logic of the MPC sample-chopping capabilities in the context of the connection between the MPD and the Ableton interface. As a simulation of the “original” device, FlyLo’s use of the MPD challenges Robert Moog’s notion that “older equipment invites a physicality, and offers a tactility

¹⁰⁸ Quoted in Rose, 69.

¹⁰⁹ Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge and London: The MIT Press, 1999), 6.

that is unavailable with newer instruments.”¹¹⁰ The “live” drum break of FlyLo’s performance further debunks faulty notions surrounding digital culture as “ultra-mechanical,” reflected in Brian Eno’s idea of the “computer-driven tendency to take things out of the domain of muscular activity and put them into the domain of mental activity.”¹¹¹ In negotiating digital technologies into the tradition of instrumental hip-hop, FlyLo retains the core values of immediacy, physicality, and “liveness” so crucial to “authentic” hip-hop performance.

¹¹⁰ Quoted in Taylor, 110.

¹¹¹ Ibid.

CONCLUSION: “FULL CIRCLE,” DEATH AND REBIRTH IN HIP-HOP

Every object tells a story if you know how to read it. –Henry Ford¹¹²

Thirty years into its life some have attempted to bury hip-hop among the ruins of failed popular music of the past, as Sasha Frere-Jones’ recent musical obituary in The New Yorker describes the “wrapping up” of rap music based on a subpar Jay-Z release.¹¹³ However, it is in the ways that musicians individually relate to a distinct compositional tradition—which I have described throughout this paper—that instrumental hip-hop establishes itself as not only a powerful social force, but as an adaptive musical style which revitalizes musical traditions of the past while constantly questioning itself. Throughout the 1990s, producers such as DJ Shadow and DJ Premier utilized the Akai MPC 60 in conjunction with turntables as a way of extending the technical practice of hip-hop production in the studio setting. As Akai developed newer MPC models in the early 2000s, producers such as Madlib and J Dilla exploited the technical capabilities of the standalone hardware device in the absence of the turntable.

Yet the 2010s marked one of the strongest shifts in hip-hop performance practice as producers such as Flying Lotus, Kanye West, and MPC finger-drumming virtuoso Araabmuzik have taken their tools out of the studio and onto the “live” stage. In light of this development, instrumental hip-hop music has mixed and mingled with electronic dance music traditions from all over the world, resulting in hybrid forms such as dubstep, grime, reggaeton, glitch, and more. While many have embraced the multiplicities of subgenre identity as a means of claiming a public musical space, others find the labels

¹¹² Henry Ford, quoted in *Objectified*. DVD. Directed by Gary Hustwit. 2009; Brooklyn, NY: Plexifilm, 2009.

¹¹³ Sasha Frere-Jones, “Wrapping Up: A Genre Ages Out,” *The New Yorker*, October 26, 2009 http://www.newyorker.com/arts/critics/musical/2009/10/26/091026crmu_music_frerejones (accessed 11/15/2009).

stifling, as Flying Lotus tweets, “Dear journalists, there is no such thing as ‘aquacrunk.’ Please stop trying to put us in a box. We’re just having fun making music.”¹¹⁴ Whatever stance one takes on the issue, the constant fusing and intermixing of electronic music cultures follows generally unquestioned.

As a result, musical practice across genres has been altered in fundamental ways. Technologies of music production have crossed genres with their practitioners, as house and breakbeat-based electronic dance musicians more and more take up the MPC as a tool in both studio and “live” performance.¹¹⁵ What constitutes musical “style” thus becomes much more fluid, as genres become something from which the producer can freely choose rather than an essential aesthetic determinant. We now have “live” drummers from various musical backgrounds socially and musically interacting with producers in unique ways, providing a physical manifestation of Andrew Goodwin’s idea that “drum machines have certainly altered the function of the drummer in live performance.”¹¹⁶ At the same time—as I have shown throughout my paper—studio-based producers and beatmakers are increasingly viewing themselves as “live” drummers, whether their work takes place in their studio or on the stage of the MTV Video Music Awards.

In deconstructing the notion of the “live” drummer, we begin to understand just one of the ways in which the turntable and MPC exist in a musical lineage of what Joseph

¹¹⁴ Flying Lotus, “Dear journalists,” Twitter post (2010, September 7), retrieved from @flyinglotus.

¹¹⁵ As examples, check out Boston-based Negative Time and the UK’s Glitch Mob

¹¹⁶ See, for example, Andrew Goodwin, “Drumming and Memory: Scholarship, Technology, and Music Making,” in *Mapping the Beat: Popular Music and Contemporary Theory*, ed. Thomas Swiss, John Sloop, and Andrew Herman (Malden, MA: Blackwell, 1998), 124. Furthermore, the February 2011 issue of *Modern Drummer* includes a feature on these “hybrid” acoustic/electric drummers.

Auner calls “reconfiguring embodiment,” as acoustic musicians continue to engage with technological devices as a means of “extending awareness” of the body.¹¹⁷ In fact, this extended awareness constitutes the definition of our use of technology as a process of mediation: a manner of negotiating our digital time (conceptual, structural, figural) with our analogue time (gestural, experiential). As Tellef Kvifte notes, there is a “mutual dependence of analogue and digital aspects of experience. Without digital concepts of bars and beats, there is nothing to compare to (or vary from)... [thus] the meaning carried by those gestures is of an inherently musical, even emotional nature, as gestures are in fact continuous and therefore analogue.”¹¹⁸ The digital divide as a binary becomes meaningless as the relationship between the analog and digital takes on a much more fluid quality.

While I have thus far ignored the role of the audience in my discussion, it is in this “analogue experience” of the hip-hop performance event—both “live” and in the studio—that most directly embodies the hip-hop aesthetic, as terms such as “break,” “cut,” “bounce,” “scratch,” or “chop” reflect the importance of Connor’s “violent sound tactations” in bringing us closer to a multisensory experience of the music.¹¹⁹ Indeed, it is this ability to “reclaim the proximal tactility of the here-and-now body”¹²⁰ of the “live” event that hip-hop most directly denies Walter Benjamin’s work of art, for while the philosopher speaks of “the here and now of the work of art, its unique existence in a particular place” as disappearing upon its reproduction, it is the fact that producers have

¹¹⁷ Joseph Auner, “‘Sing It For Me’: Posthuman Ventriloquism in Recent Popular Music,” *Journal of the Royal Music Association* 128 (2003): 117.

¹¹⁸ Tellef Kvifte, “Composing a Performance: The Analogue Experience in the Age of Digital (Re)Production,” in *Musical Rhythm in the Age of Digital Reproduction*, ed. Anne Danielsen (Burlington, VT: Ashgate, 2010), 223, 227.

¹¹⁹ Connor, 167.

¹²⁰ *Ibid.*, 171.

for so long positioned their sampling practice amidst a cultural and historical lineage that the music has had such a profound effect on both the community of beatmakers and rappers, as well as their audience.¹²¹

Indeed, the “aura” of devices such as the MPC provides a strong sense of identity and place for hip-hop producers, a notion that one can become a part of a global community through shared compositional processes. In this context, “authenticity” and “realness” become more than just abstract concepts, solidifying themselves as a perennial binary to constantly emerging “threats” of “commercialism.” Adhering to the “underground” ideology, one hopes literally to avoid these perceived “threats” of the modern world, constantly escaping to a “golden age” in which one’s self is stable, protected by the vestiges of tradition. Yet despite the underground’s strong adherence to a perceived tradition, there is also a strong sense of growth and development; an idea that although concepts of identity and place get thrown into question with historical and technological “progress” and stylistic change, the waves of history provide a phenomenological balance.

In hip-hop, this idea is known as coming “full circle,” as local New England rapper Apeshit says, “Hip-hop usually comes back to where it was twenty years ago. It will go through different phases, something that was hot in the ‘80s might come back, I think the rap bullshit will still get worse, underground will live forever, the people with heart will still keep doin’ it. It might become more split, or it might come back and somebody might make hip-hop relevant again *in rap*... bring it back full circle.”¹²²

¹²¹ Walter Benjamin, “The Work of Art in the Age of Its Technological Reproducibility,” in *The Work of Art in the Age of Its Mechanical Reproducibility and Other Writings on Media* (Cambridge, MA: Harvard University Press, 2008), 21.

¹²² Jesse Lannoo a.k.a. Apeshit, in conversation, March 2010.

“Realness” is thus implicitly acknowledged to be a fluid characteristic of the culture, and it is through this sort of Nietzschean “eternal recurrence of the same” that hip-hop is able to ground itself in a tradition that is constantly being reconstructed, renegotiated, and resampled.

It is in what Michael Bull calls an “accompanied solitude” that producers are making their beats, constantly imagining the physical presence of their audience as well as the sonic desires of a thirty-year tradition of hip-hop in constructing their soundscapes.¹²³ In utilizing hardware drum machines and samplers to create their music, producers are interacting with not only technology, but also a constantly developing cultural history that has provided communal identity to a global youth culture. In recognizing what goes on “behind the beat” we are able to visually and aurally witness the socio-cultural depth of humanity’s complex relationship to its technologies, as well as the intense individual meaning constantly created and negotiated by musicians and cultural communities.

¹²³ Bull, 176.

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