The Notation of Rap Music

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ABSTRACT

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Many different forms of notation have been used for representing rap performances in analytical articles over the past two decades. Per Adams 2014, modern musicology on rap begins with Krims 2000. The most frequent type of notation used to analyze rap—flow diagrams, which depict rhythmic duration and accent horizontally over a typographic visualization of rap’s normative 4/4 measure—can be found in Krims 2000. These diagrams independently became much more highly developed to now include rhyme schemes, as well as more specific rhythms (Adams 2009). Since this time, an entire family of methods for notating rap has been theorized (Miyakawa 2005, Connor 2014, Ranganathan 2015, Condit-Schulz 2016, Ohriner 2016, Connor 2018). A comparison of the abilities of these notations to represent separate aspects of the rap performance like pitch, beat, melody, and rhythm can reveal important insights about what rap musicologists are studying, how they are studying it, and what genus of conclusions they are coming to. Because the rap culture itself is un-notated, an evolved form of the traditional
Western sheet music system can best meet the demands of the entire genre, even if some notational forms are better locally, or in specific contexts. The widespread availability of digital transcription, playback, and electronic recording helps to overcome previously insurmountable obstacles to its use. In the future, analysts may depend on an interpenetrating ecosystem of notation, each fit for the needs of the moment, rather than a standard notation. The overemphasis on rhythm of prevailing systems of notation make it clear just how many domains in rap remain underexplored, especially in the intersection between linguistics and rap, as in the sonority hierarchy, phonologies and their conscious exploitation by native speakers, or the durational aspect of semantically meaningful utterances.
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Chapter 1: The Current Notational Practices Of Rap Studies

As a result of the authoritative standing of electronic recordings within the rap genre, as well as the sui generis approaches to notation of rappers themselves, the musicologist is confronted with an intimidating diversity of options to choose from when analyzing and creating visual representations of rap music. These options can be lyrics-focused, as in the flow diagram (Krims 2000.) They can also be music-focused, as in musical notation (Adams 2009.) The purpose of this thesis is thus twofold. The first purpose is to define the kind of situations for which these various notational systems may be most appropriate. The second purpose is to perform a comparative study of two notational systems in order to see what is gained or loss when rap recordings are translated from .mp3 to paper.

As will be seen, the scholar’s selection of a particular method of visual representation should be guided by whichever aspect of the rap performance the scholar is focusing their attention on: pitch, rhythm, interaction between lyrics and the beat, etc. In doing so, however, the scholar must be aware that, to a certain degree, their choice will predetermine and limit their range of findings. This contradiction is perhaps already appreciated in other realms, like classical music, but has yet to be fully applied to the problem of modern oral cultures of musical transmission, like rap.

Eventually, I posit an interlocking ecosystem of complementary notations, each one to be deployed as its own tool in only the right situation. The first chapter of this two-part thesis thus
consists of an inventory of what these situations might be. The second chapter applies one specific notational system—Western music notation—to a musicological situation for which it is particularly well suited: the tracing of motivic development across large musical structures. In the end, as far as notations of rap goes, there may be no “better” or “worse;” only different.

To date, there has been a documented use of at least five separate notational systems for musicological studies of rap in publication. These five different notational systems are as follows:

1) Flow diagrams — an orthographic-focused system underpinned by a 16\textsuperscript{th} note grid. In this system, words are vertically arranged over beats numbered 1–4 within the bar (Adams 2009, Krims 2000.)

2) Typographical charts — created in a word processing program like Microsoft Word, these charts pay special attention to global motions like structure and texture (Miyakawa 2004.)

3) MIDI Rolls — outgrowths from the natural workflows of digital-audio workstations, these vertical representations of a simple piano keyboard can also be used to chart rap’s pitch vertically and its rhythms horizontally.

4) Arabic Maqam notations — maqam theory posits that each note within a scale can be wider than the traditional acoustical definition of a semitone. As such, maqam may be suited to capturing the intonation of rap that falls outside the standard western twelve-tone system.

5) Common western music notation (hereafter CWMN) — perhaps the first and most expected recourse, the limitations of CWMN are probably the best understood, as documented by Adams (2015.)
Because they are used most frequently in the scholarly discussion of rap, flow diagrams will make a good introduction to the aspects of rap performance that are best described with visualizations, and the aspects of rap performance that may be underemphasized.

**The Flow Diagram**

The flow diagram has been used extensively in both academic and popular contexts since 2009. For example, it makes a prominent appearance in Adams (2009,) in Example 1c:

![Figure 1.1](image-url)


This flow diagram represents Kurtis Blow’s lyrics of the 1984 song “Basketball,” from 0:25–0:43. The numbers across the top of the flow diagram mark off the first 2 beats of rap’s normative 4/4 time signature. The letters thereafter—x, y, and z—indicate a four-fold division of each beat, resulting in a horizontal segmentation of an overriding 16th-note grid resembling that

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1 Kyle Adams 2009.
of musical sequencers. This form of notation privileges the documentation of rhythmic aspects of rap performance over others, like pitch.

This flow diagram might be most valuable for its capacity to be reworked and transformed to include, or exclude, other poetic and musical information. Later on in the article, Adams adds in colors and capitalized letters in order to indicate rhyme schemes, rhyme density, and accent. For example, all syllables of the same color rhyme with each other—the blue colors of both “stones” and “blown” indicate that they rhyme with each other. The detailed flow diagram below comes from the third verse of the song “Wu-Gambinos:”

![Flow diagram](image)

Figure 1.2


The flow diagram has now been augmented with new types of information. The red cells are all linked together, as indicating rhymes on the same vowel sound (“shining” with “blinding,” for example, in line 2, from beats 1 to 3.) The capitalized words indicate strong prosodic accent (the accent “dia-” syllable of the word “diamonds” in line 2, beat 4.) One would take for granted such a rhythmic focus in an article entitled “On the metrical techniques of flow in rap music.”
Thus, flow diagrams are expertly deployed here in order to attain the desired care and attention for the strictly rhythmic aspects of rap.

However well suited it was for Adams’ own conclusions, the flow diagram cannot capture every aspect of the musical performance that a scholar of other traditions, like jazz or classical music, has come to expect to have at their disposal. For one thing, any consideration of pitch in the rap performance is completely absent in flow diagrams. Since the emotive interpretation of semantic meaning is greatly influenced by the dual function that relative and absolute pitch serves in both linguistic and musical contexts, this is regrettable. For example, an interrogative sentence can engender a great many different interpretations depending on whether it concludes on a rising pitch or a falling pitch. This ambiguity is undesirable in rap studies, since rapping is a style of vocal performance that almost always imparts a relatively definite semantic meaning to its audience, comedic puns not withstanding. In fact, emotional irony (rather than poetic or cultural) is, to date, remarkably unknown to the genre. This is because emotional irony is akin to, if not lying, misrepresentation, and so would represent an unforgivable trespass of the culture’s virtues of authenticity and realness. All of this places rapping in strong contrast to vocalization styles like the unintelligible melismas of wordless choruses in classical music.

On the other hand, neither do flow diagrams capture the rhythms of a rap performance as accurately as might be wished. As just one example, the styles of different rappers can largely be catalogued by just how far behind the pulse they are when they rap. These measurements can range from the onbeat-emphasis of Black Thought on “Don’t Say Nuthin’”, at the length of almost zero, to the length of about a dotted 64th note, by Jay-Z on “Dirt Off Ya Shoulders.” The linear representation of quantized rhythm in the flow diagrams are not agile enough to capture such minute discrepancies. This is, of course, a perfect encapsulation of Krims’ concerns when
he formulates this problem in a 2015 chapter on the musical analysis of rap like so: is it ever possible for a notational system to avoid overemphasizing rap’s repetition at the expense of its variation, or vice versa?\(^2\) Accordingly, if the musicologist is not discussing expressive microtiming delays, does it matter whether or not such a system of notation can accurately represent them?

Despite their considerable adaptability, it is not clear how flow diagrams can incorporate information detailing the aspects of the musical accompaniment behind it. This relationship is not quite as reducible as the relationship between foreground and background in other musical genres, such as that between melody and accompaniment into a single chordal phenomenon in Common Practice tonality. The heterophonic relationship between the iambic rhythm of the electric guitar in the backing musical arrangement, and its exact imitation by DMX in the foregrounded rap, is a generic outlier. No matter what can or cannot be said about this relationship, it is an odd situation when a musicologist must defend the position that half of the music they’re analyzing can be safely ignored.

In assessing these notational forms, I am trying to avoid qualitative judgments. Instead, my ideal representation is one that is somehow “helpful” to the task at hand. And that form of notation will always depend on the particular context. In any event, it will be helpful to rap musicologists to push each of these notational forms in different directions, as much as possible, to see just what can be coaxed out of them. This activity matters not because it will give the musicologist something to talk about, but because it will impart new knowledge of rap—for example, the capacity of rappers to build phrasal structures throughout a verse by means of a

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\(^2\) Adams 2015, 121.
carefully-arranged sequence of clausal lengths, as on the Kendrick Lamar verse on Dr. Dre’s “Darkside / Gone” (2016.)

Typographical Arrangements

In contrast to the flow diagram’s focus on lyrics, the typographical chart is oriented towards depictions of the song’s overall arrangement. A typical example comes from Miyakawa (2005,) which is found in her analysis of Freestyle Fellowship’s “Innercity Boundaries:”

![Typographical chart from Miyakawa (2005)](#)

Figure 1.3

A typographical arrangement from Miyakawa (2005) that traces the entrance exit of the layered textural musical ideas in Freestyle Fellowship’s song “Innercity Boundaries”

This chart tracks the presence (or absence) of separate sonic layers from the song’s texture at every measure. Measures are counted in tens across the very top horizontal line, while they are enumerated individually beneath that. Separate layers are designated on the far left: “melody,” “percussion,” “expansion of verse,” “verse, and “chorus.” While the typographical chart at the top details the intertwining flow of layers, the notated music on a facing page details the specific content of each of those respective layers.
In contrast to the flow diagram’s more localized concerns, these kinds of typographical arrangements have a more global orientation. This leads to a certain amount of unwieldiness, as the intense level of detail quickly becomes overwhelming and the exact relationship of specific content to overall form is not easily digestible. Additionally, the generation of these kinds of typographical arrangements in traditional word processing programs is awkward and uncertain. Additionally, their usefulness has now been surpassed by the wide availability of illustration software, like Adobe. Perhaps most importantly, these typographical arrangements do not make the music look like music, and as previous legal battles over the right of rap to its artistic aesthetic have proven (De La Soul vs. The Turtles, 2LiveCrew vs. State of Florida, Pharrell vs. The estate of Marvin Gaye), this public representation of rap undeniably matters.³

Furthermore, considerations of the pitch of actual rap melodies is, once again, absent.

The flow diagram and the typographical arrangement mark out two opposite poles of a spectrum for notating rap. The flow diagram, in general, privileges a deeper knowledge of a smaller amount of musical material. At the opposite end is the typographical arrangement and its shallower but wider amount of detail. It is true that these two types of notation are working to capture vastly different aspects of the rap performance—lyrics in the flow diagram, and textural layering in the typographical arrangements. However, it is nevertheless helpful to use this

³ These three court cases, from 1991, 1990, and 2014 respectively, represent the American judicial system’s consistent refusal to legally authorize and recognize the unique methods by which rap music has historically been created. These methods include both recording sampling and expressive gratuity. De La Soul settled out of court by paying The Turtles $1.7 million for their use of a 12-second sample from a 1969 Turtles song, “You Showed Me.” 2 Live Crew’s album was banned from Florida stores for obscenity, a ruling that was eventually overturned. Pharrell Williams (and vocalist Robin Thicke) were similarly ordered to pay $5.3 million (plus 50% of royalties) to the estate of Marvin Gaye, even though their song did not sample Gaye. Instead, the track in question, “Blurred Lines,” had a similar musical arrangement. In such trials, the court calls expert artistic and intellectual property witnesses to testify. Thus, an inability to properly represent sampling in notation can be correlated with staggering financial losses for rap artists themselves.
general spectrum of depth versus breadth, and local versus global, to assess the approaches that each of these systems takes when presenting data.

**MIDI Roll Notation**

The MIDI roll is one of the most infrequent forms of notation for rap. This is because it can only be generated from complex spectral analysis that only expensive software programs like AudioScore or Melodyne can perform. However, this does not mean that the MIDI roll has nothing to reveal about rap.

MIDI roll notation is referenced in Connor 2014, 109:

![Figure 1.4](image)

A transcription of the pitch content of MF DOOM’s rap on his 2004 song “Vomitspit,” as generated by software program AudioScore
The above represents the pitch of MF DOOM’s rap vocals on “Vomitspit.” MIDI roll notation dispenses with the comparatively complex system of key signatures and accidentals that traditional Western music uses to preserve its notation’s utility. Instead, it represents all 88 keys of a piano vertically on the far left of its schema, while continuing to represent rhythm horizontally from the left to right. This is possible because the large amount of memory stored on computers have made considerations of space for copying a thing of the past. Each individual note in MIDI notation is marked with a pitch name, and a designation of its octave, with zero being the lowest. Middle C is thus represented as C4.

While the raw material for such analysis is initially generated by the unknowable (and proprietary) algorithms of the AudioScore program, the subsequent distillation of the loudest partials in the voice is left to a musicologist’s own judgment. Accordingly, the legal protections that such copyrighted algorithms enjoy may make some analysts too uncomfortable to use them. Indeed, finessing the program in order to return usable results can sometimes be more of an art than a science.

While the flow diagram and typographical arrangement dispensed with documentation of pitch, the MIDI roll emphasizes it. This notation upends the old canard that rap has no traditional melody. We see here that MF DOOM’s signature monotone hovers around the F tonic of the backing musical arrangement, and then glides down through the subdominant of Bb at the conclusion of his melodic phrases.

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4 Middle C, in truth, can be named either C3 or C4, depending on whether the conventions of the Roland company or the conventions of the Yamaha company are used. This discrepancy in standards results from the fact that MIDI, as a technology, was the creation of private companies competing for consumers in the marketplace, and not the creation of scholars more interested in mutual intelligibility.
Conversely, MIDI roll notation is noticeably poor at capturing rap’s rhythm. The position of a rhythmic phrase’s first impetus, as well as that phrase’s total duration, is visualized by the beginning and ending of horizontal lines. Additionally, a phrase’s dynamic is represented by that phrase’s respective lightness (or darkness) of color. The longer a single barred line is, the longer its duration. However, this unparsed information is of little use when compared to the indications of larger rhythmic relationships that are often supplied in Western music notation by elements like the connected horizontal beams of a triplet grouping.

This tradeoff in focus is typical of the current ecosystem of rap notational systems. When a notational system is transformed to capture an element of rap performance that a previous system was underestimating, it must then eschew those same aspects that were previously overemphasized. This is why the ultimate answer might be an interpenetrating ecosystem of notational systems. However, musicologists must still come to understand and appreciate what the unintended consequences of using such notations will be.

**Arabic Maqam Theory**

The use of maqam theory to understand Westernized MIDI roll notation might represent the most recent breakthrough in truly coming to grips with rap’s historical origins. While maqam theory is being used to understand rap’s pitch as represented in Western notation, it is not maqam notation per se that is being analyzed.

A maqam understanding of pitch is used in the analysis of Young Thug’s “No Way” by Aditya Nirvaan Ranganathan 2015:
A transcription of the pitch content from Young Thug’s song “No Way” in Ranganathan 2015 that traces the concept of pitch gravity in his work

An appended note from Arabic music scholar Dr. Johnny Farraj explains a C note, or a B note, can actually have many pitches: “The same note is not always played with the same exact pitch. The pitch may vary slightly, depending on the melodic flow and what other notes are played before and after that note.”

Thus, a current musicological gap in the understanding of rap’s intonation might simply be a problem of what gets lost in translation between separate musical cultures. A musicologist raised in a culture of Western listening modes might listen to a rapper and hear pitches that cannot fit into any kind of notatable chromatic scale. Conversely, a musicologist familiar with the listening modes of Arabic cultures might hear the same performance and interpret it as a deft application of the laws of maqam pitch attraction or gravity.

Ranganathan applies these concepts of Arabic music to four separate Young Thug lines:

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“[For the line ‘Baby, water like a fountain:]’

During the word 'fountain', Thug moves from D-B-A. The destination note is A, and to "round sharp corners", Young Thug lowers the B to something between B and A#...

“[For the line ‘my money coloured, like a clown:]’ Same idea as the previous line, I apologize for the 'broken note', which is a flattened B between D and A, on the phrase 'a clown'."

“[For the line ‘Show me them places like a noun:]’

Similarly, on the phrase 'a noun', Thug moves from D-C-A. Again, the destination note is A, and lowers the C slightly to match the contour of the line.”

“[For the line ‘She can’t, can’t ride this dick without a sound, ah:]’

Here, Thug adds a Neighbor note, E from D, on the words "can't" (2nd time) and "dick". These notes are pulled closer to the main note, D.”

The solutions that maqam theory proposes to the problem of notating rap’s pitch are not only illuminating, but elegant. They do not solve the problem of rap notation so much as reformulate them in such a manner that they no longer seem to be problems at all.

**Western music notation—Traditional & Spatial**

The second most frequently used form of notation for the rap performance is CWMN. However, the adaptation of the standard conventions of CWMN is frequently ad hoc, and depends on the scholar. Adams, for example, dispenses with considerations of both relative and absolute pitch,
but does not do away with the traditional staff lines altogether. This is demonstrated in his Example 6 figure.⁶

![Example 1.1](image)

Example 1.1

The adaptation of CWMN for capturing the rapper’s rhythms on Madvillain’s “All Caps” (2004,) from Adams (2009)

As seen in the above, Adams uses Western music notation to represent musical ideas in the arrangement, but does not apply it to the rappers’ rhythms themselves.

Connor 2014 dispenses with both pitch and the staff lines, thereby channeling the notation of a percussive instrument.⁷ Below is the notation for the opening vocals of Busta Rhymes on his 2004 song in “Holla.” While every bar is notated in 4/4, that 4/4 bar is always divided into two groupings of noctuplets. This is done in the interest of flexibility, if not accessibility. For the treatment of the space as a room-like entity into which notes can be placed at almost any position, this notation is referred to “spatial.” Furthermore, letters are also used to indicate rhymes on the same vowel sound:

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⁶ Adams 2009.
⁷ Martin Connor 2014, 94.
Example 1.2

The adaptation of CWMN for capturing Busta Rhymes’ rhythms on his 2004 song “Holla”, from Connor 2014

Ohriner (2016) uses CWMN as a kind of introductory *lingua franca*, before moving on to statistical charts and data visualizations that quantify the rhythmic metrics that Western notation only indirectly hints at. Below is his, adaptation of CWMN to the rapped chorus from the 1996 OutKast song “Mainstream” (figure 3, section I:)

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Example 1.3

The adaptation of CWMN to the rapped chorus from the OutKast song “Mainstream”

Even within this brief survey of the scholarly literature on rap that includes representations in CWMN, there are many differences between the ways in which it is used. One of the biggest debates is on where to notate the rhythmic impetus of an individual syllable. Is it from the syllable onset? Or from the loudest part of the syllable? Is un-quantized rhythm even theoretically possible to capture perfectly, and, if so, does that mean that it’s necessarily desirable to do this? Nevertheless, there is much room for adaptability and flexibility within the system of CWMN.

Similar to the other notational systems presented here, the representation of rap in CWMN has suffered from its own musical blind spots. Just like most of the other systems in question here (excluding MIDI roll notation, and possibly maqam theory,) CWMN struggles to capture rap’s pitch. Additionally, its quasi-ubiquity—stemming from its role as a de facto musical lingua franca in many institutional and academic contexts—might be akin to the killing of an ant with a nuclear bomb. This could be so because the quantized rhythms of flow diagrams seems to do a good enough job of capturing a majority of the important aspects of a rap’s rhythmic performance. Accordingly, the position of CWMN within the analysis of rap might be
like that of democracy and other forms of government in the eyes of Winston Churchill in 1947: “Democracy is the worst form of government…except for all the others.” However, as I will argue below, the gap between Western notation and an all-encompassing documentation of a rap performance—if possible at all—is mainly a question of logistics, and, perhaps, philosophy. In the case of the flow diagram, typographical arrangements, maqam theory, and MIDI rolls, in addition to problems of comprehensiveness, there are also problems of with respect to the representations of CWMN.

**Comparative Assessment**

The comparison of these notational systems can be conducted by judging each system in these separate categories:

1) **Accuracy:** Does this system capture the rap performance exactly as it happened, or does it cut some corners, as in quantization?

2) **Transmittability:** is this system of notation easy to generate and share, or does it take so much effort to manufacture and transfer somewhere else as to make the project not worthwhile?

3) **Intelligibility:** is the notation easily understood, or is it an unwieldy overload of information?

4) **Flexibility:** can it capture most types of rap, or does it do well with only one type of subgenre, or chronological period?

5) **Accessibility:** can this system be reproduced with ease elsewhere by other scholars, or is it prohibitively difficult to reproduce?

6) **Comprehensiveness:** does the notation represent every aspect of rap performance that one might happen to desire to study, or does it elevate some aspects of the rap over other ones?
7) Faithfulness: is looking at the notation what it’s like to listen to the song? Isn’t this the same as no.1?

I will not be grading each of these notations on every metric listed along a scale from 1–10, or anything like that. I refrain from that exercise in order to prevent the cloaking of this discussion in a veneer of objectivity, under which would be no more than opinionated (if defensible) subjectivity. Instead, I would like to introduce this rubric as a very general means for reaching a firm, if rather broad, consensus on the merits or shortcomings of each system.

Of course, no objective answer will be arrived at once these different questions have been answered. Instead, I hope to achieve more clarity about which notation system works in which situations and why. Additionally, I hope to investigate whether these notations’ privileging of some aspects over others (such as rhythm over pitch) introduces some (musicological) bias through a focus on some elements of the rap performance at the expense of others, as detailed in this chapter’s conclusion.

The aspects of a typical rap performance that can (or cannot) be captured by these five different systems are summarized in the table below.

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Table 1.1
A comparison of the different musical parameters that the surveyed forms of notating rap can capture

In the interest of absolute clarity, I will now define each of the 6 aspects of a rap performance that are listed across the top. “Backing music” is defined as any part of a song that is not a distinct part of the main rapper’s performance. The main rapper can be defined as the rapper who occupies the loudest dynamic in the exact center of the horizontal panning space for the most time during a song. Typically, the backing music of a rap song may be comprised of a snare drum, a bass kick, a hi-hat, a cymbal, a ride, a chordal accompaniment, a melodic accompaniment, a pedal, sonic samples, singing voices, and/or backing voices.

“Quantized rhythm” is a form of rhythmic notation where tiny, natural, purposeful or accidental rhythmic variances in a rap performance are standardized and simplified in order to fit such rhythms onto a firm, underlying binary (or ternary) grid. For example, Mos Def’s pronunciation of the word “synonym”, at 2:02 on “RE: DEFinition,” would be represented in a flow diagram as falling directly on the third beat of its measure. However, in reality, Mos Def has noticeably delayed it by several milliseconds. But he has still pronounced it with a strong prosodic accent, which means that it still feels as if it actually is landing directly on the beat. A similar phenomenon can be observed at 2:02 of Talib Kweli’s 2002 song “Get By,” on the word “meal.” Systems with quantized rhythm capabilities would treat this distinction between the perceived feel of an accent, and the musical feel of an accent, in the same way; systems with un-quantized rhythmic capabilities can distinguish between the two.

Accordingly, “un-quantized rhythm” expresses the capacity for a system of notation to capture all such incremental variances, as in the septuplets of MF DOOM on “Vomitspit.”
“Pitch,” here, means that this system of notation has some ingrained capacity for representing any kind of pitch at all. It could be relative pitch, as represented by general melodic contour, or it could be absolute pitch. This is a measure of just how much room remains to be made up by musicologists in understanding rap’s intonation.

“Song Form” means that the system of notation has the ability to represent, at a glance, this song’s entire global structure, including verses, choruses, hooks, bridges, intros, outros, and interludes. Because such representations of musical form are mostly built on linear foundations, not cyclical foundations, the representation of the form of rap songs can quickly come to overemphasize rap’s variegated nature, at the expense of its mostly repetitive nature.

“Lyrics,” here, refers to the ability of a system of notation to quickly and easily reproduce a song’s text. Although this may be taken as a given for a genre that currently constitutes the single largest wealth of digitized utterances from any one community, the previous examples should have made it clear that this is not always the case. For instance, the ambiguity of rhythmic onset in MIDI roll notation similarly undermines the connection between lyrics and rhythmic position.

Of course, this chart is reductive in some respects. For example, I have somewhat arbitrarily judged a system as being able to capture “Song Form” if, and only if, it can capture every iteration of a song’s successive chorus sections, or verse sections. However, in some analytical situations, it might suffice to capture only one iteration of a song’s typical chorus section or verse section. Such a splitting of hairs will become important when these systems are next compared to each other with a universal rubric that contains a metric of “Transmittability.” An easily transmittable system of notation would not take up a lot of time and space with either redundant or inaccurate representations of song form. Accordingly, the above chart is not meant
to end a discussion of the relative merits of each notational system, but only to provide a departure point for further discussion.

This chart succinctly summarizes a few major themes in this argument here. First, most systems for notating rap focus on rap’s rhythmic aspects. Four of the five systems of notation contain means for doing so. Second, most systems for notating rap do not currently possess any capabilities for capturing pitch. In fact, only MIDI roll notation currently contains a capacity to do so. Western music notation may have the ability to capture discrete steps in pitch, such as those found in a traditional major or minor scale. But it nevertheless lacks the ability to represent indiscrete steps in voice, such as those found in a talking (or rapping) voice.

Third, these systems for notating rap can alternately be very effective, or completely inadequate, depending on the analytical context. For example, consider the qualitatively different results one could end up with depending on whether the very same song was notated in a MIDI roll notation, or in a flow diagram. While the MIDI roll notation would excellently represent pitch, it would do a poor job of documenting specific rhythmic subdivisions. Additionally, the representation of a short 3-minute song in MIDI roll notation would involve a length of several pages, since the vertical 88-key layout is so physically large. While a documentation of form and rhythm would be comparatively simple for a flow diagram, flow diagrams would conversely struggle to represent the reach the same level of pitch specificity that MIDI rolls does with ease.

Finally, in the case of both flow diagrams and MIDI roll notations, there are currently no cross-platform software programs publicly available for notating in these systems (Meanwhile, CWMN can boast of Finale, Sibelius, NoteFlight, and many other platforms as its unconscious

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8 In assessing each system’s capacity to document one of these six aspects of rap performance, I have only considered whether they have historically been put to such uses, and not whether they might be able to do so hypothetically.
boosters.) As a result, a musicologist’s argument can quickly become prone to holes and blind spots if they are not adequately aware of the strengths and weaknesses of each of these notational systems.

**Conclusion**

The final conclusion I would like to draw from this table is that CWMN seems to display the best prima facie capacity to simultaneously represent all six aspects of rap performance hypothetically. Of course, the resultant gains may involve a concomitant trade-off in convenience. This is only to be expected when, over 44 years into a genre’s history, there is still no scholarly standard for notating rap. This is why I will next seek to reformulate Western music notation so that it can capture the most difficult aspect here (microtimed rhythms), which result from rap’s oral method of transmission.
In order to demonstrate the translational loss and gain inherent in notating rap music, I will now perform a close reading of the song “Some L.A. Niggaz.” It comes from Dr. Dre’s 1999 album, 2001, which is sometimes colloquially known as Chronic: 2001. I have chosen this song because it comes from a very important album in rap’s history, as 2001 was ranked by Billboard as the bestselling project of its own decade. Additionally, the rhythms of the five rappers on this song chart a definitive spectrum of increasing variety and complexity. The five featured rappers are Time Bomb, King Tee, Hittman, Defari, and Xzibit. Time Bomb’s rhythms have little microtiming, and are mostly 8th notes and 16th notes. Hittman’s rhythms have comparatively large microtiming delays, are grouped in complex subdivisions, and change constantly. King Tee’s rhythms are important because they fall somewhere in between those two poles.¹ In this way, these first three rappers map out an increasing amount of complexity (in terms of their microtiming and complex subdivisions) that Western notation struggles to capture. Because Time Bomb, King Tee, and Hittman are the three rappers who are most integral to the arc of this motivic development, they will be discussed the most. Their motivic development consists of their exploration of the accompaniment’s original missing third beat through a displacement of it to other places in the bar; through a rhythmic diminution and augmentation of the length of the rest that surrounds that third beat; and through a careful control

¹ Because their rhythms end the song after the song’s motivic development has reached its climax, a study of the rhythms of Defari and Xzibit would largely be redundant, and are not considered here.
of the rate at which this motive occurs in their verses.

The Generically Unique Backbeat of “Some L.A. Niggaz”

In every bar on the song “Some L.A. Niggaz,” the rapper rhythmically responds to the accompaniment’s generically significant missing third beat. By “generically significant,” I hope to indicate that this song’s backbeat is notable for the fact that no essential element of the backbeat—i.e., no snare or bass kick—is heard after the impetus of beat 2, or before the impetus of beat 4. This can be seen in the notation below. By the term “backbeat,” I refer to a cumulative percussive effect, which can be either “heavy” or “light.” This effect is produced by the combination of the timbral elements of the drum set in the backing ensemble behind a rapper. (This definition takes for granted the typical rap song texture, wherein heavy and light effects are alternatingly produced on every quarter note of the genre’s conventional 4/4 meter.) By considering not just the second and fourth beats, and by considering not just the drum set’s bass kicks and snare but also its hi-hat, tom drums, bass guitar, and even (sometimes) its chordal instruments like the piano, this definition is a slight expansion of how this term has been used in the literature until now.9

9 Baur 2013.
However, rap producers’ coordination of such historically disparate elements is so frequent that this expansion is fully warranted. The uniqueness of Dr. Dre’s beat within his genre, as well as the coordination between percussive and melodic elements in “Some L.A. Niggaz,” will demonstrate this. Below is the notation for the backbeat of “Some L.A. Niggaz:”

Example 2.1

The backbeat rhythms of Dr. Dre’s song “Some L.A. Niggaz”

This idiosyncratic rest on the third beat in a 4/4 bar is unique in a rap backbeat, if not completely *sui generis*. The historiography of this backbeat’s uniqueness will be established with a quick survey of relevant beats from the same genre. By the term “genre,” I mean to refer to a common musical tradition that is adhered to by a widespread community in dialogue with each other—in this case, rappers and beat producers. It is in this sense that I can refer to the jazz genre, the classical genre, and the rapping genre. Such background information is vital for identifying the unique element within the backbeat from “Some L.A. Niggaz” that the five rappers motivically develop here; how they develop it; and why they may have chosen to do so.

The first example that will establish generic norms is shown below. Example 2.2 is The Fugees’ 1996 backbeat on their song “Zealots.” It has a bass kick on beats 1 and 3, and a snare on beats 2 and 4:
The backbeat rhythms of the 1996 song “Zealots,” by The Fugees

This basic structure is also found in E-40’s 1999 song, “Ballaholic.” Once again, the driving rhythmic identity of each quarter note in rap’s normative 4/4 meter is strongly established:

Of course, not every rap song backbeat has a bass kick or snare on its first, second, third, or fourth beats. An example of a backbeat that omits an impetus on the third beat is the D.O.C.’s 1989 song “The D.O.C. And The Doctor:”
Example 2.4

The backbeat rhythms of the 1989 song “The D.O.C. And The Doctor,” by The D.O.C

The song’s producer, Dr. Dre again, has not placed a bass kick on the 3rd beat of the measure in the above. Instead, he has placed bass kicks in syncopated positions around that bass kick. In this way, he uses syncopation to establish the third beat’s importance to the rap’s musical texture. While The Fugees and Rick Rubin (the producer of “Ballaholic”) used a downbeat impetus to create a backbeat in this metrical position, Dr. Dre has intuited that this is not a necessity.

A final example will serve to establish rap’s generically standard backbeat for our purposes. Game’s 2011 song “Hello” was produced by 1500 or Nothin’:

Example 2.5

The backbeat rhythms of the 2011 song “Hello,” by Game (formerly The Game)

Once again, we see that every 4/4 bar’s rhythmic identity is strongly established in the form of 2 strong beats (bass kicks) that are interlaced with 2 weak beats (the snare drums).

We can now understand what makes Dr. Dre’s backbeat on “Some L.A. Niggaz” stand out. The notation of this song’s accompaniment is reproduced below:
Example 2.6

The backbeat rhythms of Dr. Dre’s song “Some L.A. Niggaz”

Now we see how this missing third beat changes the underlying metrical feel of the song. Specifically, it forces a re-interpretation and re-division of the 4/4 bar from a simple binary doubling of two 2/2 bars, to an off-kilter, 3+1 feel. This omission is preserved over the course of the entire song. This half-note rhythmic gap in the backbeat is clearly reflected in the secondary elements of this song’s percussive backbeat as well. The bass guitar likewise declines to add any specifying information to the third beat, further emphasizing the importance of non-drum elements to the modern rap backbeat:

Example 2.7

The rhythms of the bass guitar part on “Some L.A. Niggaz”

This accompanimental oddity is important for our purposes because it constitutes the foundation for the rhythms of the rap performers to come. Constituting such a generic departure, it may be obvious why all five of the rappers on this song were drawn to it. More specifically,
the rappers on this song—Time Bomb, Hittman, Xzibit, King T, and Defari—shape their rhythms largely by means of reference to this accompanimental gap. These rappers’ rhythms are largely structured by the rhythmic augmentations, diminutions, imitations, and displacements that they apply to this recurring half-note lacuna.

A perusal of three of these rappers will suffice to establish their melodies’ motivic arc. The three selected rappers are the first three rappers to perform on the song: Time Bomb, King Tee, and Hittman, respectively. Each of them performs a separate but essential function in the development of this song’s motivic third beat gap. Time Bomb transfers that omission of the bar’s third beat from this song’s background accompaniment to this song’s foreground melody. King Tee introduces the first methods of true developmental change, such as transference from the third beat to other metrical positions. Hittman’s own verse represents the heights of this motivic development, as he presents the gap the most frequently, and in a manner that exhibits the most tangential degree of rhythmic similarity.

The Motivic Development of The Missing Third Beat On “Some L.A. Niggaz”

The overall arc of this missing third beat’s development is mapped out in the chart that follows below. The “bar” column on the far left indicates which bar in the overall song is being catalogued. The “beat” column describes which beat—1, 2, 3, or 4—is being “skipped” by the rapper in his lyrics, thereby directly or indirectly referring to omnipresent third beat gap in the backbeat. The “length” column denotes a general length of how long this gap in the rapper’s lyrics lasts for. The “motivic operation” column puts a name to the manner in which the rapper is manipulating the missing beat motive with his rhythms:
<table>
<thead>
<tr>
<th>Bar</th>
<th>Rapper</th>
<th>Beat</th>
<th>Length (Quarter Note = 1, 8th note = .5, etc.)</th>
<th>Motivic Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Time Bomb</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
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<td>Time Bomb</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Time Bomb</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Time Bomb</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Time Bomb</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Time Bomb</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Time Bomb</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>20</td>
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<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>King Tee</td>
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<td>Imitation</td>
<td></td>
</tr>
<tr>
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<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>King Tee</td>
<td>3 .25</td>
<td>Diminution</td>
<td></td>
</tr>
<tr>
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<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
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<td>King Tee</td>
<td>4 1</td>
<td>Displacement</td>
<td></td>
</tr>
<tr>
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<td>King Tee</td>
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<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>King Tee</td>
<td>1 1</td>
<td>Displacement</td>
<td></td>
</tr>
<tr>
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<td>King Tee</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Hittman</td>
<td>3 1.5</td>
<td>Augmentation</td>
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</tr>
<tr>
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<td>Hittman</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>46</td>
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<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
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<td>Hittman</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
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<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Hittman</td>
<td>3 1.5</td>
<td>Augmentation</td>
<td></td>
</tr>
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<td>2 1</td>
<td>Displacement</td>
<td></td>
</tr>
<tr>
<td>51</td>
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<td>2 .5</td>
<td>Diminution &amp; Displacement</td>
<td></td>
</tr>
<tr>
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<td>Hittman</td>
<td>1 1</td>
<td>Displacement</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Hittman</td>
<td>4 .25</td>
<td>Diminution &amp; Displacement</td>
<td></td>
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<tr>
<td>54</td>
<td>Hittman</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>Hittman</td>
<td>3 .25</td>
<td>Diminution</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Hittman</td>
<td>3 1</td>
<td>Imitation</td>
<td></td>
</tr>
</tbody>
</table>

Table 2.1

The motivic development of Hittman’s missing third beat on “Some L.A. Niggaz”

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10 MC Ren’s a cappella intro from 0:00-0:04—although unaccompanied—does last for roughly two 4/4 bars at the song’s BPM = 88.9 tempo, and so are considered bars 1 and 2.
A definite motivic arc of increasing and diminishing complexity can be traced over the course of the song. In bars 13-20, Time Bomb initiates the transfer of the missing third beat idea from the background accompaniment to the foregrounded rap. While he initiates this transfer, he does not specifically develop it at all, such as by making it a longer rest or a shorter rest. For this reason, I call this straightforward reflection of the missing third beat in the accompaniment on his own third beat “imitation.” Conversely, in bars 23-33, King Tee himself does begin to explore the idea’s capacity to be transformed and mutated. These explorations consist of what I call displacement—moving a silence on beat 3 to beats 1, 2, or 4—as well as diminution—making the length last for an amount of time that is shorter than its length in the accompaniment (i.e., shorter than a quarter note.)

Hittman represents the most highly developed approach to the missing beat motive. His motivic operations consist of displacement and diminution, as well as others, like augmentation—making the beat last longer than the accompaniment’s one quarter-note rest. And while they will not be considered in-depth here, the verses of Defari and Hittman both also play an integral part in this motivic arc as well.¹¹

As we will see, this chart ends up being incomplete, and it is incomplete because of CWMN’s inherent inability to document the complicated rhythms of rap that define its typical

¹¹ This is because Defari and Xzibit both also preserve the accompanimental rhythmic gap on the third beat that lasts a quarter note in their own lyrics. This happens at 2:43, 2:46, and 2:53 in Xzibit’s verse, and at 3:21 in Defari’s verse. Since Hittman clearly represents this motive’s most complex and extended development, the structural function of these final two verses is mainly to bring the song to a relatively relaxed conclusion. This is demonstrated by the fact that both of these final two rappers sharply curtail the frequency of their use of this motive. Time Bomb performs this motive a total of 8 times; King Tee, 8 times; and Hittman, 13 times. In contrast, the penultimate rapper, Xzibit performs the motive only 3 times, while the final rapper, Defari, performs it only once. Perhaps this demonstrates an acknowledgment on their part that Hittman’s own linchpin developmental section constitutes a kind of unsurpassable zenith of complexity and involvement.
oral performance. This inability is the result of an underlying compositional assumption that rhythmic subdivisions are almost always ternary or binary in nature.\footnote{By “binary” rhythms, I mean the preponderant use of 16\textsuperscript{th} notes, 8\textsuperscript{th} notes, quarter notes, half notes, whole notes, and the dotted derivations thereof within a 4/4 time signature, as well as occasional triplets. I do not mean complicated subdivisions like the quintuplet or septuplet, or accented notes that are delayed far behind the beat.} This historical vestige of CWMN, when combined with the oral nature of performance transmission in rap, has led modern rap musicologists to subconsciously assume, or even privilege and over-emphasize, such heuristics when they try to classify rap rhythms. For example, in Adams (2009,) a reader might be led into believing that CWMN can cope well with the issues of transcribing rap when they see how fruitful it is in parsing that scholar’s own sample group. In fact, the issue arrives in the selection of such a constrained sample group in the first place. All 9 examples from Adams (2009) come from time periods, subgenres, and artists whose rapping performances are largely defined by their ubiquitous use of binary (or ternary) rhythms. Those examples come mainly from rap in the 1980s and 1990s; popular (i.e., non-specialized) subgenres like gangsta rap and disco rap; and non-underground rap artists like N.W.A, Wu-Tang Clan, and Kurtis Blow. Even when more expressive rappers like M.F. DOOM are considered, the examples are pared down to the most straightforward parts of their rhythms. The issue is not so much with any scholarly methodology or conclusions, as it is with a certain kind of group confirmation bias. The process works like so: CWMN cannot capture microtimed rhythms; non-binary rap rhythms are thus not investigated; scholars thus continuously analyze non-binary rap rhythms; these binary rap rhythms are thus somehow held up as universal, conventional, standardized, essentialized, or even overwhelmingly common within the genre, when they are not.

CWMN’s transcriptional shortcomings per rhythm are thus a mistake that is a simultaneous result of this bias in favor of binary rap rhythms, and a further propagation of it. To
be clear, these raps that have complex subdivisions or strongly microtimed delays accelerandos are in no way anomalous outliers, as they include examples from time periods, places, and artists as diverse as M.F. DOOM on “Vomitspit,” Talib Kweli on “RE: DEFinition,” AZ on “Firm Fiasco,” J. Ivy on “Never Let Me Down,” André 3000 on “Return of the ‘G,’” Pharoahe Monch on “Intro,” etc.

In contrast, such complicated rhythms can, indeed, be captured by reformulations of that notation. I will demonstrate the ways in which prevailing methods of notating rap can sometimes warp musicological conclusions by obfuscating important discoveries, while simultaneously inflating the importance of others. More specifically, the problem with existing systems for notating rap is that, per Kyle Adams, they either over-emphasize its repetitive nature or under-emphasize its varied nature.

CWMN manages to make both mistakes: first, by over-emphasizing the repetitive nature of rappers’ local bar-to-bar rhythms, and then by under-emphasizing the parallel similarities of its larger song structures. Multiple-page scores of 100+ bars for the typical 3-minute rap song at a tempo of 94 can obscure the fact that every 8-bar chorus is largely a repetition of the other two choruses typically present. However, it may be the case not that CWMN is the best notation for rap, but that it simply demonstrates the least amount of shortcomings among the available options. A transcription of Dr. Dre’s song “Some L.A. Niggaz” (1999) will bear these assertions out, especially when it is then subsequently compared to a transcription of this same song in a new, thoroughly reformulated form of CWMN.

**A Motivic Analysis Of “Some L.A. Niggaz” In CWMN**

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13 Adams 2015.
A close examination of the measures where the most important steps on the path of this motivic development are taken will demonstrate these claims. These are bars 13-19 for Time Bomb; bars 23, 26, and 28, for King Tee; and bars 44, 49, and 53, for Hittman.

Time Bomb’s main function in the missing beat’s developmental arc is to establish the missing third beat as a noticeable element of not just the background accompaniment, but the foreground melody as well. His first 2 bars have a stream of syllables that fill in the third beat, but immediately after, Time Bomb begins to imitate the accompaniment by similarly omitting any impetuses on or around the third beat in bars 13 and 14. The drums are included below the notation for easy reference. Capitalized words indicate rhymes, and slurs indicate grammatical clauses:

Example 2.8

The rap of Time Bomb in bars 13 and 14 of “Some L.A. Niggaz”
Time Bomb passes over the third beat between the words “up” and “blued” in the first measure above, and between “up” and “loc-in’” in the second measure. By continuing to imitate this third beat gap in the accompaniment with his own lyrics, Time Bomb firmly establishes this motive as an idea of foundational importance to the structure of the entire song. It is left to the next rapper, King Tee, to transform the foundations of this motive’s identity, in terms of both its length and metrical position.

King Tee’s rap slightly overlaps with Time Bomb’s own, and begins with a series of pickup notes in bar 22, at 0:57. He immediately picks up where Time Bomb left off by beginning his own verse with two consecutive imitations of the accompaniment’s missing third beat:
Example 2.9

Here, King Tee begins his verse by skipping the third beat, just as Time Bomb did. These skips occur between the words “cannon” and “smoke” in the second measure above, and between “banner” and “watch” in the third measure. While the function of Time Bomb’s verse was to initiate the transfer of this idea from the accompaniment to the rap verse, King Tee does much more than transfer it. He begins to perform the first truly developmental operations on this motive, and to also use it more extensively.

Like Time Bomb, King Tee’s rhythms include this motive a full 8 times. However, King Tee’s use of this motive goes beyond Time Bomb’s own straightforward imitation of the background accompaniment. In contrast, King Tee begins to develop both the length of this motive (which he shortens) and the position of this motive (which he variously changes to either beat 1 or beat 4.)

While the motivic development table from above lists King Tee as having 5 “imitations” of this motive, it also lists a diminution of this idea at bar 26. This moment is transcribed in the notation below:
Example 2.10

The rap of King Tee in bar 26 of “Some L.A. Niggaz”

Here, the previous length of the missing third beat has been compressed from its former quarter note duration to a smaller 16th note duration. By taking this step, King Tee has initiated the process of motivic development on this song.

King Tee goes on change not this motive’s length, but its position. This happens at both bar 28 and bar 31. In bar 28, the missing beat in the rap has now been transferred to skip over the fourth beat of a bar:

Example 2.11

The rap of King Tee in bar 28 of “Some L.A. Niggaz”
King Tee is now taking a quarter-note length pause not during the third beat’s onset, but during the fourth beat’s onset.

In bar 31, the missing beat in the lyrics is happens on the first beat of a bar, between the words “on” (from the preceding bar 30) and “I:”

Example 2.12

The rap of King Tee in bars 30–31 of “Some L.A. Niggaz”

Although the rest still lasts for a quarter note, it is now happening during the first beat, and not the third beat.

However, it is Hittman who will bring the development of this third-beat, quarter-note, musical rest to its highest point of development and complexity. He will do this by making use of
this motive five more times than anyone else on this song (his rhythms display it a full 13 times). Additionally, he will apply the operation of durational augmentation to this motive.

The process begins in Hittman’s second true bar, which is bar 44. By remaining silent from the “and” of beat 2 until the onset of beat 4, he lengthens this motive’s previous duration by about an eighth note here:

![Example 2.13](image)

The rap of Hittman in bar 44 of “Some L.A. Niggaz”

Immediately after this, Hittman imitates the original form of this accompaniment once per bar from bars 45–48. In bar 49, he once again augments the length of this motive to last for about a dotted quarter note:
Example 2.14
The rap of Hittman in bar 49 of “Some L.A. Niggaz”

In bar 50, he displaces this motive to beat 2, between the words “chain” and “C.:”

Example 2.15
The rap of Hittman in bar 50 of “Some L.A. Niggaz”
Hittman even tends to combine these operations at times, such as when he diminishes the length and places this new shorter duration over beat 2 (as an 8th note in bar 51) or beat 4 (as a 16th note in bar 53.) Bar 53 is below:

![Example 2.16](image)

Example 2.16

The rap of Hittman in bar 53 of “Some L.A. Niggaz”

In the span of just 16 full bars, Hittman performs this motive 13 times, wherein he performs 3 instances of diminution, 2 of augmentation, 4 of displacement, and 3 instances of some combination of these operations. Hittman’s rhythms can thus be described as a stylized nestling structure that is built out of a highly developed accompanimental motive.

This is the question now: what role did notation play in the generation of this analysis?

First of all, it was the method by which the existence of extended motivic development in rap was first uncovered. This is spoken to by confirmational findings presented in Connor 2018, in analyses of DMX’s “Who We Be” (2001), Game’s “How We Do” (2005), and B-Lo’s “U Know” (2006). In this way, one large advantage to notation is the fact that, historically, it has allowed for the discovery of genuinely new knowledge within the rap genre, all debates over cultural values aside for the moment.
It enabled this discovery because, like notation always does, it allows for the instantaneous comparison of complex information with a single glance. While there are musicians who may be able to notate and index songs mentally, for the rest of us, notation is a blessing. One need only vertically align the quarter note rest in the drum set notation with the quarter note rest in the rap notation above to digest the basic argument here, for example.

Notation also allowed for a clearer focus because it allowed for the removal of informational noise that had no bearing on what was at study (the rhythms of these rapper’s words.) In this way, by eschewing unnecessary focuses on asides like harmonic key, and by subsuming the importance of semantic meaning to rhythmic performance, the notation crystallized and distilled the topic of study. But by the same token, in reducing and simplifying the subject matter, CWMN notation also overlooks many intricate aspects of rap rhythms.

These lost and overlooked aspects will be the focus of this chapter’s next section.

A Motivic Analysis Of “Some L.A. Niggaz” (1999) In CWMN

In order to investigate the losses in translating raps into notation, I will present a few measures from “Some L.A. Niggaz” in both a binary 4/4 notation and in my own special noctuplet notation (described in Chapter 1.) I refer to the latter as a type of “spatial” notation for its treatment of a notated measure as being like a bucket into which notes can be poured, at whatever position, in a quasi-additive—and not divisive—manner. I will pick an order of measures that slowly increases the complexity of their relationship to the underlying 4/4 meter in terms of their subdivisions and amount of microtimed delay. This will demonstrate the evolving amount of loss and inaccuracy that creeps into traditional capturings of rap.
CWMN is able to capture the rhythms of the first rapper, Time Bomb, fairly accurately. This is because his own rhythms are not strongly delayed in their microtiming behind the beat, and they are mostly binary 8\textsuperscript{th} notes and 16\textsuperscript{th} notes. Specifically, there are no examples of uncommon subdivisional groupings. However, some rhythmically essential elements are still lost when CWMN tries to document this performance. One such example comes in his very first bar. This is how it was notated in simplified notation. The important rhythms are on “sport a rag.”

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{example2.17.png}
\caption{Example 2.17}
\end{figure}

The rap of Time Bomb in bar 11 of “Some L.A. Niggaz”

Simplified notation asserts that these 3 notes are simple 16\textsuperscript{th} notes. In reality, they are a heavily swung grouping of 3 quasi-16\textsuperscript{th} notes, on which Time Bomb greatly drags in order to draw them out more slowly and make them last longer. Sometimes, the widespread use of binary notation in rap musicology can remove these swung, subdivisional accelerations and decelerations (Adams 2009.) If this process continues, then it might become easy to agree with
the genre’s professional critics who assert that “Hip Hop is not only a misnomer but also often an insult to the art of music-making.”

The reality is that these micro-swings are an essential, generically defining feature of this musical culture, and any notational project that does not at least attempt to capture them—or recognize their existence—is likely to be inaccurate.

In noctuplet notation, this micro-swing could be captured more accurately, like so:

Example 2.18

The rap of Time Bomb in bar 11 of “Some L.A. Niggaz,” now in noctuplet notation instead of CWMN

Here, the two decelerated syllables—“a” and “rag”—have been lengthened and drawn out to reflect this micro-swing.

Of course, this song’s analytical findings do not rely on any conclusions about swung, binary 8th notes and 16th notes, so perhaps this oversight could be overlooked. This might especially be true given the fact that notating in noctuplet notation is not currently standard

\[14 \text{ Kelley 2011.}
\]

\[15 \text{ The methodology for the generation of these notations is as follows. These noctuplet notations were first hypothesized through a rough trial-and-error period in the Sibelius notation software program, in conjunction with the use of Logic Pro X. Afterwards, the notations were imported into that DAW program and compared with the original recording. Subsequently, any necessary corrections to the notation were made.}\]
practice. At this point, we find that two metrics of our previous notational rubric may come into conflict: faithfulness and accuracy. Is it better to not capture something at all, or is it better to capture something partially accurately and partially inaccurately? In a genre like rap, what with its tortured historical reception in the mainstream, such questions are especially sensitive, and perhaps can only best be answered by each musicologist individually.

Meanwhile, these findings raise questions about the effect that our use of simplified notation had on our previous analytical findings about the motivic development of “Some L.A. Niggaz.” We need more information to see if those findings will be affected at all. We actually do find such evidence in bar 30, in the middle of King Tee’s verse:

Example 2.19

The rap of King Tee in bar 30 of “Some L.A. Niggaz,” now in noctuplet notation instead of CWMN

Here, the issue is not of swung, binary, 8\textsuperscript{th} or 16\textsuperscript{th} note durations, but of microtimed delays during the onset of such rhythms. Simplified notation represents these rhythms on the onomatopoeic word “tick” to be landing squarely on the beat. In reality, these rhythms are happening about a 32\textsuperscript{nd} note after that:
Example 2.20

The rap of King Tee in bar 30 of “Some L.A. Niggaz,” now in noctuplet notation instead of CWMN.

Again, we see an increasing amount of slippage in translation between the rap recording and the rap notation. The question is this: at what point does notation-as-representation, and not notation-as-archive, become unsustainable due to its increasing inaccuracy?

In the work of a rapper like Hittman, we cross over that threshold of notational representation and pass definitively into the realm of notational failure. Any attempt by simplified notation to capture Hittman’s complex subdivisions and extensively microtimed delays will not only be incomplete if insightful (as in the case of Time Bomb and King Tee) but, in reality, inarguably inaccurate.

There are multiple instances of this, as in bars 37 (“C.K., B.K.,”) and bars 38 (“I rang with a gang, I helped…”), but a particularly flagrant example comes in bars 44–45. This
is how simplified notation would represent it:

Example 2.21

The rap of Hittman in bars 44–45 of “Some L.A. Niggaz,” now in noctuplet notation instead of CWMN

According to this notation, the gaps between “sun” and “shine,” and “one” and “times,” are just particularly syncopated rhythms that dance around the onsets of beats 1 and 2 of their bar. The “bitch-” syllable of “bitches” seems like its simply been displaced from falling directly on the metrical accent behind it, which is uncommon but not unheard of (as in the prosody of the opening lines on Kendrick Lamar’s 2011 song “Rigamortus.”) Meanwhile, the unaccented syllable of that word (“-es”) falls directly on the beat. The same can be said of the word “switches” in the next bar. The real problems begin when this simplified notation cannot make it clear that the phrases “sunshine,” “one-times,” “-waiian thai,” and “drive-bys” are actually all re-iterations of the same rhythmic durations and metrical positions.
More specifically, all four of those phrases are structurally identified with each other. This is because they are all 2-notes long; they are all self-contained grammatical clauses; they all last for about an eighth note; and they all fall right in front of the pulse. Unfortunately, any iteration of this simplified notation will always obscure this fact, because there is simply not enough options to choose from in a binary bar divided into 16 16th notes.

The simplified notation asserts that while “one times” and “sunshines” are curled around their beats, “-waiian thai” and “drive bys” fall right on the beat. Why can’t one move the second pair of phrases back, and have them both be syncopated? Because then the word “ass” would be crowded, since it lasts longer than a mere 16th note. Why can’t one move these pairs forward by a 16th note, in order to make their relationship to “one times” and “sunshine” clear? Because then the word “six” would be either placed on the downbeat (incorrect,) or would last only a 16th note (also incorrect.) Similar problems of metrical positioning and durational length also confront analogous re-positionings of the phrases “sunshine” and “one-times” as well.

In this manner, we will eventually come to question our earlier findings about the motivic development. We would not challenge the previous findings per se, but consider whether they might have missed an essential part of the motivic development story. By clarifying their rhythmic similarities, the following noctuplet notation of these same bars prompts new questions about the source of the silences (or non-silences) between these five phrases:

1) “AKs and nines” and “one times”
2) “one times” and “sunshine”
3) “sunshine” and “and fine-ass”
4) “thai” and “drive bys”
5) “drive bys” and “six fos”

This new notation asks whether there might be for identifying these five intervening pauses with our old third-beat, quarter-note, musical rest motive:

Example 2.22

The rap of Hittman in bars 56–58 of “Some L.A. Niggaz,” now in noctuplet notation instead of CWMN
In the simplified notation, these rests all come across as no more than circumstantial breaths or dramatic pauses. But in the noctuplet notation, we might instead have uncovered a more motivic process at work. Are these five rhythmic connections—now restored to their proper length and metrical positioning—actually further diminutions of that same motive in truth, and not “just” breaths or performative pauses at all?

All along, Hittman might instead have been on a long-scale journey of destructively diminishing this motive’s length, from 1.5 quarter notes in his first bar (bar 44,) to 1 quarter note in bar 50, to an eighth note in bar 51, to a 16th note in bar 55, to a <16th note in bar 56, to no more than a fermata-like extension of notes in bar 58. For example, the noctuplet notation now makes it perfectly clear that “AKs,” “one times,” and “sunshine” all begin with a dotted sixteenth note, and that they are all microtimed and syncopated in front of the beat in the exact same metrical position. Because the increasing syncopatedness of Hittman’s pauses make them stand out so much, these three silences can all be explained as being extreme instances of our previous motive, and not dismissed as “just” syncopation or pauses for breath.

The noctuplet notation has thus revealed the relationship of the musical rests between the first three phrases listed above to be more substantially connected to this song’s motive than CWMN ever could. The identity of Hittman’s rhythms, through brute repetition, has now been so fully subsumed into his motivic world that even a fermata-like emphasis on phrase-final notes can be heard as motivic. The final notes of the phrases “hawaiian thai” and “drive bys” last for longer lengths of time than the phrase-final notes of “one times” and “sunshines.” The fact that, in the place where a missing beat motive would very likely have appeared according to our previous motivic process—i.e., in between phrases—there is now a fermata-like extension (and not a rest per se) simply demonstrates the motive’s ultimate diminution to nothingness at this
point. Hittman isn’t declining to reference the motive here; his increasingly syncopated metrical transfer of a vanishingly small phrase has finally and forcefully done away with the motive through diminution in toto.

As a result, our previous chart must now be supplemented with new rows that detail these new motive appearances, which at last perfect our understandings of this song’s motivic arc:

<table>
<thead>
<tr>
<th>Bar:</th>
<th>Rapper:</th>
<th>Beat:</th>
<th>Length (Quarter Note = 1, 8th note = .5, etc.)</th>
<th>Motivic Operation:</th>
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<tbody>
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<td>1</td>
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Table 2.2

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<tr>
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<td>Hittman</td>
<td>1</td>
<td>Elimination</td>
</tr>
</tbody>
</table>

The motivic development of Hittman’s missing third beat on “Some L.A. Niggaz,” now with the more accurate information from the noctuplet notation incorporated\(^{16}\)

The story remains the same, but with new characters interchanged. Instead of simply circularly manipulating the motive—always returning to its original form—Hittman has definitively mutated it from a dramatic caesura in bar 44 to no more than an elliptic stutter in bar 58. He has done this by strongly establishing the motive by repeating it more than once per bar, and by reducing its length so incrementally that its reduction becomes barely noticeable. It is the noctuplet notation that has enabled the gathering of this new information.

**Conclusion**

These findings have a number of interesting implications. First of all, it calls into question the prima facie utility of common Western musicological tools in the analysis of understanding rap’s rhythm. Even as it uses an adaption of CWMN to reach new findings, there remains the possibility that the improvements found in noctuplet notation are themselves still prone to the very same blind spots of rhythmic over-generalization or rhythmic under-specification. With this

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\(^{16}\) MC Ren’s a cappella intro from 0:00-0:04 is still being counted as bars 1 and 2.
finding, it perhaps argues even more strongly than ever before for the utilization of non-Western modes of musicology, such as maqam theory (Ranganathan 2015.) Additionally, these findings call out for a deeper interaction between scholars in academia and the rappers themselves. Many of these questions here, such as about the order of the beat-lyrics manufacturing process, could possibly be answered through direct interviews with King Tee, Hittman, and Xzibit.

The possibilities for future investigations are just as intriguing. Even as rap continues to dominate the global musical mainstream, it remains, at best, only partially understood musicologically. If anything, this article should show that the future of rap musicology remains very much “up for grabs,” as it were, in everything from its most important topics, to its standard methodologies and fundamental terminologies. With these thoughts of generic and historical authenticity in mind, it is essential that the rap musicologists of the future leave no stone unturned in their search for capturing this music, even when doing so requires methods that might seem not just untraditional, but downright odd. The question remains: until musicologists recognize that rap music is itself musicologically sui generis, what other discoveries might we be overlooking?
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