Boom bap ex machina: hip-hop aesthetics and the Akai MPC

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Boom Bap ex Machina: Hip-Hop Aesthetics and the Akai MPC

Mike Exarchos (a.k.a. Stereo Mike) | London College of Music (University of West London)

Introduction

Over the past three decades, the growing literature on hip-hop musicology has paid ample tribute to Akai's range of MPCs (originally, MIDI Production Centers—currently, Music Production Controllers), acknowledging their pivotal influence on rap production practices (D'Errico 2015; George 1998; Harkins 2009, 2010; Kajikawa 2015b; Morey and McIntyre 2014; Ratcliffe 2014; Rodgers 2003; Rose 1994; Schloss 2014; Sewell 2013; Shevlock 2017; Swiboda 2014; Wang 2014; Williams 2010). The technology's combined functionality of sampling, drum machine and MIDI sequencing features has been embraced by rap practitioners ever since the release of the standalone MPC60 in 1988. The timeline coincides with particular sonic priorities in Hip-Hop that can be grouped under the 'Boom Bap' aesthetic—an onomatopoeic celebration of the prominence of sampled drum sounds programmed over sparse and heavily syncopated instrumentation. But what is the association between subgenre aesthetics and MPC functionality, and what parallels can be drawn between the evolution of the technology and stylistic deviations in the genre? The chapter examines how MPC technology impacts upon the stylization of Hip-Hop as a result of unique sonic, rhythmic and interface-related characteristics, which condition sampling, programming and mixing practices, determining in turn recognizable sonic signatures. Furthermore, the boom bap sound is traced from its origins in the mid-to-late 1980s to its current use as an East Coast production reference, honoring a sample-based philosophy that is facilitated by the MPCs' physical interface and operating script. Looking at a number of representative case studies, the findings form a systematic typology of technical characteristics correlated to creative approaches and resulting production traits, informing speculation about the future of the MPC, its technological descendants and the footprint of its aesthetic on emerging styles and technologies.

A brief history sample

> When a new technology gets loose in the music world, it takes a few years to become front-page news. Consider the electric guitar (…) The sampler is making a serious bid to be the electric guitar of the '90s (…) What has reached critical mass is the complex of music (and social) meanings attached to sampling. (Aikin 1997: 47)

It was October 1997 when *Keyboard* magazine made sampling front-page news, featuring DJ Shadow alongside the Akai MPC2000 on the front cover and leading with the story: 'Samplers Rule'. The story of sampling, however, had begun over a decade and a half ago (at this point the MPC2000 represented the fourth generation of MPC technology), and the story of Hip-Hop had commenced before digital sampling was even possible. Rap aficionados associate hip-hop music automatically with sampling, but to put things in perspective, Hip-Hop's original 'instrument' was the turntable (Katz 2012: 43-69). Pioneering DJs in the Bronx had used a pair of turntables and a mixer to extend the instrumental sections of 1960s and 1970s soul and funk recording, providing the instrumental foundation that MCs would eventually rap over (Chang 2007; Toop 2000). It took a number of years before any rapping was actually committed to record and the first successful rap release arrived in the form of *Rapper's Delight* by the Sugarhill Gang in 1979 (Howard 2004). *Rapper's Delight* and all proto-rap releases of the era utilized disco, soul and funk musicians for the production of the instrumental backing (Kulkarni 2015; Serrano 2015), and turntables did not feature prominently on records until *The Adventures of Grandmaster Flash on the Wheels of Steel* in 1981. Flash's turntable performance stands as a historical *record* of both the performative hip-hop tradition (turntablism), and as a production that contains multiple phonographic segments that are then cut, manipulated and juxtaposed further by the DJ. It is these sonic artifacts that early hip-hop producers attempted to replicate when the

first affordable digital samplers hit the market, a notion that is audible in mid-to-late 1980s sample-based releases. Ingenuity on the side of the producers, and evolving design on the side of the manufacturers, meant that samplers would soon transcend the function of merely replicating turntable performance, unpacking new creative possibilities and becoming hip-hop instruments par excellence (in the hands of studio DJs who had now transitioned to fully fledged *producers*).

What is Boom Bap?

The story of Boom Bap is closely associated with the development and practice of sampling, and as such, Boom Bap is often described as a production technique, a sound, a style or a subgenre. The term was first uttered in 1984 by T La Rock in the final ad-libs of *It's Yours* (Mlynar 2013), but it was popularized by KRS-One with the release of the *Return of the Boom Bap* album in 1991. It stands for an onomatopoeic celebration of the sound of a loud kick drum ('boom') and hard-hitting snare ('bap') exposed over typically sparse, sample-based instrumental production. It could be argued that these two words ('boom' and 'bap') conjure rhythmic, timbral and balance implications, and as such Boom Bap could be better described as an overarching aesthetic that signifies hip-hop eras, production preferences, sonic traits, subgenre variations, geographical connotations and even authenticity claims. Mike D'Errico (2015: 281) defines "boombap" as a "sound that was shaped by the interactions between emerging sampling technologies and traditional turntable practice" by producers who "used turntables alongside popular samplers such as the Akai MPC and E-Mu SP-1200" resulting in "gritty, lo-fi audio qualities (…) and innovative performance practices that continue to define the sound of "underground," "old-school" hip-hop."

But how do we make the transition from particular mechanistic affordances[i] (Clarke 2005: 36-8) to a complex set of sonic signatures claiming their very own raison d'être? The connection lies in the sampling affordances that enabled the separation, reinforcement and stylization of

individual drum sounds within a hip-hop context to such an extent that practitioners 'baptized' the phenomenon with its own onomatopoeia. The significance of this is that the sonic variables that characterize Boom Bap are interrelated to production techniques and workflow approaches conditioned by technical characteristics found in digital samplers in general, and the MPC range in particular. Through case-study analysis the chapter will demonstrate how this mapping occurs, its implications on current hip-hop production, but also how it may predict future practices within the genre.

Boom Bap out of the machine

The isolation of the 'boom' and the 'bap' can be traced back to pioneering hip-hop producer Marley Marl, who "discovered the power of sampling drums by accident during a Captain Rock session" (Weingarten 2010: 22) and, in his own words, found that he "could take any drum sound from any old record, put it in [t]here and get that old drummer sound" (cited in George 1998: 92). Kajikawa (2015b: 164-5) informs us that Marl must have "first experimented with sampled drum breaks in or around 1984 when the first devices with adequate memory and function, such as [the] E-mu Emulator II and the Ensonique Mirage, began hitting the market". The significance of this discovery—and Marl's influence on a genealogy of producers associated with Boom Bap, such as DJ Premier, Pete Rock, Q-Tip, RZA, Prince Paul, DJ Shadow, J Dilla and Madlib—is that it empowered rap producers to transition from 'surface manipulators' (users of drum loops or breaks referential to a turntable affordance) to drum 'scientists': samplist-programmers who could come up with new patterns altogether, layer multiple drum sounds upon one another and create original rhythms out of minimal sonic segments from the past. Soon, the techniques advanced to dense layering of sampled *and* synthesized sources (the latter often courtesy of a Roland TR-808), complex rhythmic appropriation, chopping and juxtaposition.

It is in the trajectory of this evolving production technique—from Marl's drum-hit isolation to later producers' intricate juxtaposition—that the development of the boom bap aesthetic can be observed, highlighting the tension between 'liveness' and rigidity, organic and synthetic sonics. Talking about the Roland TR-808 and E-mu SP-1200, Kulkarni (2015: 43) observes that: "The two most emblematic pieces of hardware hip hop has ever used both, in their way, crystallise that delicious dilemma, that tightrope between looseness/'feel' and machine-like tightness that hip hop's sound so engagingly steps on". Naturally, with powerful sampling technology integrated alongside drum machine and sequencer functionality in standalone production centers, future producers would go on to approach all past phonographic material—not just funk and soul drum breaks—with increasing microscopic focus, separating instrumental phrases into 'stabs', assigning them to MPC drum pads, and performing and programming re-imagined sequences into new cyclical arrangements (loop-based compositions). The 'boom' and the 'bap' would evolve to represent not only a drum-inspired onomatopoeia, but an overarching 'chopped', manipulated and syncopated *aesthetic* founded upon the interaction of past records with new mechanistic sequencing. Table 1 maps distinct characteristics of the boom bap sound against affordances—and limitations—found specifically on MPCs (see Table 1 below). The left column highlights characteristic stylizations that define the boom bap aesthetic, while the right column indicates software and hardware functionality within the MPC environment that promotes these stylizations or makes them possible. It is worth noting that many of these affordances are not exclusive to MPC technology anymore, but their combined integration on a standalone piece of hardware as early as 1988 became instrumental in allowing the aesthetic to develop, whilst also conditioning future workflow preferences mirrored in later generations of the same hardware (and competitive designs, too). As such, the MPC workflow allowed 1990's hip-hop producers to perfect the sample-based art-form, and the boom bap sound became synonymous with Hip-Hop's

Golden Era (circa 1988-1998), as well as East Coast's rather dogmatic reliance on phonographic courses.

East Coast producers continued to rely on boom bap methods not only because of their preference for phonographic sources, but also as a reaction to the more synthesized subgenres coming out of the West Coast or US South, and a form of conscious sonic signposting toward the birthplace of the genre—New York. The boom bap sound was later taken into more experimental, instrumental frontiers by producers such as J Dilla, Madlib, Prefuse 73 and Flying Lotus (Hodgson 2011), while it currently enjoys a resurgence in the form of a plethora of releases classified as Boom Bap[ii], and mainstream releases increasingly tapping into it to support more conscious lyrical content (for example, Jay-Z's 2017 single, *The Story of O.J.*, produced by No I.D.). In an interview with *Rolling Stone* magazine (cited in Leight 2017), No I.D. sums up the rationale behind his return to a sample-based approach by saying: "I began to play the samples like I would play an instrument (…) I had stepped away from my strength sometimes because the business makes you think you can't do it (…) I can do it. And I can create new art."

<<TABLE 1>>
Table 1: A mapping of boom bap stylizations against MPC affordances and limitations.

	**Boom bap characteristics**	**MPC affordances / limitations**
Balance	Prominent kick drum	Internal mix functionality
	Prominent snare drum	Internal mix functionality
Timbre	Emphasized low-end (kick drum)	Internal processing (effects) / Resolution limitation
Dynamic	Hard-hitting snare drum (presence)	Internal processing (effects) / Resolution limitation
	Low fidelity	Resolution limitation
	Vinyl (sample) sources	Phono inputs
	Compressed instrumental production	Internal processing (compression) / Resolution limitation
	Interpolation / filtering	Controllers (interface)
Sonic 'Glue'	Instrumental production 'glue'	Resolution limitation / Converters (I/O) / Internal processing (compression)
	Shared ambience on sampled elements	Internal processing (effects)
Arrangement	Isolated drum 'hits'	(Auto-)Slice functionality / Memory limitation
Rhythmic	(Short) Other instrumental 'stabs'	(Auto-)Slice functionality / Memory limitation
	Layered kick drum (often with 808)	Program functionality / MIDI out
	Layered snare drum	Program functionality / MIDI out
	'Chopped' breaks (drums) and other phonographic samples	(Auto-)Slice functionality
	Sparse instrumentation	Memory limitation / Program functionality (mono)
	Turntable effects / performance	Phono inputs
	4-measure repetition / chorus variation	Sequencer/song functionality
	(Highly) Swung programming	MPC swing/quantization algorithm
	Tight drum-instrumental syncopation	Program functionality / MIDI out / MPC swing/quantization algorithm
Motivic	Re-arranged phrases / rhythms / motifs	(Auto-)Slice functionality / Drum pads (interface)
	Percussive programming of instrumental phrases	Drum pads (interface) / Program functionality (mono)

Hip-Hop's weapon of choice

It is important, however, to consider the point at which MPCs enter the historical timeline and the rationale behind them replacing E-mus as preferred weapons of—hip-hop—choice. Akai released the MPC60 in 1988 bringing a number of improvements to the notion of integrated sampling, drum-machine and MIDI-programming functionality. Ratcliffe informs us that:

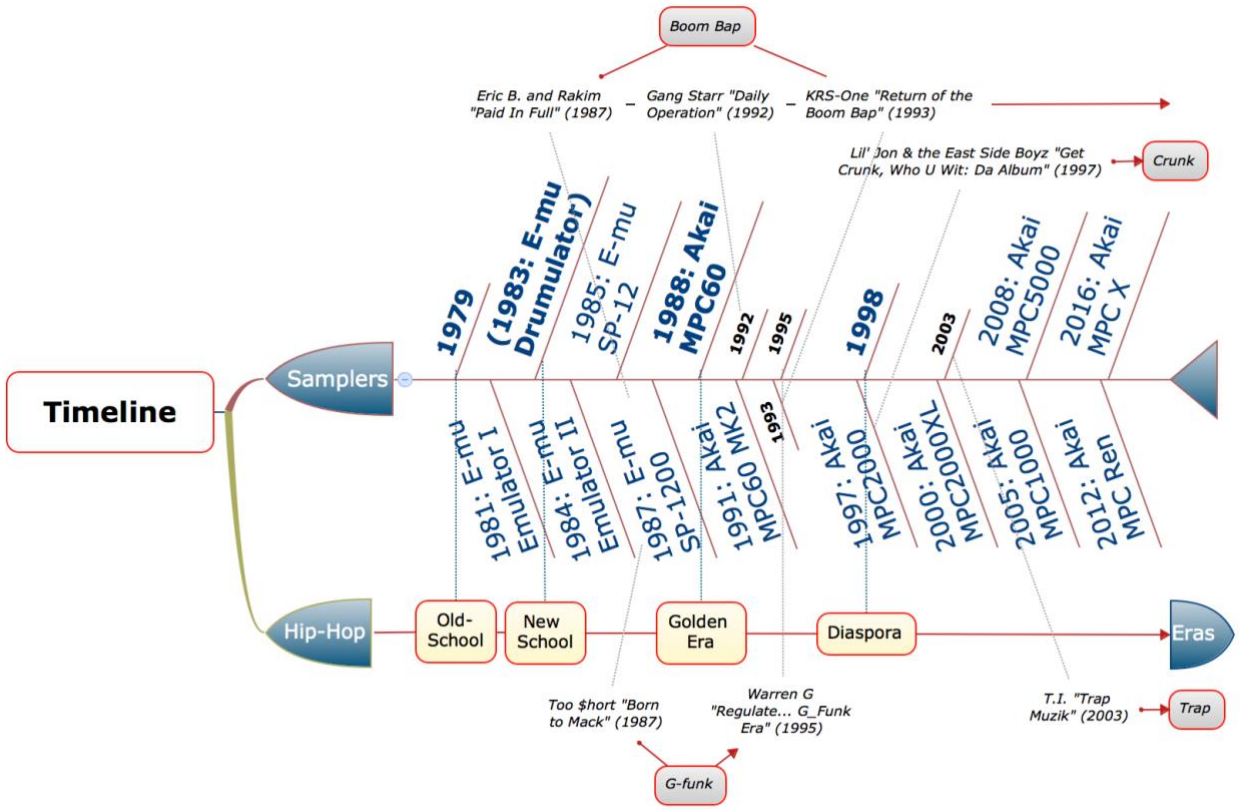
> MPC is the model designation for a range of a sampling drum machine/sequencers, originally designed by Roger Linn and released by Akai from 1988 onwards (for instance, the MPC 60, MPC 2000, and MPC 3000). These instruments are favoured for sample-based hip-hop and EDM due to both the design of the user interface (featuring drum pads for real-time programming) and idiomatic performance characteristics (such as the swing quantisation algorithm). (Ratcliffe 2014: 113)

Rap producers made the switch from E-mus to Akais for different reasons, but it could be summarized that the MPCs' unique swing quantization parameter, the higher bit-depth resolution, the touch-sensitive drum pads of the physical interface and the internal mixing functionality were among the main reasons (Anderton 1987; Linn 1989). Roger Linn (Scarth and Linn 2013) himself attributes the "natural, human-feeling grooves in [his] drum machines (…) (i)n order of importance" to the factors of "(s)wing", "(n)atural dynamic response on [the] drum pads", the "(p)ressure-sensitive note repeat" function, programming accuracy, strong factory sounds and a user-friendly interface. Hank Shocklee of the Bomb Squad (the production collective behind iconic Public Enemy albums, such as *It Takes a Nation of Millions to Hold Us Back* and *Fear of a Black Planet*) asserts:

> [The 12000] allows you to do everything with a sample. You can cut it off, you can truncate it really tight, you can run a loop in it, you can cut off certain drum

> pads. The limitation is that it sounds white, because it's rigid. The Akai Linn [MPC-60] allows you to create more of a feel; that's what Teddy Riley uses to get his swing beats. (Cited in Dery 1990: 82-3, 96)

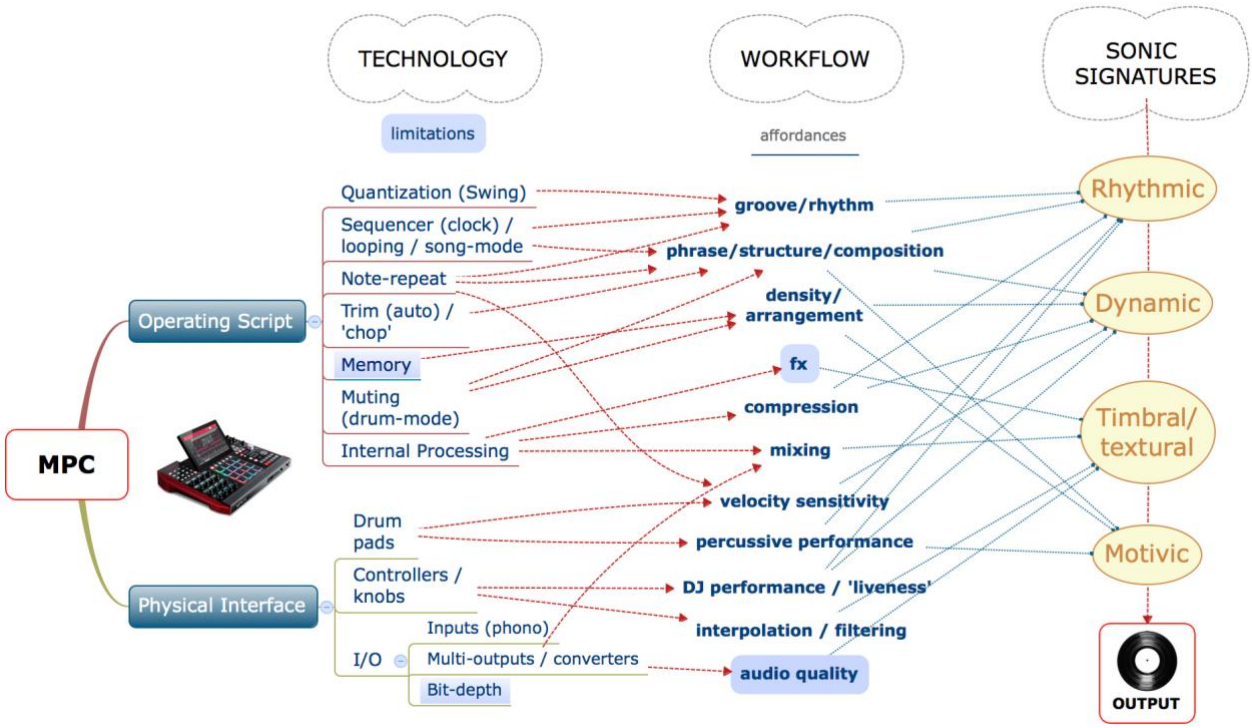
Schloss (2014: 201-2) adds that "the circuitry and programming of different models of samplers are believed to impact special characteristics to the music (perhaps the best known of these characteristics is the legendary "MPC swing," a rhythmic idiosyncrasy first noted in the Akai MPC 60 sampler, circa 1988)." And Kajikawa (2015a: 305) reports that the Akai MPC-60's "touch-sensitive trigger pads allowed producers to approach beatmaking with renewed tactile sensitivity." Figure 1 below provides a schematic representation of a timeline mapping hip-hop eras against the releases of particular models of E-mu and Akai products, illustrated by examples of seminal releases signifying hip-hop subgenres:



<<FIGURE 1>>
Figure 1: Timeline mapping hip-hop eras against E-mu and Akai products, with examples of seminal releases characteristic of rap subgenres.

A typology

The technical characteristics of the MPC range can thus be grouped into variables relating to the operating script on the one hand, and to physical attributes of the hardware interface on the other. These, in turn, influence sampling, programming and mixing tendencies in producers' workflows, with sonic, rhythmic and motivic implications for the musical outputs. It is beyond the scope of this chapter to detail every function, physical attribute or parameter found on the MPC range, so the focus will remain instead on characteristics that create noteworthy affordances in producers' workflows. These will then be mapped to a number of predictable sonic signatures (potential aesthetic results), as can be observed through aural analysis of seminal works. Consequently, the observations here do not follow a one-way, technologically deterministic rationale, but take into account the creative agency of producers illuminated through the discussion of key works, and informed by existing musicological literature and producer testimonials. A visual representation of the typology is provided in Figure 2 below:



<<FIGURE 2>>
Figure 2: A schematic representation of technical characteristics of the MPC range mapped against workflow affordances and sonic signature categorizations.

Starting from the MPCs' operating script, key characteristics highlighted in the typology above are: (a) the quantization algorithm (and MPC's infamous 'swing' parameter); (b) the MPC's onboard sequencer, its looping function and the included 'song-mode' for the construction of longer phrases; (c) the note-repeat function (tied to the sequencer and quantization function); (d) the (auto-)slice option of the zone functionality (introduced in 1997 with the release of the MPC2000), which enables the separation of a longer audio sample into separate segments or 'chops'; (d) the memory limitations of earlier designs (resulting in shorter sampling times); (f) the monophonic/muting functionality within programs; and (g) the internal routing functionality (including optional effects boards introduced after 1997 with the release of the MPC2000).

Key features of the physical interface highlighted in this typology are: (a) the velocity sensitive drum-style finger pads; (b) physical controllers such as sliders and rotary knobs found

on the hardware; and (c) various aspects of the MPCs' input/output (I/O) functionality, which can be further subdivided to: i) the type of sampling inputs available; ii) the (multiple) outputs functionality (and how this relates to internal routing and processing as mentioned above); and iii) the quality and resolution of the analogue-to-digital (AD) and digital-to-analogue (DA) conversion, including the bit-depth limitations of earlier designs (and their emulation thereof in later ones).

Next I turn my attention to how these technical features have affected creative (ab)use in the context of hip-hop music-making and what their influence has been on the boom bap sound. To answer this question it is worth revisiting some seminal work in the genre and investigating the sonic signatures present in relation to the highlighted features above. For a comparative analysis, two releases before and after 1988 are considered that have been classified as Boom Bap: Eric B. and Rakim's album *Paid In Full* (1987), largely produced by Eric B., but influenced by Marley Marl, featuring two of his remixes and, in fact, partly recorded at his home studio; and Gang Starr's *Daily Operation* (1992), featuring DJ Premier's archetypal—and highly swung—production footprint.

Rhythmic signatures

Comparing Marl's remixing of *My Melody* and *Eric B. Is President* to DJ Premier's programming on tracks such as *2 Deep* and *Take It Personal*, there is a discernible difference evident in the swing quantization of various elements. We know for a fact that although DJ Premier learnt his craft on an E-mu SP12, by the early 1990s he had switched to an Akai MPC60 for his programming, triggering samples from an Akai S950 sampler (Tingen 2007). Based on previous research (George 1998; Kajikawa 2015b; Weingarten 2010), it is also safe to assume that what we are hearing on *Paid In Full* is E-mu technology, especially as this is the year prior to the release of the MPC60. Marl's work is indeed swung (as can be clearly heard in the rhythmic placement of the sixteenth kick-drum figure in the third measure of each four-measure loop on

Eric B. Is President), but when compared to DJ Premier's programming (on elements such as the brass stabs of *2 Deep* and the swung kick-drum sixteenths on *Take It Personal)*, the latter is so highly swung it almost resembles a triplet feel. In fact, it is impossible to find any records prior to 1988 that are as highly swung as DJ Premier's work in the early 1990's, a fact that ties this characteristic musical figure to the MPC swing algorithm. But the sonic artifacts observed here cannot be attributed to technology alone. DJ Premier's love of jazz (as exemplified by his sampling choices famously featuring Charlie Parker on Gang Starr's 1989 debut release *No More Mr Nice Guy*) surely have a lot to do with his abuse of the swing affordance, and it is precisely this flux between absorbed influences (culture), technology and personal agency, that result in stylistic evolutionary leaps.

Such was the effect of MPC quantization parameters on hip-hop outputs that in following years producers meticulously reaped the time intricacies of different generations of the hardware and imported them into digital audio workstations (DAWs) emulating the MPC 'feel'. Before these came pre-packaged in contemporary DAWs such as Ableton Live, the producing community would share them online (in the form of MIDI files and song templates), while producers would frequently extract these in person to ensure higher accuracy between sequenced elements on their version of the hardware, and programmed elements running in parallel on their DAWs. Celebrated producer Just Blaze is one of the producers who made the switch from producing on hardware MPCs to Apple's Logic DAW, and in an interview with uaudio.com he provides valuable insight into his rationale:

> When I made the decision to move over to Logic, a couple of guys that I work with and I imported all of the actual sequencer grooves from three MPCs into Logic (…)
>
> We did this because, even, though it's all ones and zeros and they're all computers, every processor and sequencer is a bit different (…) The grooves that we imported over are the

> only thing that I always make sure that I have warmed up when I open a blank session. (Galland and Fox 2016)

Just Blaze here points out another important quality of the MPC range (and hardware/sampling drum-machines in general): the computerized 'grid' is not actually set in stone and timing idiosyncrasies in hardware sequencers do not stop with swung quantization templates. It has been shown that even when a straight feel is selected, the MPC impacts timing errors that deviate from a strict mathematical grid and the complexity of the programmed material can have an incremental effect on timing accuracy (Perron 1994: 5).

Dynamic signatures

The combination of unique quantization templates and timing idiosyncrasies can therefore be seen as a useful binary of control versus randomization, which, in the right programming hands, allows for the creation of 'groove' and 'feel' signatures, balancing the quest for rhythmic tightness with hip-hop's 'genetic' predisposition for a 'live' heartbeat. But no rhythmic analysis of groove is complete without a mention of dynamics and, as any drummer (or drum programmer) would add, rhythmic feel is the result of not just timing, but also accents and velocity variations. Here, the touch-sensitive drum pads of the physical interface enable further interaction between human and machine-like qualities. The drum pads on the MPC could be used in a fully touch-sensitive mode, registering any velocity that the performer/programmer exercised as a MIDI value, or they could be pre-set to threshold or stepped velocities, allowing for more controlled expression. Furthermore, the note-repeat function on MPCs would allow for automatic repetition of a sample assigned to a drum-pad according to the preset quantization value, but the benefit of touch-sensitivity again presented a unique opportunity for mechanistic timing over expressive dynamics.

Motivic signatures

An important affordance that allowed further agency with the drum break—and closer interaction with individual hits—was the auto-slice option implemented as part of the zone functionality since the release of the MPC2000 (Avgousti 2009). Beat mavericks such as J Dilla and Madlib clearly abused this function on albums such as *Champion Sound* (2003), but—in fact—the automated process mirrored a practice long-exercised by boom bap producers. Whether laboriously 'chopping' longer drum breaks (or motivic phrases) 'by hand', or using automatic processes to separate them into shorter segments, sample-based producers took pride in meticulously subdividing sections to the shortest temporal denominator necessary—eighths, sixteenths, or individual 'hits' or 'stabs'—to assign 'cuts' onto drum pads for re-triggering. Although this process may now feel quite commonplace to the contemporary producer, the rhythmic, dynamic and motivic implications of this practice on the stylization of hip-hop production at the time were of massive importance. It allowed for increased rhythmic freedom, re-appropriation and syncopation, but it also had timbral and motivic implications as will be demonstrated next, especially when used in conjunction with the MPCs' program-muting/monophonic functionality.

A typical boom bap practice would be to set a program's polyphony to mono, so that each segment triggered mutes the previous one already playing (for this to work samples would have to be set to 'one-shot' triggering, which ensures they play out until interrupted by another event pertaining to the same program). Two positive side-effects of the process were a highly rhythmical effect and the preservation of clarity in the harmonic progression of newly constructed patterns (by avoiding the juxtaposition of overlapping melodic or harmonic information present in sampled phrases). The monophonic triggering and muting would thus create tightly syncopated results due to the placement of the new 'cut' (initiated by the percussive attack of the edit or a kick-drum on the first beat) against rhythmical subdivisions already present in the previously

playing segment. As a result, the original material would assume new rhythmic qualities due to its placement and truncation within the programming order sequenced on the MPC. A prime example of this rhythmic-motivic signature can be heard on Gang Starr's *Hard to Earn* album (1994). It could be argued, that the resulting sensibility is quintessentially Hip-Hop: the *meta*-syncopation interacts favorably with the sampled material's inherent syncopation.

Timbral/textural signatures

In the first volume of *Perspectives on Music Production*, Matt Shelvock (2017: 170) demonstrates how the notion of hip-hop production—as "beat-making", composition or creation—is closely integrated with mixing practices, and "that the lines between mixing and production are often blurred within this genre". As such, he highlights how hip-hop mix engineers may be closely involved with creative production decisions, and that clear stages between making and mixing a track may not be adhered to in hip-hop practice. Looking at this relationship from the perspective of beat-making, it is also true that the hip-hop producer assumes a plethora of mixing roles *while* creating a track. One of the defining features of the MPC has been the inclusion of mixing/processing functionality, which has empowered beat-makers with sonic options traditionally reserved for the mixing stage. What's more, the MPC operating script caters for a flexible routing functionality that enables the insertion of effects at various stages (upon an individual sample, program, track or the master). The resulting "signal flow" outcomes create striking and unique sonic signatures, which would have required complex processes were they attempted within a DAW environment or via patch-bay routing in a hardware studio.

It is also important to discuss the limitations imposed by the internal effect processing capabilities of the DSP chips on early MPCs and note the aesthetic implications these have had on the musical outputs of respective eras. The early chips limited the amount of effects that could be internally patched in at the same time (as insert effects or in an auxiliary send configuration) to two, so for the sake of efficiency, practitioners would often share effects across a number of

programs or tracks. For instance, a typical configuration would be to enable a master compressor for the whole internal MPC mix 'buss', while also sharing a reverb effect across numerous elements. This limitation would often result in a notion of sonic 'glue' or 'blend', an illusion constructed out of shared spatial and dynamic characteristics.

Compression hereby deserves special mention, because its (ab)use by practitioners within the context of Hip-Hop and the MPC environment has resulted in very particular stylizations (these have been exponentially expressed in the more experimental outputs of Flying Lotus, Madlib, J-Dilla and Prefuse 73 as discussed by D'Errico (2015) and Hodsgon (2011)). Although compression is a dynamic effect common to most virtual or physical mixing environments, its inclusion within the MPC operating script, the possibility to insert master compression on the stereo mix-buss (as part of the internal processing matrix), and the combined effect of the compression algorithm with that of the reduced bit-depth resolution of earlier models (and its emulation on later ones), lends it a unique quality in this context.

Furthermore, the physical input and output connectors on the MPC range, the analogue-to-digital and digital-to-analogue converters, and the resolution capabilities of various models, contribute to particular mixing affordances, sonic signatures and lo-fi signifiers. The notion of being able to produce a complete musical piece on an MPC meant that it was possible for producers to bypass the use of a computer sequencer or DAW altogether and bring a complete instrumental idea into the studio for mixing. Akai facilitated multiple outputs on most models of the hardware (either as default, or optional as an expansion) with the aim of allowing an instrumental production to be output directly onto a hardware studio mixer. The sonic character of the physical I/O on MPCs (including the vinyl preamp inputs on most models) would thus be imprinted onto both incoming—sampled—sources and outgoing multi-tracks, contributing to a particular timbral footprint. The sound of certain MPC models has become revered to such an extent that recent reincarnations of the technology feature emulations of earlier models (for

example, 'vintage mode' on the MPC Renaissance and MPCX provides emulations of the MPC60 and the MPC3000). The reduced bit-rate (resolution) of earlier models is one of the notable variables impacting on the audio quality of hip-hop outputs from respective eras. This brings us to the present, and it is important to investigate the current footprint of these stylizations and their relationship to contemporary musical outputs in Hip-Hop.

Evolution

I give you bars, no microwave rap
I can take it down South, but it's gon' be my version of trap (…)
I don't hate the trap but give me that boom bap
Yeah the 808 eating at the beats drill the 808
(Statik Selektah 2017)

The lyrics above are from Statik Selektah's recent release *But You Don't Hear Me Tho* (2017), highlighting the aesthetic friction between Trap—the prevailing and highly synthesized contemporary rap style—and the retrospective boom bap sound. The track features many of the stylizations characteristic of Boom Bap, complete with prominent kick and snare drum sounds, highly swung programming, and chopped, soulful samples (albeit recorded freshly by soul-funk band Mtume with additional horns from Utril Rhaburn). Static Selektah is a contemporary hip-hop producer and DJ Premier protégé whose production duties are called upon when—according to XXLmag (Emmanuel 2017)—"classic hip-hop at its finest" is required. He represents a generation of producers and artists that Pitchfork (Ruiz 2017) describes—alongside rapper Your Old Droog—as "a nostalgic sonic wave currently being surfed by NYC contemporaries Roc Marciano, Action Bronson, and Joey Bada$$, rappers doing their best to embody the spirit of New York hip-hop without getting stuck in its past." Indeed, Action Bronson's 2015 album *Mr. Wonderful*—partly produced by hip-hop veteran The Alchemist—sits among a plethora of recent

releases categorized as Boom Bap; meanwhile, the boom bap term enjoys a revival in the context of artists' lyrics and as a common stylistic descriptor in album reviews. Indicatively, Ruiz (2017) describes Your Old Droog's single *Bangladesh* (from album *Packs*) as "an ill Bansuri loop over a simple boom-bap drum beat" and HipHopDX (Leask 2017) reviews his track *Help!* as "an unremittingly noisy blast of psychedelic boom-bap."

If Your Old Droog's *Packs* merges sparseness and a sample-based aesthetic with noisy psychedelia, then another recent release, Apollo Brown and Planet Asia's 2017 album *Anchovies*, takes the recipe down to the absolute rawest of materials: perhaps it is a sign of genre maturity when process is reduced to its leanest, and the overarching simplicity of *Anchovies* exposes Boom Bap's DNA in a minimal production approach that does away with obvious drum reinforcement, coming full-circle to the turntablist tradition of chopped, flipped and rewound instrumentals (with rather extraneous amounts of vinyl noise). As an exception to the onomatopoeic boom bap dogma, it reveals the mechanics underneath the beat: chopped instrumental samples programmed into re-imagined sequences and chord progressions, where swung quantization powers a highly rhythmic and hypnotic interaction between sourced phonographic material and the enforced temporal relationships of a sequencer. The customary boom bap beats are either minimal or simply implied, but the rhythmic placement of the chopped samples provides the very essence of the sample-based aesthetic. Perhaps producers require the distance of a couple of decades to identify the raw essence of a genre and be ready to expose its fundamental mechanics and source materials with such transparency. At the heart of the art-form, lies a producer working with an instrumental formula that affords these sonic and temporal relationships to manifest: a formula originally inspired by the MPC.

Endtroduction

Although the sample-based modus operandi that defines the boom bap sound is represented by a large number of contemporary releases, it has to be acknowledged that it is not the prevalent style of Hip-Hop in the mainstream. Conversely, Trap's reign over the genre for a considerable number of years requires further examination at a time when electronic music forms are subject to exponential "trans-morphing" into numerous subgenres (Sandywell and Beer 2005). Yet, it is not rare for forms that cross over into the mainstream to simultaneously undergo an aesthetic counter-reaction; a phenomenon expressed by underground purveyors tracing and practicing the mechanics and stylizations of older subgenre forms. This is encapsulated by subcultures becoming consciously retrospective and evolving their stylizations according to their own code of aesthetic conduct; one that is slower than the pace dictated by commercial pressures (Thornton 1995). The currently buzzing hip-hop underground certainly represents such a reaction, and the answer in artists' lyrics and producers' practices seems to point to a Golden Era boom bap recipe.

But a pragmatic challenge lies in the sourcing of raw materials (phonographic samples) necessary for the process to function. Boom Bap's dependence on the past is challenged by the legal context and finite pool of phonographic material available to producers in the decades prior to the birth of sample-based Hip-Hop. As a result, sample-based producers are forced to source alternative content should they continue to actualise boom bap practices. As noted in Statik Selektah's release above, new content is sourced from live performers, while, for their most recent album *And the Anonymous Nobody* (2016), De La Soul (2017) inform us that their "first album in 11 years was born of 300 hours of live material". J.U.S.T.I.C.E. League, on the other hand, are a production collective "recreating every aspect of the original sample, down to the kind of room it was recorded in" (Law 2016) in order to power a plethora of contemporary rap hits (for artists such as Rick Ross, Gucci Mane, Drake and Lil Wayne); and Frank Dukes

produces original music to function as sampling material (for artists such as Rihanna, Kanye West, Drake and Future), fusing vintage sonics into his productions to render the new content favorable for subsequent sample-based interaction (Whalen 2016). The Roots, of course, have chosen a predominantly live approach throughout their career, but remain conscious of the aesthetic compromises resulting from not directly interacting with sampling technology (Marshall 2006). Ben Greenman (Thompson 2013: 101) comments on The Roots debut (*Organix* 1993) by saying: "It was swag deficient, lacking the grit of sample, microchip, and identifiable urban narrative that, to this day, define the genre."

The latest incarnation of the MPC range (MPCX) seems to be acknowledging the methodological alternatives contemporary producers practice, retaining the interface, operating system and workflow affordances that powered Golden Era aesthetics, while maximizing the potential for recording new music directly into its interface and leveraging interaction with synthesized music forms (exemplified by direct inputs for live instruments, CV outputs for analogue synth control, pre-loaded Trap and EDM sound libraries, and a 'controller' mode for working with a computer). If music-makers are adamant to pursue and evolve the sample-based art form—going as far as reverse-engineering original sampling content—then the instrument that has been fueling sample-based divergences since 1988 may just be able to support this retrospective-futuristic oscillation that characterizes so much of metamodern creative practice (Vermeulen and Van Den Akker 2010). Yet, the stylizations it has afforded, and the workflow tendencies it has conditioned, are now part and parcel of producers' global vocabularies practiced beyond the context of MPC technology and the confinements of the boom bap aesthetic: the sample-based, syncopated lo-fi 'chop' may just have become the guitar riff of the microchip era.

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[i] Clarke expands Gibson's (1966: 285) coining of the term 'affordance' from "a substitute for *values* … what things furnish … (w)hat they *afford* the observer … (which) depends on their properties" into a concept that takes into account the social interdependence between objective properties and the nature of human users/listeners; according to Clarke (2005: 38) "affordances are primarily understood as the *action* consequences of encountering perceptual information in the world."

[ii] Representative releases include: *Mr. Wonderful* (Action Bronson 2015), *Bare Face Robbery* (Dirt Platoon 2017), *Underground with Commercial Appeal* (Fokis 2017), *That's Hip Hop* (Joell Ortiz 2016), *B4.DA.$$* (Joey Bada$$ 2015), *Super Hero* feat. MF Doom (Kool Keith 2016), *Which Way Iz West* (MC Eiht 2017), *Ode to Gang Starr* (Sam Brown 2017), *You Don't Hear Me Tho* feat. The LOX & Mtume (Statik Selektah 2017), *The Good Book, Vol. 2* (The Alchemist & Budgie 2017), *The Ghost of Living* (Vic Spencer & Big Ghost Ltd 2016), and *Packs* (Your Old Droog 2017).