

POLAK, SUZANNE U., D.M.A. An Analysis of *Mainframe Tropics*: The Imprint of Electronic Dance Music within a Work by Mason Bates. (2020)  
Directed by Dr. James Douglass. 67 pp.

The author demonstrates through musical analysis of the written score and observations of a YouTube performance, personal performance, and preparation for performance, that Mason Bates's 2009 work *Mainframe Tropics* for horn, violin, and piano is an acoustic realization of a short Electronic Dance Music Set. The analysis validates how the three-movement work follows established forms of EDM tracks and is set with elements of rhythmic modulation and continuance within the beat patterns as written (especially Four-on-the-Floor and Breakbeat) and how Bates's work uses the influence of one genre of music to create an original idea within another genre of music. In addition to the in-depth musical analysis, there is a step-by-step through-analysis for use by performers and composers to better understand the work and its genesis.

AN ANALYSIS OF *MAINFRAME TROPICS*: THE IMPRINT OF  
ELECTRONIC DANCE MUSIC WITHIN  
A WORK BY MASON BATES

by

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A Dissertation Submitted to  
the Faculty of The Graduate School at  
The University of North Carolina at Greensboro  
in Partial Fulfillment  
of the Requirements of the Degree  
Doctor of Musical Arts

Greensboro  
2020

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## CHAPTER I

### INTRODUCTION:

#### 1. ... 2. ... 3. ... 4. ... HIT IT!

It is evening, a low light in the space; while colorful streams of light emanate from the stage, the music pulses and the audience can't help but begin to sway, tap their feet, and snap their fingers to the pulse and excitement of the music. The question is: are they in a dance club preparing to move to the turntables of a master DJ, or sitting in an auditorium listening to a pulsating work of contemporary classical music? As dividing line continually blurs between the structures of musical genres, popular music through stylistic influence has worked its way into the recital hall, while orchestral lines are ornamenting today's club grooves. With the invention of the internet, awareness of all existing and expanding genres of music and living composers, the ever-broadening world of classical music is increasingly infused with the ideas and textures of contemporary characteristics of other genres of music and creation whether acoustic or electric.

Mason Bates is a composer who embraces this ideology. He serves as composer-in-residence to many of the top orchestras in the United States while continuing to work as a DJ (under the name DJ Masonic) in club venues as well as a curator of creating concerts that embrace both worlds in production—performance and presentation. His work for violin, horn, and piano, titled *Mainframe Tropics*, utilizes both the classical and the club by having a richly composed acoustic work that shows the influence of



Electronic Dance Music, or EDM. The provided analysis demonstrates how this influence flourishes into originality in composition.

The term *influence* tends to have a negative connotation within the world of composition; sometimes it is thought a work influenced by an outside source is derivative. According to the Merriam-Webster dictionary, influence is the capacity to have an effect on the character, development, or behavior of someone or something, or the effect itself. A piece of music influenced by an outside source is not necessarily classified as within the genre of influence. In his book *Thinking About Music*, music philosopher Lewis Rowell asks, “What is the essential being of a musical work? and How can we know it for what it is?” He goes on to later question, “To what extent can any person’s knowledge of [a piece] include all this work’s essential features, while excluding all influences from the work’s context another such extraneous data acquired during its perception?”<sup>1</sup> Each performer and listener access their knowledge to form their perception of every performance of a work of music. An aspect of those perceptions could be a past performance or experience with the piece; it could also be music they hear in everyday life. So too could the composer bring multiple compositional aspects to the process of creation. Therefore, it is not necessary for me to ask Mason Bates what the work is based

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<sup>1</sup> Rowell, Lewis, *Thinking About Music: An introduction to the Philosophy of Music* (Amherst: The University of Massachusetts Press, 1983), 141.

on because my previous knowledge and perception of EDM informed me of potential influence. My perception became the basis for this document; it simply reinforced my aural understanding of the work and provided validity for a scholastic project.

While I have chosen to compare this work by labeling it as an EDM set, the trio is not electronic, is not meant to be danced to in an open and free manner, and is not presented in dance clubs as part of an hour-long performance, which is the typical length of an EDM set. Rather, this piece of music illustrates how construction can happen utilizing influence of one genre on another and how that influence can be shaped into an original idea of its own. A greater understanding of the influence upon the work enriches the concepts for both the performer and the listener and provides invaluable insight into the working compositional process of an established figure in the current world of classical music.

This document first delves into the history and characteristics of the two primary components that shape the work as a whole: Mason Bates and EDM. A brief look into Bates's life and personal musical output shows that EDM is an everyday part of his musical life and firmly within his wheelhouse as a DJ and composer. Chapter II also gives brief information into his current success as a living composer in the early twenty-first century. Chapter III illuminates Electronic Dance Music with a brief history into its formation and the terminology that shapes it as well as how the music is created as set in current musical terms. As this genre is currently thriving, there are numerous offshoots within EDM, but this overview will only examine the general aspects of construction. The core of the research will be in the following analyses. A macroanalysis in chapter

IV shows the main ideas of the work and compresses them into a smaller format for more efficient consumption of those ideas as well as an understanding of the arc of the piece from each of the given elements. Useful information for performance preparation follows, along with observations for composers regarding Bates's thought process. Chapter V contains the microanalysis, where minor components are examined in greater detail in three categories: rhythm, harmony, and melody.

A thorough grasp of the information in this document will provide a composer guidance into crafting a work based upon an outside genre and how to mirror this technique; it will provide the performer depth to their ideas in preparation and presentation of the work, and it will provide the listener insight into what constitutes the creation of a current classical work and how that knowledge allows for further immersion into the piece.

**CHAPTER II**  
**MASON BATES:**  
**THE ARTIST OF THE INFLUENCE**

Mason Bates has the distinction of being one of the most musically recognizable and well-known composers in current classical music. His incorporation of electronic sounds and media into symphonic orchestral works gained him widespread recognition, followed by winning a Grammy award in 2019 for his opera *The R(e)volution of Steve Jobs*. In 2020, he will be the first to serve as the composer-in-residence to the Kennedy Center while continuing to work as a DJ and curator, hosting hybrid classical concerts in dance clubs, writing film music, and serving on the faculty at the San Francisco Conservatory of Music. He champions productions of classical concerts that are ‘immersive’ in execution and utilizing non-concert hall venues, lighting, atmosphere, and information to educate audiences about the music being performed.

Mason Bates’s childhood was centered on his family farm located in Newton, Virginia, while his education took place in Richmond, Virginia. He began his musical journey as a young boy singing in choir, yet showed an early aptitude for composition, beginning with works composed for his school choir. He later studied composition in high school age with Dika Newlin (based at Virginia Commonwealth University in Richmond); a well-known student of Arnold Schoenberg. Bates attended Brevard Music Center in the summer of 1993, where he caught the attention of the orchestral conductor of the Evansville, Indiana Symphony, Robert Moody, who would commission his first

orchestral work in 2001. After high school, he attended the dual program at Columbia University and the Juilliard School, earning a BA in Literature and an MM in composition. He then moved to the West Coast of America for his Ph.D. in Composition from the University of California at Berkeley, where he also began to work as a DJ in the San Francisco nightlife.<sup>2</sup>

Bates is recognized for mixing the world of electronica into symphonic classical music. His best-known work, *Mothership*, is written for four unconventional soloists (guzheng, violin, electric guitar, and bass guitar), a performer utilizing turntables and computers, and a full orchestra with many additional musicians. The piece premiered in Sydney, Australia and broadcasted live on YouTube in 2011 to over 1.8 million people online; it was the first piece YouTube organized as its own symphony for a premiere of a work. *Mothership* currently remains his most performed work. The premiere performance was conducted by Michael Tilson Thomas, who also serves as music director of the San Francisco Symphony, and with whom Bates has worked on multiple occasions. In 2017 the SF Symphony won a Grammy nomination with a recording of three of Bates's works. From 2010 to 2015, Bates also served as the composer-in-residence to the Chicago Symphony, whose recording of his *Alternative Energy* garnered a Grammy nomination in 2017. This work also included a mix of electronic and acoustic music, yet not all of his works do so; *Resurrexit*, premiered by the Pittsburgh Symphony, is entirely acoustic.

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<sup>2</sup> All biography information compiled from: U.S. Public Records Index Vol 2 (Provo, UT: Ancestry.com Operations, Inc.), 2010; and "Search the Richmond Times-Dispatch Archive". nl.newsbank.com. Retrieved 2019-12-03.

In addition to his symphonic career, Bates continues to work as a DJ under the name DJ Masonic, and created Mercury Soul, a non-profit organization that stages shows in non-concert hall venues which mix orchestral music with DJ club sets. While working with this organization, Bates became familiar with stage lighting techniques, overall stage production, informational presentations, and fluid performance organization of technical aspects with movement and performance with live people, which he then infused into symphonic performances of his works in large classical concert venues. Currently, as the composer-in-residence to the Kennedy Center, he has launched KC Jukebox which creates collaborations between classical ensembles and composers with artists outside the music field, such as musicians working with professionals from television. After the sold-out premiere of his opera *The R(e)volution of Steve Jobs*, Bates is currently working on a commission from the Metropolitan Opera of New York based on the Pulitzer Prize winning book *The Adventures of Kavalier and Clay* by Michel Chabon.

As stated on the website for the classical music magazine *Musical America Worldwide*,

At a time when classical music is eagerly, anxiously, even desperately trying to connect with a younger generation, Bates is one of the rare composers who is at once popular, hip, and active at the large classical-music institutions—opera houses and orchestras—that are having the hardest time winning young audiences.<sup>3</sup>

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<sup>3</sup> Midgette, Anne. “Composer of the Year: Mason Bates.” *Musical America Worldwide*, accessed November 16<sup>th</sup>, 2019. <https://www.musicalamerica.com/features/index.cfm?fid=329&fyear=2018>.

A continuing theme seen throughout this short biography on Mason Bates is his continual push of mixing performance mediums, bringing the club into the symphonic hall, using artists across different mediums, transferring the classical into the dance club, and playing the turntables with the orchestra. He is popular for writing music well-liked by audiences across the age spectrum due to the accessibility of his music which embraces current popular music genres as well as his personal live performance appearances with the orchestras performing his electronically constructed compositions. He also endears himself to many performers because of his innovative programming organizations.

Mason Bates continues to work simultaneously in both genres. Being active in multiple genres of music enables his constant exposure to multifaceted concepts, and for a composer like Bates, who is already blurring the lines in all aspects of current music performance, his compositions begin to show the influence of those cross related genres.

### **CHAPTER III**

#### **EDM: WHERE THIS DOCUMENT GETS ITS GROOVE ON**

Within its purest form, Electronic Dance Music, known by the acronym EDM, is music created via some form of electronica to establish a continuous soundscape meant for dancing by groups of people in a specified venue. Under the heading of EDM follow many distinctive types of sub-genres of EDM Music, including Dub, Hip hop, Synth pop, Electro, House music, Rave, Techno, Drums n Bass, and Trance. It is neither simply electronic music, which would then perhaps place it within the genre of classical works using an electronically designed or programmed instrument, nor it is simply dance music meant only to be enjoyed in a club or a party; it is a defining movement within the world of pop music where the artist leading the groove on-stage is not the glamorous singer or the hard-core rocker, but rather the Disc Jockey, commonly known as the DJ.

In EDM, the DJ reigns supreme by utilizing any number of machines, turntables, headsets mixers, synthesizers, drum machines, sequencers, samplers, and computer programs to create new music. Within a live context, one might see the original set-up a DJ would utilize with a mixing board and vinyl records on a turntable with headphones as they shape the music into a performance meant to be danced to, and an atmosphere and experience that is created and shaped by the DJ. The DJ does not simply play music by switching out various CDs, but “rather they select, combine, and manipulate different parts of records into new compositions that differ substantially from their source



material”.<sup>4</sup> Today many DJs also create their own works of pop music with the current popular mainstream musicians, and then sample that work into yet more new work. Continuously evolving, there are now even more sub-genres of EDM where dancing is not meant to occur and the music is simply listened to. However, this document will be primarily concerned with the history and use of EDM designed to be danced to within a public setting.

The two general and primary characteristics of EDM are a) a steady driving drumbeat, generally at a faster tempo, anywhere from 100-160 beats per minute (BPM), with a bass drum as the heart of the ‘beat’ of the music; and b) the music is mostly instrumental, meaning it does not contain a singer with verses and lyrics, but rather melodic or rhythmic construction via an instrumental sound. While voice samples can be used, they usually only access small snippets of words or lines, and are then manipulated in some format. This driving instrumental set to a beat is designed using electronic technology and the use of prior recordings which creates music to be danced to in a live setting, like a club.

EDM grew out of the culture of dance clubs that emerged in the US and Europe during the 1950’s and 1960’s as recordings via vinyl record became more readily available. As the DJ started to become a central figure in the disco era, dancers would shift from couples to singles; previously most dancing involved partners (e.g. the

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<sup>4</sup> Butler, Mark J. “Unlocking the Groove: Rhythm, Meter, and Musical Design in Electronic Dance Music.” PhD diss., Indiana University, Bloomington, 2003. ProQuest Dissertations & Theses Global. 7.

Charleston, swing) but with this new dance club experience came solo dancing which didn't require a knowledge of steps (e.g. the Twist, the Mashed Potato). Having the freedom to dance individually with improvised steps was more inclusive and made the dance experience a communal one for everyone. While disco would eventually become unpopular in the late 1970s to early 1980s, it laid the backbone for EDM. For example, in disco the DJ would alternate between records to create a continuous sound to keep the people moving and grooving. This allowed for the creation of beat-matching, where the pulse would stay steady despite the changing of the song.

Continuous developments in the techniques of DJing lay the foundation for EDM. First, the remix in which elements of a track are used in a new way, especially in the alteration of the beat and adding of additional bass line. Second, record companies release remixes as their own performance entities as records for the general public. Finally, the DJ becomes a complete artist by adding beats or bass lines into various remixed pieces creating a sound a listener could distinctly recognize as their personal signature. Thus, the term 'house music' was born to reflect the recognizable musical signature of the DJ working in that space (the 'house') during the event. Once synthesizers became less bulky and more readily accessible to the musician at home (rather than restricted to a recording studio), more experimentation and creation flourished for DJs. Techno emerged as the predominating force of the synthesized developments within the dance and house music craze that defined the club music experience of the 1980s. In Europe, Ibiza became the destination city to experience DJs practicing this art of instrumental tracks continuously spinning an entire night without

pause for endless dancing.<sup>5</sup> To counter the earlier closing hours of clubs, the ‘raves’ were created; these were parties for all-night dancing with a DJ who would keep the music shifting through various tempos to build excitement or allow relaxation yet never slow the beat. EDM genres known as ‘House’ or ‘Garage’ grew out of the locations of some of these raves, and the type of music created for use in those spaces.

Through the domination of house and techno beats in EDM in the 1980s, the 1990s brought on the enrichment of EDM via variation of techniques of the beat. For example, Drums n Bass, “a style that combines accelerated drum patterns (“Breakbeats”) sampled from the percussion-only sections (“breaks”) of old funk records with half-tempo bass lines influenced by reggae”;<sup>6</sup> or House, a “four-on-floor-pattern [that] is so incredibly subgenre-defining through the simple usage of a consistent kick drum on each individual quarter note.”<sup>7</sup> This opened the door to many EDM genre offshoots such as trance, progressive, and electro. EDM consists of the production of music (the record producers) and the DJ creating new music from the samples of musical ideas contained in the produced track. While two people can be involved in this process, many DJ’s became producers of their own track material. The set became a newly formed musical picture from the snippets of borrowed sound and contains continuous music and flow even when the track changes central ideas. The continuous flow maintained and shaped by the DJ

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<sup>5</sup> See Butler, 21 for information on Paul Oakenfold and Danny Rampling.

<sup>6</sup> Butler, 23.

<sup>7</sup> Franz, Joshua Tyler. “Rhythmic and Formal Analysis of Electronic Dance Music: *House and Drums n Bass*.” MA diss., State University of New York, Buffalo, 2019. ProQuest Dissertations & Theses Global. 64.

between different tracks is known as a set, and generally lasts about an hour. “A set is a unity; not only do DJ’s create an unbroken flow of sound, they also minimize the distinctions between the individual tracks, so that the emphasis is on the larger whole rather than its components.”<sup>8</sup> The way a DJ manipulates the tracks to segue from one to the next defines them as a composer; there could be an overlay of bass and beats of one to link into the same of another. The method in which a DJ chooses a given track for a specific moment and audience will control and cultivate the entire experience of the music in the room.

Currently in the year 2020, the turntables and mixers of DJs used at the dawning of EDM have been replaced by computers and programs that allow the same functionality as hands-on equipment and records. Yet the ideology in creating the sound remains the same, and these sounds techniques define the auditory notes which make an EDM track recognizable. Since an EDM set is composed of tracks that create a continuous flow of sound, the sound can be mixed in a variety of interesting ways: the ending of one song overlaps the beginning of another, or the effects of one track morphing into the bass of a second track while a main characteristic of a third track plays over all of it. There is a volume switch to control each track on the equipment (a *vertical fader*), and a volume switch to control the audio level output of each track when both are being played (a *cross fader*). Each switch allows varied volume control of how one track leads into another via sound output. The other elements of sound in the EDM track are controlled via *equalizers*, known as EQs, which control the sonic frequency (or highs, middles, and

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<sup>8</sup> Butler, 27.

lows) of each track. The EQs not only allow certain aspects of each track to be highlighted or distorted in some way, but also allow components of the tracks to be erased (e.g. taking out the bass line, or a high-pitched repeating siren only allowed in certain moments). As technology continues to evolve, artists also invent new ways to manipulate tracks, such as *jet* (which makes an ascending and descending sound within the EQ's), *phaser* (another jet-like effect), *flange* (a time-delay effect), and *crush*.

The final hallmark of an EDM set requires all tracks to maintain the same tempo by design and construction; each track's pulse falls within a certain sameness of tempo (10 clicks or so of temporal distance). A tempo slider control can allow the DJ to manipulate the track to match accordingly. The DJ must also synchronize the beats of each mixed track, exemplified by one (original) method called slip-cueing the records. Slip-cueing is done by holding a record motionless while the player rotates underneath and releasing the record at the exact right moment so that it attains the correct speed immediately. With the invention of the CD came the advent of BPM technology (beats per minute) which allowed a DJ to know the precise tempo of each track available to sample or which tracks contained a similar beat. Current software has features such as *tempo lock* or *sync button* to automatically segue from track to track with no human involvement; apps also exist for the everyday person should they wish to be an armchair DJ. These techniques form the bedrock of an EDM track, therefore the influence of EDM on acoustic works would be created by organically using the same techniques.

There can be other sonic facets to an EDM track. Different types of effects (or EFX) such as reverb, panning sound from one speaker to another, echoes, and others.

The method in which the music or tracks are sequenced, and the methods by which the tracks are segued from one to another, give it a recognizable flavor or identifying marker depending on the producer and/or the DJ. The sound of the music of EDM should not sound like an acoustic recording of live musicians. While some of the samples or elements may have been recorded via a live performance or sequenced from an acoustic instrument, EDM favors finding newly designed sounds, establishing new electronic mediums, and distortions of specific sounds that obscure recognizable organic frequencies. Another known quantity of EDM is the remix: a track in which the producer and DJ reimagine some element of the music while maintaining the same core structure of the original track. In some cases, the remix of a track has become more popular than the original output of the song material. Above all, it should be noted that, “For DJs their performance-interpretation is a type of improvisation. The interpretation is evinced in how the songs are mixed and embellished during the set. This interpretation is most apparent in the transitions...”<sup>9</sup>

Within the rhythm of EDM there is an enrichment contained in the two main delineations of the beat: *Four on the Floor* and *Breakbeat*. This terminology is known by those who create the music as well as those who enjoy being at a rave. Four on the Floor originates from rock music where the drummer would give four solid beats of the bass drum to establish the beat of an upcoming song; this feature is heard in EDM when there

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<sup>9</sup> Egolf, Eva J. “Learning Processes of Electronic Dance Music Club DJs.” PhD diss., New York University, New York, 2014. ProQuest Dissertations & Theses Global. 216-217.

are steady quarter note beats found within the rhythm of the track. Genres of EDM which reflect this include techno and trance music. Breakbeat comes from the moments in acoustic tracks of pop records where there is a percussion only section, or where the percussion 'break' forms the 'beat' pattern of the track. Some of the first tracks sampled for this usage are from the 1970's, one of the most famous examples being *Amen Brother* by the Winstons.<sup>10</sup> Generally, these breakbeats are sped up (in tempo) from the recording where they originated; in Drums n Bass EDM the tempo is fast, whereas in Big Beat EDM the tempo is more moderate. Four on the Floor tracks are rhythmically consistent and static in the representation of the beat. Comparatively, Breakbeat tracks will have more variation and syncopations throughout the overall beat. Also, Breakbeat will feature an entire drum set type of pattern, allowing for color variation within the beat; Four on the Floor usually contains a significant and heavy bass drumbeat. There are also moments when the two genres can commingle, as in Speed Garage EDM.<sup>11</sup>

While EDM continues to branch into new and various classifications, this document will focus on the basic rhythmic patterns as noted above, and the general sense of pulse of basic EDM. Both Four on the Floor and Breakbeat are typically in duple meters (the most typical being 4/4), or some combination of two quarter notes evenly divided by four 8th notes, eight 16th notes, and so forth. The variation of the beat can come from either making the beat uneven (so two 8th notes become a dotted 8th and a sixteenth) or from omission of any given notes from a steady beat (so four 8th notes

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<sup>10</sup> Butler, 87.

<sup>11</sup> For more on this, read Butler's informative footnote 6 on pg. 90.

become two 8th notes, a rest, and one 8th note). Also to be considered is the division of an overall bar of music. If there are eight 8th notes in a measure, accents could be placed on the 8th notes 1, 4, and 7, thus giving a feel of 3+3+2. If there are sixteen 16th notes in a measure, accents could be placed on the 16<sup>th</sup> notes located at 1, 4, 7, 10, and 13, thus giving a feel of 3+3+3+3+4. This asymmetrical pattern still works within the evenly metrical span of EDM by allowing the asymmetry to occur within a bar, keeping the duple pattern pure. Lastly, there can be syncopation found within the rhythm of EDM, typically within the Breakbeat pattern. The syncopations can be as creative as desired by the DJ/producer, but still need to happen within the pure duple meter of the dance, allowing a dancer to be able to find the pulse within their movement no matter how creative the syncopation might be. “Slight variations in the patterns can create entirely new perceptions to the audience, where subtlety is a very powerful tool”.<sup>12</sup>

Regardless of which format is used to establish the beat for an EDM track, it is defined by the track having a ‘loop’- rhythm (and harmony to an extent) forms a cyclical repetition so it is recognizable when it returns. If the rhythm and harmony were completely varied throughout, then it would not be defined as an EDM track. While many popular music forms may use a cyclical based structure, the existence of the loop as an instrumental-only structural device allows the distinction of an EDM work, and that the repetitive looped rhythms allow an EDM track to unfold within this simplicity. A loop is a repeated instrumental pattern, which may be as short as one note to 16 bars of music; a sample might comprise an entire loop, or perhaps multiple loops might be rotating within

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<sup>12</sup> Franz, ii.



the same track. A loop can be analyzed by identifying the smallest number of repetitions of the cyclical material.

The beat is king in EDM. “The beat is not only heard, it is also physically felt, as well as enacted through bodily motion”.<sup>13</sup> A bass drum or a low bass synth pulse might drive the overall rhythmic looped structure of the track. Musical excitement can be enhanced by the DJ by manipulating the bass pulse, most commonly done by taking the entire bass beat out and then returning it to prominence. The DJ might remove all sense of pulse completely which allows the dancers a moment of pause or uncertainty, then reintroduce each element within duple bar phrases, leading the public into the return of the primary beat.

“In Electronic Dance Music, no single “voice” dominates; instead, the texture is heterogeneous, with all the parts being more or less equal”.<sup>14</sup> While the beat is king, each part contributes equally to the construction of the pulse and the continuance of the loop even when the beat is being manipulated with by the DJ. Instrumental tracks of EDM allow each element to be recognized individually while contributing to the whole. As EDM is a recorded art form, the foundational aspects of the construction allow each layer to be recorded within a multichannel function, thus allowing the DJ to individually control each layer with the aforementioned EQ and volume sliders. “As they were mixing, I observed DJ’s constantly adjusting for harmony and melody while aligning compatible keys. They made these adjustments to avoid ‘clashes’, a music faux pas

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<sup>13</sup> Butler, 107.

<sup>14</sup> Butler., 109.

which they assiduously avoided.”<sup>15</sup> DJs are constantly listening to make sure that even the volume maintains a steady stream of output, neither too loud nor soft, but rather maintaining the sense of the music as a consistent auditory flow.

A talented DJ can have a mix of several tracks that rhythmically, harmonically, and melodically segue successfully into one another, while manipulating various parts of each track to control and enhance the experience of the public. EDM is a rhythmically consistent music with loops of different layers and textures in constant flux to create both similarity and continuance in a mix of tracks.

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<sup>15</sup> Egolf, 218.

**CHAPTER IV**

**MACROANALYSIS:  
PUTTING THE MUSICAL PIECES INTO THE BIG PICTURE**

This chapter will present information with a broader viewpoint which will create clarity in understanding the piece. A chart of the entire work is provided.

To understand the arc of the piece, certain aspects of the music must be recognized: as an EDM-influenced work, this composition is driven by the rhythm of the three interwoven instrumental voices. It is also driven by the harmonically propelled rhythm with steady central tones which are mixed with coloration chords and snippets of melody and accentuated by the prepared piano. It is both an EDM-influenced three-track set and a classical work of three interconnected movements. As the piece moves from IV to V to I, one would assume that the arrival of I would be a climax of the work, but as that moment arrives in the restatement and remix of the 1st movement within the 3rd movement, it is somewhat understated and does not arrive with a sense of textural importance. This indicates that the work is a shifting textural construction of digital music in an acoustic setting, with appreciation of the shapes and motions it creates, as well as the constant sense of pulse maintained throughout the work to engage the listener in the rhythmic movement of the piece. Each of the three voices holds equal sway in their contribution to the whole. See Figure 4.1 for a through-chart of the rhythmic and harmonic movements of the piece.

<u>MM. #</u>	<u>Rhythm</u>	<u>Harmony</u>
1-24	1st Mvt: starts Four-on-floor with breakbeat touches	E as I throughout, shifting primarily to A as IV with coloration chords
29-36	Breakbeat takes over as downbeats disperse	Tonality shifts to A as IV
36-46	Breakbeat with rests throughout	E (I) to A (IV) with coloration chords
47-72	Syncopated Rhythm, though downbeats maintained in some form	Harmonic shifts to D (IIIV) and then B (V) setting up a deceptive cadence (V into VI)
73-84	Breakdown: Metric Modulation into a triplet undefined section	C (VI) is reached and harmony shifts between E (I) and C (VI)
85-100	Loop of opening measures	Loop of opening harmonies
101-122	Smaller loops of repeated opening material	Smaller loops with repeated harmony and coloration chords
123-142	Transition material	E primarily, preparing the shift
143-150	2nd Mvt: Big beat pulse established via metric modulation	2nd Mvt: starts with C (VI) but again based in E as I
151-170	Ambient rhythm maintained, acoustic fader-like	Harmonic coloration using B harmonic piano preparation
171-180	Rhythm becomes more audible as it shifts into more orchestration	Shifts through types of 7th chords, maintaining E as I
181-191	Rhythm fully integrated in the parts	Harmony broadens throughout
192-203	Full Big Beat dominance	Full orchestration of 7th chords
204-207	Beat is dropped	Light chordal colors
208-211	Beat echos in upper register	E remains as I
212-217	Quiet repetitions of Big Beat in preparation to transition	Repetitions of 7th coloration chords in preparation of transition
218-229	Transition material	Transition from E to F# as I
230-237	3rd Mvt: Breakbeat Intro into main material of the movement	3rd Mvt: F# is I, achieved as pivot chord (F# in E as II, and now as I)
238-241	Four-on-the-Floor Funk Introduction	F# bass line, audible preparation of bass note in the piano LH
242-244	Beat dropped	Shifts to D (VI)

<u>MM. #</u>	<u>Rhythm</u>	<u>Harmony</u>
245-286	Shifts between Funk and Breakbeat Syncopations	Main harmonic funk material introduced: F# (I) to A Minor (III)
287-290	Breakbeat Hits	D (VI) to B (iv) to E (VII)
291-298	Rhythm obscured as it echos Big Beat feeling of 2nd mvt.	F# Major 7th 2nd mvt. echo with moving 7th coloration chords
299-323	Echo Remix of 2nd mvt.	Echo 7th chord movement
324-329	Rhythmically undefined moment of suspension	Shifts from G (II) to G# (ii) with feeling of unknown direction
330-337	Shortened Loop of opening material of 1st Mvt.	Shortened Loop transposed from E to B; here B is established as I
338-353	Remix of 1st Mvt. with 3rd Mvt. Breakbeat interruptions	B continues as I with transposed loop and color chord interruptions
354-359	Four-on-the-floor Funk Dominant Arrival	Harmony shifts between B (I) and D minor (iii)
360-371	Shifts between Funk and Breakbeat Syncopations	Shifts throughout melodic snippets, maintaining B as I
372-375	Breakbeat hits	D (III) to B (IV) to G (VI) to A (VII)
376-378	Last Funk rock-out	B (I) to D (iii)
379-380	Breakbeat flutters	Setting up deceptive cadence (V-VI)
381-382	Syncopated hits	G (VI) as suspended cadence
383	Finish on downbeat of measure	Resolution and Finish on B (I)

Figure 4.1. Chart of *Mainframe Tropics*.

First, we look at the rhythmic arc of the piece in broad sweeps, showing the rhythmic motion which shifts between influences of Four-on-the-Floor and Breakbeat. The beat remains constant with metric modulation, and although it is easier to change the metronome for the 1st movement breakdown and the 2nd movement in order to attain a sense of the main pulse for those moments, a performer should never lose sight of the primary tempo as consistency of pulse throughout the work. A sequence showing the

movement of rhythmic influence would be as follows: 1st movement: four-on-the-floor with breakbeat touches > breakbeat syncopations > breakdown > loops of beginning sections > transition > 2nd movement: big beat > transition > 3rd movement: breakbeat into four-on-the-floor funk > short transition > 2nd movement echo > short transition > 1st movement remix > breakbeat interruptions > 3rd movement funk and breakbeat > syncopations and finish. This is a look at the rhythm via the lens of EDM influence, but it's only an influence and close study of the changes in time signatures as well as strict adherence to keeping all metrical pulses should be rigorously practiced. Since instrumental entrances vary and each player contributes to the rhythm as a whole, every player must be constantly aware of the pulse (and the divisions within it) and study the score to know when they are rhythmically in unison with and when they are not. For example, looking at mm. 65-68, the violin and horn enter in m. 65 on the same beat, but the violin continues with a figure matching that of the piano RH while the horn holds a longer note which is followed by a melodic snippet at the end of m. 66. Whereas for mm. 67-68 all three instruments are mostly together in rhythm, with the piano adding some moving harmonic lines. Intimate familiarity with all parts will help provide all players the best opportunities for rhythmic security.

If the harmony were sequenced as the rhythm it would be as follows: 1st movement: E as I, shifts to A as IV, coloration chords, deceptive cadence > breakdown, C as VI to E as I to C as VI with coloration > harmonic loops with rhythm E to A > transition F# minor II to E as I to A as IV to E, stepwise movement with D into > 2nd movement: C as VI to E as I with coloration chords > transition E to A to F# as II pivot

to F# as I into > 3rd movement: F# major to A minor Funk with coloration > transition F# > 2nd movement echo F# > transition G major > Remix of 1st movement B as I into > four-on-the-floor mixed with breakbeats now in B as I, funk is B major to D minor > syncopated coloration hits > finishing chord on B as I.

A more sparse harmonic interpretation is as follows: 1st movement: E as I, with breakdown in C, E remix > 2nd movement: E > transition pivot F# as II to F# as V into > 3rd movement: F# as V, 2nd movement echo > 1st movement remix in B as I into > 3rd movement original material and finish in B as I. Our macro view would be (if harmonized from the beginning): 1st movement E as IV > 2nd movement: E > 3rd movement: F# as V to B as I. In the most enlarged view, the whole composition can be analyzed as IV-V-I. Again, this larger view of all three movements from a harmonic standpoint allows the musicians an opportunity to evaluate their dynamics so that when the work arrives in the 3rd movement at B major after the remix of the 1<sup>st</sup> movement can serve as a direction and/or climatic peak for the piece. At the restatement of the original funk beat material in B major (as I in m. 354 of the 3<sup>rd</sup> movement), Bates has a clear four-on-the-floor fortissimo figure serving as a possible climax of the rhythmic arc of the work, though it continues in celebration and pulse until the end. Also, the word ‘coloration’ has been used many times in this document in reference to harmonic chordal hits and syncopated melodic snippets that occur within each movement but not analyzed as part of the keystone areas of the harmonic movement: this is not to diminish their value as part of the analysis, but to recognize they function as stepping stones in a larger harmonic movement and are orchestrated as such. The melodic snippets, or fragments,

are important in that each line can have a direction within the compositional construction to aid the rhythmic drive of the piece and each performer should be cognizant of this function. However, it is again repeated that strict adherence to the score as marked helps that a balance be achieved within each part if each player pays close attention to all dynamics and articulations. See Figure 4.2 for an overall look of the work.

Regarding compositional process, we have the chicken or the egg scenario: which came first, harmony or rhythm? Were the harmonies based on the note E and expanded once the rhythm was set? Did the harmony change first in a three-movement arc and set into ever expansive rhythms? Or was it all simultaneously constructed in the process? Since only Mason Bates knows the possible answers to these questions, if one were to undertake a piece written in a similar manner, one would need to decide these aspects of rhythmic pulse identity and harmonic voicing before beginning to compose. In contemplation of the writing process, it shows via the orchestration how the voices can shift the focus of the beat. For example, let us examine the beginning of the piece via the primary four-on-the-floor influenced beat. In mm. 1-4, the horn and piano are short single 8<sup>th</sup> notes on the downbeats while the violin is 8<sup>th</sup> note off-beats, yet each are playing the same E4. With the horn and violin patterns expanding in m. 3 to add the dominant 7<sup>th</sup> of E (note D) into the mix.



1st Movement Silicon Blues				2nd Movement Marine Snow			3rd Movement Greyhound			
Measure#: 1-72	73-84	85-122	123-142	143-217	218-229	230-290	291-323	324-329	330-353	354-383
Harmony: E as I Main Shift to A as IV Coloration Chords Throughout	Deceptive Cadence C as VI to E as I	Harmony Loops Repetitions E as I	Transition E as I	7th chord shifts E remains as I	Transition E to F# via F# pivot chord F# as ii into I	F# as I Funk harmony set F# as I to A minor as iii	Echo Remix of 2nd mvt 7th chord colors	Harmonic Suspension	Remix of 1st and 3rd Harmony B as I	3rd Mvt Funk B as I
Rhythm: Four-on-the-floor first established then moves to Breakbeat	Metric Modulation Triplet Feeling Loss of pulse	Rhythm Loops Repetitions Original Feel	Transition Preparing Metric Shift	Big Beat EDM Pulse maintained as Bass occasionally drops out	Transition Metric Modulation via 8th notes	Four-on-the-floor Funk established with Breakbeat color	Echo Remix of 2nd mvt Big Beat Shade	Rhythmic Suspension	Remix of 1st and 3rd Opening	3rd Mvt Funk with breakbeats
Harmony:	E as I IV					F# as I V			B as I I	
Rhythm:	Four-on-the-floor shifting to Breakbeat			Big Beat		Breakbeat	Four-on-the-floor Funk	Remixes		Funk with Breakbeat Finish

Figure 4.2. Overall Form of the Work.

By m. 5 the violin transitions to an 8th note pattern which oscillates between the root, 5<sup>th</sup>, and dominant 7<sup>th</sup> of E, while the horn and piano maintain the downbeats on E for 2 measures and then shift to the off-beats, simultaneously the downbeats are being played on E by the violin within the 8th note pattern. By m. 9, while the violin continues the 8th note pattern, the horn moves to the IV as A in the off beats and the piano plays both the E on downbeats and the A on off beats. This compositional technique demonstrates the constancy of the beat while shifting it throughout the parts as well as subtly modifying harmonic voice-leading, while neither losing any steam in rhythmic drive nor simply moving in a stepwise vertical motion from one chord to the next. In examination of sections such as this, Bates clearly demonstrates his high level of compositional skill, and one in which the composition student could gain more insights into practices of writing in this style. The simplicity of the preparations of the piano should be noted; generally, works for prepared piano take an extensive amount of time and involve many facets; these preparations take about 3 minutes to set and 30 seconds to remove. These are utilized wisely to allow the piano to remain aurally as an acoustically recognized quality, so when the preparations enter in the performance, the listener is perhaps at first deceived as to their source.

For any musician undertaking this work, the constant use of the metronome in practice must be embraced. The goal is not to perform in a machine-like manner, even if the work has overtones of computers and mainframes in the titles and program notes, but to understand the value of each voice in the contribution to the creation of the rhythmic construction, to comprehend that each voice played as articulated is equal in importance

in creating the texture of the piece, and to create music within these parameters.

Typically, performers in a chamber group will make decisions regarding the primary material at any given point, especially how to make sure that the material is always in the foreground.

With this in mind, the metronome becomes an invaluable tool in establishing each performer's understanding of beat placement and how Bates uses those shifting and blending beat placements in the development of overall motion of the pulse, or having snippets or tones that are a building block within a moment of harmonic movement. For the performers, simply adhering to the information of the score as opposed to the traditional process of deciding voicing, textures, and pulse direction, will allow them to focus on the essential and primary rhythmic drive. This allows the composition to be what it is—a shifting EDM track that takes the listener through different images of digital and oceanic musical pulsating ideas in a sense of mixing the club with the classical in a chamber work. As such, the performers are creating a historically accurate performance, albeit a very recent history.

All musicians and composers should become increasingly aware of other genres of the music. This could increase versatility and employability in an ever-shifting world of the arts; it also allows the classical world to open the doors to new audience members who might hesitate to attend a traditional Western art music classical concert. This trio champions Bates' efforts in exposing the traditional classical audience to different soundscapes by infusing old music ideas with current technology and forms.

**CHAPTER V**  
**MICROANALYSIS:**  
**WHERE BATES TURNS INFLUENCE INTO INGENUITY**

Having discussed the hallmarks of an EDM track, the document will focus on Mason Bates's *Mainframe Tropics* in order to see how he creates an acoustic composition inspired by an EDM set. It is neither an EDM-patterned piece, nor is it only a classical instrumental trio for violin, horn, and piano; rather, through his intimate knowledge of both genres, Bates uses the ideology of EDM to create a work of ingenious construction. This analysis focuses on the individual elements of EDM, major and minor, which Bates chooses to re-imagine for this work. The analysis is from the vantage point of each element and looks at each element individually rather than a whole analysis (which is contained within the proceeding chapter). In looking at these elements, the process behind his composing becomes clearer and illuminates his unique approach to musical creation.

There are shared components between both EDM and *Mainframe Tropics*. A set of EDM is a continuous flow of tracks; the trio is a three-movement through-composed work that does not break between movements but is connected with a rhythmical shift into each alternating movement. Each element contributes equally in an EDM track; in the trio each instrumental part is important and no part contains a 'melody' that highlights it as more important than the rest. Rather, they contribute to the whole of the piece by maintaining their structural identity through strict adherence to the markings in the score.

EDM does not get harmonically or melodically diverse; it maintains a steady flow of harmony that is tonally centered, even if it does not have a ‘home’ key that is instantly recognizable. There are no significant volume shifts in EDM or in the trio, primarily since all three instruments continually play without pausing for any length of time greater than a few rests. An EDM track maintains a steady beat; the trio could be played with a metronome clicking throughout. Even though the breakdown in the first movement and the entire second movement are slower as compared to the BPMs established for both the 1st and 3rd movements, the slower pulses are both accessed via metric-modulations that are metrically even. EDM is not melodically dominant and has snippets of musical lines as samples; the trio also does not have a melodically driven construction where the melody delineates the form, but rather multiple snippets that help form the harmonic movement of the piece. In this chapter the independent elements are examined in further detail. It should be noted that while some examples of the score are included to illustrate the analytical ideas, the analysis is best understood while viewing the full score. In addition, individual in-depth charts are provided for the rhythm and harmony microanalyses before each section, Figures 5.1 and 5.2, respectively.

## Rhythm

<u>Measure</u>	<u>Description</u>
1-24	1st Movement- Opening Four-on-the-Floor Set Pattern with Breakbeats scattered in via the preparation in the Piano RH Clicky Sounds
29-36	Steady beat drops out, pulse is maintained by Breakbeat patterns in all instruments
37-46	Pulse is maintained by 16th note patterns throughout all the instruments; the rhythm is constructed in a straightforward manner
47-72	Pulse is now auditory; while downbeats are covered by one instrumental voice in some fashion (except m. 61-62), syncopation of rhythm is dominant; opening Four-on-the-Floor now segued into Breakbeat
73-84	Breakdown: pulse is lost through metric modulation and movement from duple to triple meter. M. 82-84 build up excitement to next section
85-100	Loop, complete repetition of opening 16 measures
101-122	Smaller loops: mm. 25-28 is mm. 101-104, mm. 37-46 is mm. 105-114 in exact repetition; then an embellished loop of mm. 51-58 in mm.115-122, where the beat patterns are more expanded
123-142	Transition: 16th note patterns which echo Four-on-the-Floor beat, shifting to 8th note patterns in m. 137 to prepare metric modulation
143-150	2nd Movement- piano sets Big Beat influence with dotted quarter/quarter/eighth note rhythms for steady pulse throughout movement
151-170	Ambient Suspension; pulse is maintained via the preparation in the Piano LH, making it a faded pulse
171-180	More notes added with Piano to bring back a steadier sense of pulse
181-191	Marked Warming Section; pulse is now clearly orchestrated
192-203	Rhythmic Expansion of Big Beat into moving 16th note patterns
204-207	Beat and Bass drop out, momentary suspension
208-211	Echo of Pulse as written in high treble clef of the Piano
212-215	Simple rhythm, preparing the transition
216-229	Transition; metric modulation being prepared via shifting time signatures
230-237	3rd Movement-opening material is Breakbeat with bass hit in preparation of Piano LH
238-241	Four-on-the-Floor Funk Rhythm first being introduced
242-244	Beat is dropped, pulse suspended

<u>Measure</u>	<u>Description</u>
245-248	Four-on-the-Floor Funk
249-253	Light Breakbeat Syncopations
254-256	Four-on-the-Floor Funk
257-265	Light Breakbeat Syncopations
266-282	Four-on-the-Floor Funk, (the beat drops out m. 276 but returns to funk)
283-286	Light Breakbeat Syncopations
287-290	Syncopated Hits
291-298	Four-on-the-Floor becomes obscured by ties over barlines in preparation for Transition into Echo Remix of 2nd movement
299-323	Echo Remix of 2nd Movement, Big Beat mixed with Breakbeat Syncopations
324-329	Rhythmically undefined moment; pulse is lost
330-353	Remix: 1st movement loop of shortened value with Breakbeats interruptions
354-358	Four-on-the-Floor Funk returns
359-364	Beat and Bass drop out
365-367	Four-on-the-Floor Funk
368-371	Beat and Bass drop out
372-375	Syncopated hits
376-378	Four-on-the-Floor Funk with heavy accented bass
379-380	Beat and Bass drop out
381-382	Syncopated hits
383	Ending downbeat hit

Figure 5.1. Rhythm Microanalysis Chart.

### **Rhythm**

As stated earlier, the pulse of an EDM set is primary, and the trio's construction relies on the pulse created by the written rhythm. Bates creates a mixed form of Four-on-

the-Floor and Breakbeat, but doesn't maintain duple meter; yet the listener is not aware of the difference of the meters unless perhaps they were to dance to it. (See Figure 5.1 for an overall chart of the microanalysis.) The first movement, *Silicon Blues*, sets the rhythm for this acoustic set of music that follows. The tempo is given as *quietly propulsive* and a BPM (or metronome marking) of 138 to the quarter note. The first four measures have 16 total beats; the quarter note is the beat and the measures are divided 3+4+3+6 (see Musical Example 5.1).

The musical score for Musical Example 5.1 consists of three staves: Violin, Horn, and Piano. The title is "Quietly Propulsive" with a tempo marking of quarter note = 138. The Violin staff begins with a dynamic of *p sempre*. The Horn staff begins with a dynamic of *f* followed by *sub p*. The Piano staff begins with a dynamic of *f sub pp* and includes the instruction *sempre secco, (non Ped.)*. The score is divided into four measures. The first three measures are in 3/4 time, and the fourth measure is in 6/4 time. The Piano part features a *sfz* (sforzando) marking in the second and fourth measures. The Horn part has a *sfz* marking in the fourth measure. The Violin part has a *pp* (pianissimo) marking in the fourth measure. The score includes various musical notations such as slurs, ties, and dynamic markings.

Musical Example 5.1. Mm. 1-4 of *Mainframe Tropics*.<sup>16</sup>

By placing an instrument on the downbeats of certain measures, the music sounds like it's in a duple meter, but it is actually much more complex. The horn and piano both play on all the beats until the 6/4 measure, providing the first moment of suspending the

<sup>16</sup> Bates, Mason. *Mainframe Tropics*. California: Aphra Music 2011.  
<https://aphramusic.com/collections/chamber/products/mainframe-tropics>  
 Score excerpts printed with permission from Aphra Publishing.



beat to create tension for a brief moment in the music before the beat resumes. The violin plays on all of the off-beats (the ‘ands’ or ‘+’) until the 6/4 bar; if only horn, violin, and piano LH played the first four bars, the ‘raison d’être’ of this EDM acoustic construction could be heard (and note that Bates cites the digital world as an element that informed the work). This aspect, which can first be heard between these three voices, forms the four-on-the-floor aspect of the piece; however the primary beats and off-beats continuously trade between the instruments, it is never lost (except for brilliant moments of ‘breakdown,’—more on that later).

Where the breakbeat effect begins in the upper part of the RH that Bates has as a prepared part of the piano, with rubber washers inserted into the upper strings D-flat 6 and E-flat 6 create unpitched, wooden clicky sounds. These wooden clicks sound like sampled parts of unrelated rhythmic track, or a ‘breakbeat’ of another song; sometimes they are short interruptions, at other times fully realized snippets of rhythmical breaks that continually drive the beat forward and enhance the overall steady feeling of the music. Also, this element provides a nod to the attribute of EDM not wishing to sound like acoustic instruments; the preparations in the piano, (and especially this woody click), do not sound like an acoustic piano and immediately clue the listener in to the unique sound of this work.

This four-on-the-floor opening with scattered breakbeats continues from m. 1 to m.4, with the following divisions of the measures as given by the beats construction: 16 (3+4+3+6), 14 (3+4+3+4), 14, 16, 14, 14. Again, this allows Bates to have a steady digital-like pulse mixed with creative meter in a sense that is not easily heard as being

uneven. One instrument constantly maintains each beat through the first three divisions of the beat in each grouping, again keeping the EDM trance-like groove. At m. 29, the beat drops out, and the breakbeat in the RH takes over as the primary rhythmical device through m. 36 (and beat groove is maintained in a version of 3/4 and 4/4). At m. 36, the beat recurs intermittently as a member of a 16th note figuration in the LH of the piano. Here is a moment of influence changing into ingenuity: while we are allowed the beat on downbeats with downbeats accented in 16th note figurations in measures 37-46, the beat becomes a part of the harmonic movement and comes and goes in this exciting fashion by the use of occasional rests. This movement creates an auditory mirage: having heard where the steady on-the-floor beat should be, the listener begins to be prepared to hear it, even when it will be completely removed audibly throughout mm. 47-72. The important rhythmic distinction is as follows: from mm. 37-72 there is almost continuously someone on every beat of a measure (the only exceptions being mm. 61 and 62), yet the accented sense of construction of the beat steadiness is only maintained from mm. 37-46 and thus established strongly to audibly maintain the beat throughout the syncopations of mm. 47-72. Furthermore, the analysis could be seen as a dominant four-on-the-floor opening with small breakbeat snippets seamlessly segueing into a predominant breakbeat pattern between each of the three players in mm. 47-72. Indeed, a break of the breakbeat RH motion is found starting in m. 57 through m. 72; the clicks are also taken out, but musically added back via the 16th note lines found in mm. 63-64, for example.

As previously mentioned, at m. 73 there is an instrumental 'breakdown' within the track of the first movement (see Musical Example 5.2). Metrically, a quarter note

within a quarter note triplet of the original tempo becomes the quarter note pulse of m. 73-84. A musical climax of sorts has been reached as the instruments verge into different sorts of triplets and held lines. The triplet being used in this section gives it the feeling of breakdown as it unevenly divides the duple of a quarter note and thus takes away from the duple feeling of EDM that colored the music prior to this. This breakdown provides the feeling of ‘taking the beat away’, where the dancers pause to catch their breath and lose a sense of continuous motion (and the trio instrumentalists feel the same way in this case); but it only lasts for 12 measures (the first measure being 5 beats, and the rest being 4) and similar to an EDM track, a build of excitement through m. 82-84 leads back into the main pulse of the music.

The beat comes back in m. 85, exactly as the opening, 3+4+3+6 with a four-on-the-floor dominant feeling and continues as a repeat (or an exact loop) of the opening material note-for-note from mm. 85-100. Next it jumps to smaller loops of previous material: mm. 25-28 is mm. 101-104, mm. 37-46 is mm. 105-114 in exact repetition; then there is an embellished loop of mm. 51-58 in mm. 115-122, where the beat patterns are similar but there are more notes in the second iteration. In m. 121 and 122, 16th notes are introduced in the beat via the violin that will form the basis for the end of the first movement (or track if you will); these 16th notes stay constant in the established steady beat four-on-the-floor style from mm. 123-136, which while occasionally interrupted, are always found on the first downbeats of each of these measures. These pulsing 16ths change to 8th notes in m. 137 and carry on to the end of the first movement, found in m. 142. The measures 123-142 are also analyzed as a transition between the first two

movements or tracks of this acoustic work; the propulsion of the beat is being allowed to metrically relax via the orchestration and lessening in dynamic (though never audibly disappearing) and prepare the listener for the metric shift into the second movement.

The image shows a musical score for three instruments: Violin (Vln.), Horn (Hn.), and Piano (Pno.). The score is for measures 73 through 76. Measure 73 is circled and includes the tempo marking '♩ of previous = ♩ (♩=92)'. The Violin part features a melodic line with slurs and accents, and dynamic markings of *mp*, *f*, and *mp*. The Horn part has a similar melodic line with dynamic markings of *mp* and *f*. The Piano part has a complex accompaniment with triplets and dynamic markings of *ff*, *mf*, *f*, and *mp*. The score includes various musical notations such as slurs, accents, and dynamic markings.

Musical Example 5.2. The Beginning of the Breakdown, mm. 73-76.

The second movement, *Marine Snow*, achieves its metrical shift via a modulation of the 8th note: while the 8th note stays constant in pulse (and keeping in mind that a metronome could stay constant at 138 throughout), the meter changes to 6/8, so the pulse changes from a smaller beat (138 to the quarter with a two 8th note pulse) to a larger beat (69 to the dotted quarter with a three 8th note pulse). While the beat shifts into a three-note divided tempo (6/8 being divided into 3 eighths to a dotted quarter beat), it is felt within two big beats. Again, Bates could be acknowledging ‘Big Beat’ EDM, which is typically slower than a regular EDM track as noted in Chapter III; while this big beat is seemingly much slower than the music previous, it still contains a constant steadiness and one that could be heard if a metronome was maintained in a performance of the piece.

However, as this work is only influenced via EDM, so too is this movement allowed to keep the classical trope of a three-movement work being slow-fast-slow; and as this work exists in both worlds, it is in keeping to having influence of both genres.

Here the piano is the beat-keeper, maintaining the beat in a primary oscillation of 8th, quarter, and dotted quarter beats that are only elaborated into 16th note patterns for harmonic movement. Again, as in the first movement, the beat is established for the listener, so they get a sense of the pulse before it is modified (or modulated by the DJ as it were); piano sets the beat in a 8th/quarter/dotted quarter downbeat heavy pattern in mm. 143-150. This downbeat 8th/quarter shifting pattern is maintained into a new sonically modified piano moment; in m. 147 the preparation on the note F4 of the piano (in which a large machine screw has been inserted into the strings) is heard. This preparation gives the note a metallic sound, resulting in a sounded harmonic of B3 if properly placed, and again utilizes a sound not typical of a piano, an acoustic synthesized sound. The sound is introduced quietly to the listener on the downbeats of m. 147-150; and then this sound is where the beat is maintained throughout m. 151-170 (see Musical Example 5.3).

So it is present at first, and then takes the beat, but elusively in its production: in a way, this is an acoustic *fader* placed on the beat, it adjusts the output of the sound and changes where it lies not only via EQ but from an acoustical production standpoint. It is then bolstered by more pianistic rhythm in the LH in m. 171-178, fading out of the texture as the rhythmic device, allowing the LH to take over the role in complete at 179 and 180 and then immediately shift to the RH in m. 181. As noted in the previous

chapter, the creativity of the DJ can often be found in the transitions; here too is seen the creativity of Mason Bates as the piano part shifts the beat from the RH to the LH, from the acoustic to the prepared, from the higher end of the piano to the lower end, providing full color but in a manner that isn't 'clashing' or metrically uneven.

The image shows a musical score for Horn and Piano. The Horn part (Hn.) is in treble clef and begins at measure 151, marked 'Cold, distant.' The piano part (Pno.) is in grand staff. The piano part features a rhythmic pattern of eighth, quarter, and dotted quarter notes, with a dynamic marking of 'fp' and a 'ppp' marking. A dashed line indicates an octave shift in the piano part.

Musical Example 5.3. Piano Preparation with 8<sup>th</sup>/Quarter/Dotted Quarter Rhythm Established mm. 151-154.

As the piano shifts from the metallic preparation, the beat continues to the *warming* section of the second movement, as marked beginning in m. 181. The quarter, 8th, dotted quarter rhythms continue prominently through m. 191; for musical excitement, the music begins to expand into 16th note patterns starting in m. 192 and then full continuous 16th notes in m. 194, yet the beat shifts to the LH, first in simple full downbeats and then again in the known rhythmic pattern of the movement (starting in m. 196). It should be noted, however, that here the beat will have a small offset feel due to the LH playing both the beat and the bass in m. 196 through m. 203; since the spread of these two ideas in the LH are larger than a hand span could possibly reach (more than an octave at most points), the pianist has to do a quick jump between the bottom bass and

the rhythmic pattern, which allows for the slightest hesitation feeling on every downbeat or a simple expansion of the beat itself, even as it is metrically based on the downbeat in a simple pattern.

To lessen the intensity of the rhythmic expansion as heard through mm. 196-203, the beat is dropped for four bars (along with the bass) in m. 204-208. While there are constant 16th notes in both the RH and LH of the piano, the writing is done in such a manner as to hide where the metrical downbeat is and allow a moment for the beat to drop out and enjoy a sense of suspension (the last before the piece finishes). The beat returns faintly in the RH piano high in the treble clef in m. 208, like an echo of the beat that is heard throughout this movement. This high echo continues in 208-211, but here Bates adds an extra big beat (so m. 208 and 210 are 6/8 while m. 209 and 211 are 9/8) which highlights where the music has arrived in the 2nd movement—at the movement's conclusion and then transition into the 3rd movement. This transition, which begins at m. 208, is quite subtle (as the art of the DJ is in moving throughout tracks). Measures 212-215 keep the simple rhythm of constant moving 8ths and solid downbeats in the piano RH and LH and reintroduction of the preparation of F4 in the piano in mm. 216-217 in the main beat pattern. This is all to prepare for the first iteration of a 4/8 bar in m. 218 (which 4/8 does allow for an easier metric modulation into the beginning tempo). Next follows a pattern of two 6/8 bars and a 4/8 bar, then two 6/8 bars and two 4/8 bars, and lastly two more 6/8 and two last 4/8 bars to lead into the 3rd movement. The pattern of maintaining rhythm via 8th/quarter/dotted quarter is maintained throughout these bars, with the 4/8 constantly having two 8ths in every bar. Again, this is so the listener can feel

the transition into the original duple feel of the piece and that the triple feeling was simply a big beat of the overall EDM set of the piece, making it easier for the musicians to keep the tempo steady as it transition into the 3rd movement.

The third movement, *Greyhound*, is a 'RE-MIX' of original material, loops, and echoes of the first two movements (commonly when an EDM track was first remixed, the DJ would typically do a singsong shout of the word 'remix' as the track started, so this author is honoring that tradition by using capitals in the beginning of this sentence). The metric modulation is achieved in reverse; the 8ths remain constant, but the beat shifts from the dotted quarter of three 8ths to the quarter of two 8ths, thus dotted quarter equals 69 becomes quarter equals 138 once again. However, the 3rd movement starts as a breakbeat influenced pattern; while there are two given quarter note pulses in the first two beats in the piano, these are once again obscured by a preparation in the piano. This last preparation involves F#1 in the bass of a piano, where a rectangle-shaped pink eraser is inserted into the strings to create a muffled thud-like sound. It is the last of the acoustic synthesized preparations of the piano, and meant to sound like the fullness of a bass drum in a drum-beat like pattern, exactly like that which could be used in an EDM sample. The horn is written quite high and the violin is written with harmonics, creating a feeling of the rhythm being propelled by the little snippets of sample-like music between each instrument. This breakbeat continues from the beginning of measure 230 until m. 237, where four-on-the-floor is brought back in its purest form with four solid hits between the LH piano preparation and the horn.



This opening of the 3rd movement is the original material of the track that will lead into the loop sections and echoes of the previous movements through two main rhythmical shifts: from the four-on-the-floor funk-like feeling to a bass drop rhythmic-like suspension (though of course the beat stays steady throughout the snippets of music used to build these sections). The funk rhythm is established in mm. 238-241 in the LH of the piano, with use of both the low preparation and moving accented intervals and notes. At m. 242, Bates provides the instruction *suddenly light and quiet* as the piano shifts into the treble range and the snippets between all three voices provide the suspension feeling. Then at m. 245, his instruction says . . . *then snapping out of it* as the music returns to the funk beat in the LH accentuated by the same two voices of the preparation and bass line. The shifts continue: light through m. 249 beat 2 to m. 253, funk mm 254-256, light in mm. 257-265, funk in mm. 266-282 (the beat drops out m. 276 but returns to funk), light in mm. 283-286, and then an arrival of a mix of funk and echo of the breakbeats of the first movement (see Musical Example 5.4).

Throughout these shifts, the time signature first stays in 4/4 at mm. 237-250, then bars of 3/4 are inserted in m. 251 and m. 259, then a steady 4/4 until the new mix at m. 287. These 3/4 interruptions allow brief moments for innovation within the beat and just general fun within the changes. In m. 287 there are heavy beats both on the beat and in the syncopated hits, embellished with the woody click preparation in the piano which echoes the first movement. This syncopated hit section from mm. 287-290 leads us into the next part of the remix.

The image displays a musical score for three instruments: Violin (Vln.), Horn (Hn.), and Piano (Pno.). The score is divided into two systems. The first system starts at measure 277, marked with a circled '277'. The second system starts at measure 281, marked with a circled '281'. The music is in 6/8 time and features a transition from a four-on-the-floor funk rhythm to a breakbeat. The piano part is particularly prominent, with a complex rhythmic pattern in the left hand and a melodic line in the right hand. The horn and violin parts provide harmonic support and melodic interest. Dynamic markings include *sfz*, *f*, *con brio*, and *fp*. The score also includes performance instructions such as *sub.* and *Bring out!*.

Musical Example 5.4. Funk Four-on-the-Floor with Transition into Breakbeat, mm. 277-283.

At m. 291, the music is marked as *calming*, and the four-on-the-floor beat becomes obscured by tied chords in the piano LH and horn over the downbeats of various measures from mm. 291-298. Bates does this to transition into a brief remix of the rhythmic pulse of the 2nd movement, which begins in m. 299. From mm. 299-323, the 8th note again remains the constant tempo marker as the time signatures change from 6/8 to 4/8 with one measure of 4/4 for a brief suspension of the beat (m. 309). Each 6/8 brings downbeat chords reminiscent of the big beat feeling that was established throughout the 2nd movement. However, the 4/8 bars at m. 301, 307, 313, 316, and part of the concluding 6/8 bars at mm. 321-322, contain the woody click preparation in the

RH of the piano, keeping the listener involved in the shifting metrics of the overall beat and again making a brief ‘breakbeat’ sonic suggestion. In m. 323, the horn is the sole instrument leading the ensemble via offbeats into another transition of complete syncopation in 3/4 and 4/4 from mm. 324-329. In these measures (with the orchestration of the instruments), Bates uses these 6 bars as the only rhythmically sounding undefined moment by having each of the players on both the beat and offbeats. This effect toys with the concept of knowing where the beat is as well (as the direction of the music) in a manner that allows a fraction of a second to lose the listener. This feeling does not last long, as the music segues into a rhythmic loop of the beginning of the 1st movement in m. 330 through a shortened version. While the rhythm in mm. 330-333 mirrors that of mm. 1-4, the last measure in measure 4 is 6/4, whereas m. 333 is only 4/4 and not held as long; see Musical Example 5.5 and compare with Musical Example 5.1).

330 *Quietly Propulsive*

Vln. *p*

Hn. *f sub p*

Pno. *f sub. pp*

*sfz* *sfz*

*8va* *8va*

Musical Example 5.5. Remix of 1<sup>st</sup> Movement in 3<sup>rd</sup> Movement. Compare with Musical Example 5.1 for Observation of Loop and Shortened Length in the 4<sup>th</sup> Measure.

After the reintroduction of the 1st movement material, Bates continues to have the original four-on-the-floor rhythm (with breakbeat flutters in the RH prepared piano) as written before, but increasingly interrupted by the original ideas rhythmically set forth at the beginning of the 3rd movement. At first these interruptions are minor (m. 335), but soon begin to invade the beat and then offset it; this first happens in m. 338 where the piano LH shifts from primary beats to off-beats, then on primary beats 1 and 2 of m. 339, followed by off-beats on the +s of beats 3 and 4. These interruptions also distort the rhythmic lines of the violin and horn until the first movement rhythm is completely overcome by the 3rd movement four-on-the-floor funk in m. 354. From here to the end, the rhythmic movement is leading to final syncopation hits: funk from m. 354 through m. 358, the beat and bass drop mm. 359-364, funk returns in m. 365 to beat 2 m. 367, beat and bass drop beat 3 m. 367 through m. 371, syncopated hits mm. 372-375 (our first), then a wild and bass heavy accented funk from m. 376 to m. 378 beat 2, beat 3 m. 378 leading into a bass drop which leads the final syncopation starting at m. 381, multiple hits including the high and low piano preparations, and an accented final chord on the downbeat of m. 383.

To summarize the rhythm in an overall arc, the first movement sets the tempo for the set with a four-on-the-floor track mixed with breakbeat track; the track has one breakdown, then loops of smaller durations that transition into the second movement big beat track of the set, which then transitions into a 3rd movement funk mixed with remixed ideas of both the first and second movements, all while keeping a steady metrically divided pulse of 2 eighth notes or one quarter to BPM 138. These observations

are based on the study by the author during preparations for performance. However, in the program notes printed in the score, Mason Bates provides hints that could be interpreted as agreement. Of the opening 1st movement, Bates says in the program notes that it is “imbued with a pulsing electronic heart . . . its irregular rhythms chug along as persistently as the grooves of contemporary techno.” For the second movement he references the title of the movement, “that marine snow is a continuous shower of organic detritus . . . that falls for weeks before reaching the ocean floor. . . . As the marine snow drifts lower, the gentle pulse returns with a growing insistence.” Leading into the third movement he remarks, “the piano’s muffled thuds are a subsonic reincarnation of the work’s opening mechanistic element . . . By the work’s end, we return to a clunkier version of the silicon-based world that began the piece—like an old-fashioned mainframe computer doing a lopsided dance” (Bates’ program notes). This mix of imagery of silicon mainframe computer technology and elements of deep ocean murkiness provide the title of the work *Mainframe Tropics*; indeed, the rhythm provides the backbone for the images to be set and driven in each movement with clarity of idea and intention along with other influences of EDM woven throughout.

## Harmony

<u>Measure</u>	<u>Description</u>
1-8	1st Movement- Harmony Established as centered on E with an overall feeling of major
9-12	A bass note A is added giving a feeling of moving from I to IV
13-28	E holds as steady root with many coloration chords throughout
29-36	Shift to E again as main root center or I to IV again
37-68	Consistent auditory shifts from I to IV and back with many coloration chords adding to overall harmonic movement
69-70	D grounded root for a movement to VII
71-72	B grounded root for a movement to v and setting up cadence
73-74	Breakdown; Deceptive Cadence; E to C, with m. 71-72 feels like v-VI
75-76	Movement back to I with E
77-81	Chordal Expansion and movement through Major 7th chords
82-84	A as IV preparing transition
85-120	Harmony loops as the rhythm loops
121-128	D as VII shifts to E as I and back during transition
129-130	A as IV grounded root
131-140	E as I grounded root
141-142	D as VII grounded root preparing cadence
143-146	2nd movement- Deceptive Cadence start on C as VI
147-150	E again established as continuing I chord
151-170	Harmonically ambient section with shifting harmonies over a B as v obscured by preparation in Piano LH
171-180	Shifts through 7th coloration chords while maintaining E as I
181-193	More dynamic shifts through coloration chords, E still as I
194-195	Movement into C as VI for a cadence
196-197	Arrival at E as I before shifting into 7th coloration movements
198-203	Shifts through coloration chords ending on A as IV

<u>Measure</u>	<u>Description</u>
204-217	Begins with soft plagal cadence into I, and then continuous shifts from I to VI, both expressed in Major 7th chords
218-225	Shifts from coloration chords back to E as I
226-227	Arrival on A as IV preparing an auditory plagal cadence
228-229	Surprise as cadence moves into F# pivot note- F# as ii in E now set to become F# as I in F# tonal center for the 3rd movement
230-236	3rd movement- F# as I established with coloration Breakbeat chords
237-241	F# Bass Line dominant
242-244	Bass drops out; suspended on D as VI
245-248	F# Funk Harmony being introduced
248-253	Bass drops out; harmony remains centered on F#
254-256	D as VI Funk Harmony
257-262	Bass drops out; suspended harmony
263-265	Build-up in harmonic movement with repeated 16th notes
266-282	F# Four-on-the-Floor Funk with main shift to A minor as iii
283-286	Violin as high F# bass line
287-290	Movement from D as VI to B as iv to E as VII to cadence into Echo Remix of 2nd movement
291-298	F# as I with coloration chords reminiscent of the 2nd Movement
299-323	As echo remix continues, coloration chords throughout 7th chords in descending movements, mixed with Breakbeat colors
324-329	Harmonic movement surprise into G major center and then G# in m. 328 in a suspension leading to loop of 1st movement
330-353	Transposed Loop of 1st Movement, now in B centered tonality and establishing B as I, with Breakbeat coloration chords that audibly echo the 3rd movement, giving section remix feeling
354-359	Four-on-the-Floor Funk in B as I now, with main shift to D minor as iii
360-364	Bass drops out, B remains as I
365-371	Repeat of Funk Harmony to Bass dropping out
372-375	Syncopated hits in G as VI to A as VII
376-383	B as I: Four-on-the-Floor Funk to Breakbeat and Syncopated harmonic hits, G as VI to F# as V to B Major as I on last chord of the trio

Figure 5.2. Harmony Microanalysis Chart.

## Harmony

As previously stated, EDM tracks are generally not harmonically extensive, atonal, or complex. Rather, they stay within a certain key-based or note-based zone throughout the entire track. Bates' cleverly uses this practice of EDM in his harmonic approach by creating the same overall arc of harmonic leading in a tonal-based center which allows the listener to perceive it as simple, but it is actually quite complex and chromatic. A more detailed analysis will be provided for each movement (see Figure 5.2 for an overall chart of the harmonic microanalysis).

The first and second movements are based on the note E and the tonality of E Major. In the first movement, this harmony is established by the violin, horn, and piano LH as they all enter on E first line treble staff. The piano RH is adding color that feels both in a manner of major 9<sup>th</sup> to dominant 7<sup>th</sup> (D# and F# moving to D natural and A in the opening measure). The 6/4 bar adds an A major 9<sup>th</sup> chord in both hands of the piano during the first beat drop, but immediately resumes the same first harmony in m. 5. Additional notes are placed in all the instrumental parts which reinforces the E tonality, while circling around in a major 7<sup>th</sup> to dominant 7<sup>th</sup> sense. In m. 9, both horn and piano LH add an A root to the E tonality, providing a sense of shifting to the IV chord of E major. The actual 3<sup>rd</sup> of that chord (C#) does not appear until the last 8<sup>th</sup> in the piano in m. 12, after which the bass shifts back to E in m. 13. E holds steady up through mm. 13-28; however, multiple color chords are added in brief off-beats (for example, F major 9 on the + of 4 in m. 18, or C dominant 13 on the + of 4 in m. 20). These subtle shifts to different tonalities mimic the coloration of simple EDM-like harmony. This allows the



composer to be harmonically expressive without distorting the tonal center of E, as well as providing a sense of chordal structure for the listener. At m. 29, the tonality shifts to A major (the IV chord), which continues through m. 36 and incorporates syncopated hits. Bates continues to shift the harmony from E Major I chord to A major IV chord by using melodic snippets and harmonic hits, chords, and octaves in all the instruments until the transition to the breakdown of the first movement. Again, there are brief coloration chords throughout (G# minor 7 on the + of 2 in m. 61, for example) but used in a very subtle manner so only the movements from I to IV are the most predominate. In m. 69, the piano lays a D grounded bass to build a D Major #11 chord in all the instruments; in measure 71 the piano goes lower to B bass and builds a B Minor 13 chord through the instrumental parts. These two chordal structures are the transition to the breakdown which begins in C major 7. In a traditional tonal movement, this could be considered a sort of deceptive cadence: the I being E, therefore D as a III/V in E, and then B as the minor V shifting to C as the VI. This works in a bass focused system of analysis rather than traditional harmony (scalar-based) which requires certain chords be either major or minor dependent on the scale it is based.

The author prefers to call it a deceptive cadence movement into C. It achieves this with a power ballad type of movement from a suspended I chord to major VII to major VI as the deceptive arrival in the breakdown, all happening in m. 73. It then shifts back to major I in m. 75 and rotates between I and VI. This deceptive movement allows the breakdown to provide a sense of grounding within the rhythmic uncertainty of the instrumental orchestration (see Musical Example 5.6). In mm. 77-81, Bates has taken a

moment of complete chordal expansion, moving from E major 9 to C major, A suspended major 7 to F major 9, A-flat major 9 to E-flat major to F major, to finish in C major 7 in m. 80. Again, a subtle shift of color to enhance the deceptive cadence overtone of the breakdown. With the C major arrival established, the composer uses snippets to re-establish the opening loop in E and the return of the shifting tonality of major to dominant in m. 84.

The musical score consists of three staves: Violin (Vln.), Horn (Hn.), and Piano (Pno.). The key signature is one sharp (F#) and the time signature is 4/4. Measure 73 is circled and marked with a tempo of quarter note = 92. Above the first staff, it says "of previous = ♩" with a triplet symbol. The Violin part features a melodic line with triplets and slurs. The Horn part has a similar melodic line with triplets. The Piano part is marked *ff* and features a bass line with triplets and slurs. Below the piano staff, there are chord symbols: "I susp." under measure 73, "VII" under measure 74, and "VI" under measure 75. A dashed line labeled "8th" spans from the end of measure 73 to the beginning of measure 74.

Musical Example 5.6. The Power Ballad Movement into the Breakdown.

As this is the loop, the harmony is also being looped, first with E and then adding in A, while an overall sense of E-based tonality is maintained with coloration chords on

off-beat syncopated hits. This continues until m. 121, where a similar arrival point comes as in the first iteration where the harmony lands on D-based VII chord, but rather than shifting to B as in the deceptive cadence movement, here the harmony rests for a moment as the transition begins into the 2nd movement. D VII continues until m. 129 when A is based as the root, and then returns to E in m. 131, in a short of D as IV/IV to A as IV to E as I, and E stays constant until the last two bars of the 1st movement. In those bars (m. 141 and 142, respectively), the harmony moves stepwise down to D, and at the beginning of the 2nd movement to C major 9 (though this chord is actually considered suspended; while E was just heard and could be sonically remembered as the 3rd in C, it is actually not used in the spelling of the chord in mm. 143-146 and therefore the chord is suspended).

In keeping with the simplicity of harmony, the 2nd movement is comprised entirely of either Major 7th based chords or chords based off the E Major Scale, which primarily remain centered in either E as I or C as VI. As a given, the opening 4 measures of the 2nd movement are C-based, which shifts to E in mm. 147-150. This is followed by harmonically extended coloration of Bates by using the prepared piano preparation that has the F4 key prepared to have a B harmonic; this B harmonic could be like a V bass line to the I of E, but since the harmonic is quite faint in sound, it leaves the listener in a somewhat harmonically hazy episode. Bates directs this moment with a marking of *cold, distant*, giving voice to the ocean color he is painting in the harmony as written. The piano provides a G major 7th chord, an A-flat major 7th chord, all written in the upper staff of the treble clef in an eerie-like quality. In m. 164, under the pianissimo dynamic,

the LH piano provides a low B bass, reinforcing the V chord ideology and leading as a transition into the Major 7th Harmonic shifts that will dominate the rest of the movement. The music arrives at E Major 9 (built upon the 3rd of the chord, G#); at m. 171 the shifts begin: G major 7 in m. 173, B Major 9 in m. 175, D Major 13 in m. 177, and a brief coloration chord C dominant 7 #11 in m. 179 leading into the *Warming* harmonic movement in m. 181. Here the harmony reaches a glorious movement through various E color, m. 181 E major 9, m. 183 G major 9, back to E, and then A suspended 13 in m. 187 to D# minor 7 in m. 188, D major 7 in m. 190, F# minor 13 in m. 194, and C major 13 in mm. 194-195, which pulses triumphantly into a dynamic arrival at m. 196 in E Major 9. This arrival is short-lived, (only for three big beats), and then the harmony shifts to C# minor 11 in m. 200, B minor 13 in m. 201, A suspended 9, which cadences in a soft Plagal cadence to E as a I based on the 3rd in m. 204. As noted, in m. 204 begins the transition into the 3rd movement and the harmony softly shifts from E as I to C as VI again, with coloration coming at the first moment the 4/8 bar is introduced in m. 217 since that measure is made of 2 major 7th chords, D-flat major and G major, which lead back into E. Then in the next 4/8 measure at m. 221, the same two chords are written again which lead back into E at mm. 222-223. This is followed by two 4/8 bars at mm. 224-225 which are harmonically written as B-flat major to F-sharp suspended to E major to C major to cadence to A major 9 in m. 226. The listener has a sense of arriving yet again at the IV chord of E, and as the transition has been building, and one could assume that the harmony was going to return to the E as I harmony. However, the piano preparation is brought in on a low F#, (doubled in octaves within the LH of the piano), as

the harmony reaches a pivot point. F# was II in E (or perhaps V/V in E), and will now become what the listener senses is the I of the 3rd movement; the opening harmony will ground the impression, but this is the ultimate harmonic deception regarding the final key center cadence.

At the beginning of the 3rd movement at m. 230, the tonality is now based in F#. As the breakbeat funk begins to proceed, the harmony centers on F#, bolstered by the preparation in the lower part of the piano. The bass line has subtle shifts into A, D, and E, with Bates preparing the listener for the greatest color contrast of the movement: that of F# Major to A Minor (even a visual contrast as F# uses all black keys of a piano and A Minor all white). In m. 232, Bates introduces a G# major chord on the + of 2, shifts back to F# beginning of m. 233 (on the + of 2 again), and while utilizing B# as C-natural, he introduces A minor. This movement will dominate the original harmonic material of the 3rd movement (see Musical Example 5.7).

The moving bass-line continues through m. 242 where the bass drops out and the harmony shifts to D as VI of I of F# for 3 measures. The bass line then takes over and dominates the original material of the 3rd movement in F# funk in m. 245. Here, as stated before, are the rhythmic shifts from bass line funk four-on-the-floor in m. 245 to the bass dropping-out suspensions (like in m. 248-253). These suspensions areas are still harmonically centered on F# which comprises the moving instrumental lines that highlight F# Major and A Minor while the G# Major connects the two. The bass returns this time as pure four-on-the-floor based in D major in mm. 254-256, and then a suspended D major in m. 257-262, which lead to an exciting build in F# at mm. 263-265.

This development is quite like the moment in EDM when the music (which had suspended for a moment) is now clueing the listener into the moment when main beat is going to return. It does here as well, and continues with the F# funk in full swing throughout mm. 266-282. The violin takes over the F# bass in mm. 283-286 as the piano and horn shift upward for a change of orchestration. In m. 287, the harmony arrives at D major, which is also the syncopated lead-in to the remix of the 2nd movement material. This syncopated hit lead-in moves from D major 9 to color hit on off-beat B-flat suspended to D, which runs into B minor 9 in m. 289, to E major 11 in m. 290, and thus into the 2nd movement remix at m. 291.

The image displays a musical score for three instruments: Violin (Vln.), Horn (Hn.), and Piano (Pno.). The score is divided into two systems, with measures 277 and 281 circled at the beginning of each system. The key signature is F# major, and the time signature is 4/4. The score includes various musical notations such as dynamics (e.g., *sfz*, *f*, *com brio*, *fp*), articulation (accents, slurs), and performance instructions like "Bring out!". The piano part features a complex rhythmic pattern with many sixteenth notes and rests, while the violin and horn parts provide melodic and harmonic support.

Musical Example 5.7. F# Major to A Minor Movement.

The harmony also calms (as marked in the score), with F# major 9 holding steady in the piano LH for 3 measures. Then on beat 4 of m. 293, Bates has an A Minor Chord in beat 4, tied into the next measure, and resolved into D major 7. This A minor chord, sitting among the shifting major 7th chords, is the harmony being mixed between the 2nd and 3rd movements. The harmony over the next four bars shifts from B Major 7 to E major, to F# major, and the same A Minor to D Major color as written prior. In measure 299, where the 6/8 big beat is reintroduced, the harmony moves in a descending pattern in both hands of the piano, and either the horn or violin; the descending pattern reminds the listener of the deep ocean imagery of the 2nd movement. These movements are created: with small intervallic writing; mm. 299-300 moves F# major 3rd to C# 5th to D major 3rd to A 5th, mm. 302-303 moves B-flat major 3rd to F# fifth to E fifth to D major 7th, mm. 305-306 moves F# major 3rd to C# fifth to E fifth to D major 3rd, while in mm. 308-309 the idea is completed with B-flat major 3rd to F# fifth to a written-out B perfect 4th which lands on an E fifth. All of these 6/8 movements are interrupted by the 4/8 woody clicks of the piano, but the harmony gives an open sense by using intervallic writing rather than full chordal structure (again, reminiscent of the deep ocean imagery). Once the music reaches m. 310, the harmony begins to thicken again and moves in a pattern of sustained chords to staccato hits; for example, at the beginning the piano moves D# minor 7th dotted quarter to D 9 open fifth on staccato 8th. This harmonic movement, combined with the rhythm, is building to the remix of the 1st movement. That same shift occurs two more times (in mm. 311 and 314), branches into C # suspended 11 to A suspended in m. 315, returning to D# and D in mm. 317-318, and then one last

harmonic descension in mm. 319-320 with F# minor 9 to C major 7 to B minor 9 to a G Major 7th interval. This ends the remix of the 2nd movement.

This descension shifts into the purposely undefined moment of the piece, (between the 2nd and 1st movement remixes), with moving lines of F# major to minor to B major and ending G open fifth 9 to m. 324; here the harmony also does not have any sense of a tonally centered pitch. Measure 324 opens with G major 7, but shifts to E-flat major inversion on the + of 3, then G major in the next measure. This is combined with woody clicks, G major in inversion followed by open fifth C 9, and then G # minor 7 on beat 3 of bar m. 328. These G major chords feel as distant from E or F# major as possible at this moment, particularly since neither of the preceding keys have a G-natural in their key signature. Yet, the remix of the 1st movement arrives, although now transposed into B major! It is a compressed rhythmic loop of the 1st movement, and the harmony is exactly mirroring the original 1<sup>st</sup> movement material but up a 5th interval step. As the 1st movement remix continues, even with the rhythmic interruptions of the original 3rd movement material, it becomes evident that the harmony is shifting toward B major; thus, the opening 3rd movement material of F# major was serving as V chord of the key in which the piece will conclude. To repeat, the harmony is B moving to the IV as E with color chord interruptions (such as the echoes of D# minor 7 to D open fifth 9 in m. 335). These harmonies continue all through the remix and interruptions until the 3rd movement funk reclaims the harmonic motion of the music at m. 354, this time in the home key of B major. The funk is as before, with heavy bassline measures at mm. 354-358; then the B drops out and the B major color dances throughout the voices in mm.



360-364 until the B funk returns in m. 365. The same ideas of funk leading to the bass dropping out repeat in mm. 365-371, and then the syncopated hits arrive, signaling a transition to the final material of the piece. The hits are in G dominant 13 to E-flat suspended to G major 7, to E minor 7, and A major 7, but in m. 376 the funk returns for a triumphant finale in B major. Color tones abound, especially as the movement halts to hits of B-flat major 3rds and F# open fifths in m. 379; then a race to the finish, hits in all instruments, and a final chord in B major tonality. Also, it should be noted that both the horn and violin lines contribute to the same harmonic movement as outlined in the piano in this analysis. Since the piano has the lowest bass range, it is the primary indicator of the harmonic analysis of the work.

Therefore, if we look at the entire harmonic movement of the piece, it can be seen as a simple, tonal harmonic cadence between the three movements. The 1st movement is in E major, with a breakdown in C and returning to E; the 2nd movement is in E, primarily with abundant color chords and multiple shifts to C as VI. The 3rd movement begins in F#, is infiltrated with the harmonic color of the 2nd movement in the echo remix, moves to B major in the remix of 1st movement, and concludes with original material in the same B tonality. The entire piece could be seen as IV to V to I: 1st movement and 2nd movements are in IV, original material of 3rd and 2nd movement remixes in V, which moves to I of 1st movement remix and the work's ending. Considering the work's performance lasts approximately 10 minutes, these overall harmonic movements can be heard by the listener, which brings a satisfying harmonic journey to the EDM acoustic set of movements within the work as a whole.

## Melody

Speaking from an observational aspect, this work is not driven via melody, (understandably as it is inspired by EDM), as EDM does not have any primary melodies but rather snippets of tunes that help to propel the harmonic and rhythmic movements. This observation is based upon defining a melody as an organized collection of pitches of a duration of a certain length (4 measures, 8 measures), repeating in a question/answer format, and repeatable by a listener after hearing it- none of these are present within this work. However, this doesn't mean it's not melodic, but rather that its melodicization emanates from the harmonic movement and voicing among the instruments.

Within the 1st movement, a voiced melodic idea can be seen in the upper note of the piano figuration as written in the middle treble clef. The opening measures move F# to A, repeat 2 times, and then become A to B in the 6/4 at m. 4. In mm. 5-8 the same melodic movement is found but in varying lengths of beats, again ending A to B. This idea is a melodic snippet—a short idea that drives the forward direction of the piece. An example can be seen in other instruments in mm. 45-50, where the violin and horn concur in movement of the 9th and the 7th of E major 9 to D open fifth, a repeated gesture that transitions to independent moving lines which bolster the overall harmonic movement; since this is a melodic snippet, it repeats again in a similar manner in mm. 51-53 before breaking off into syncopated harmonic hits. Generally, the 1st movement is written entirely in this manner, both in the original statement and the loops, with short melodic episodes that contribute to the harmonic movement, (except for the lead-in and then the breakdown, where a melodic snippet of held notes is prevalent for a brief moment).

Measure 67 brings the first rhythmic unison of the melodic snippets, found in the horn and violin (not the same notes but same rhythms) which continues to the breakdown in m. 73. The two instruments have the same pitches at the breakdown for the 1st two bars (mm. 73-74), but this unison seems like an arrival to highlight the change of the rhythmic pulse rather than an independent idea and they immediately separate, the violin into snippets, and the horn into sustained tones. At the end of the movement, the violin has driving 16th and then 8th note patterns (beginning in m. 121) that are used more for rhythmic stability among the players; the horn has snippets and then sustained tones, and the piano has a combination of the two.

The second movement, while being slower in tempo like the big beat EDM, is again split melodically between two ideas that are expressed in either sustained tones or moving lines. Neither is used in a leading concept but are used to bolster the harmonic and rhythmic ideas of the piece. Regarding sustained tones, notice the moving sustained tones between mm. 171 and 197 in both the violin and horn- both are in similar identical rhythms (yet not completely), and neither is playing the same note until the last two measures of mm. 196-197. One could argue that without the notes being unison this could be a type of counterpoint, but their tones are neither moving in a contrapuntal fashion nor expressing any individual idea, but rather contributing to the harmonic whole. Their arrival at the same note B is simply a building towards the high point of the harmony in the second movement (the fortissimo arrival into E major). Then the violin separates off into snippets and the horn into sustained tones (some quite high for the instrument in mm.

201-203). The violin will return to sustained tones with the horn that are not the same notes (again); this continues to the transition into the 3rd movement.

The 3rd movement original material is completely snippet based, with either sustained tones in the horn, movement with horn playing on each beat (mm. 234-241), or hits of syncopation followed by frenetically moving 16th note lines in the violin (mm. 230-237). If takes a cursory look at the material from mm. 242-290, the snippets, sustained notes, hits, and moving lines predominate in the violin and horn, while a closer examination of the exact notes indicates they bolster the harmonic movement as previously analyzed; they are not independent melodic lines, but part of the EDM track construction. They are chromatic in writing, but function as harmonic movement based on the notes being placed on stronger beats and employing fast chromatic movement. This movement calms when the 2nd movement remix is reached in m. 291, but the moving lines in the violin and horn join the descending harmonic movements of the piano as part of the return of ocean imagery. This leads into syncopated hits that are in the undefined moment of m. 324, followed by a remix of the 1st movement melodic snippets, (now a fifth above), starting at m. 330. Moving lines return as the 3rd movement interruptions increase (e.g. mm. 348-349), and then the moving lines with sustained tones is reasserted as the 3rd movement funk returns in the key of B major. This drives to the ending syncopations of mm. 379-383, which finish on the final chord of the piece.

These melodic pedal tones and snippets of movement are not to be undervalued by the above analysis, but rather recognized as the understated elements of building blocks that make up the overall EDM set impression of the work. While the piano

provides a basis from which to discuss the analysis, each component, whether in harmony, rhythm, or melodic movement, contributes equally to the work as a complete entity. Each are independent and equally significant in shaping the analysis and performance of the trio.

### **A Last Look**

This chapter provided an in-depth view into the three main elements which comprise this piece, but other observations can be noted that are important to the concept of the work as an EDM track. Significantly, no instrument rests for any given length of time; each instrument is in continuous motion from the downbeat of the beginning until the end of the work. Again, EDM does not have huge shifts in volume. While this piece contains very well-marked dynamics and articulations, the shifts in volume are more subtle since they continue to play together rather than an individual instrument or all three pausing at some point. Again, the concepts of the volume shifting only in smaller amounts and each instrument being given independent dynamics is reminiscent of the EFX used in EDM music, such as *faders*, *EQ*, and etc. The movements are in a continuous drive to the end from the moment they begin, are separated by their track material, and woven into a seamless acoustic set of EDM music.

**CHAPTER VI**  
**CONCLUSION:**  
**AND THE BEAT DROPS OUT ...**

After an examination of EDM culture and Mason Bates's multiple vocations, a clear connection can be found between the composer and the genre. With close analysis, an influence of EDM music structure can be seen peppering many of his acoustic works. Such is the case with the horn trio, *Mainframe Tropics*, a work he notes within his personal notes printed in the score, that is informed of the digital. Through an analysis of the rhythmic, harmonic, and melodic elements, the influences of EDM on the writing of Mason Bates can be examined not only for similarities, but for the ways in which Bates takes the traditions of one genre and adapts it to create an original voice in a completely different genre. Certain influences revealed through analysis is not a negative statement of the composition, but rather an interpretation of elements to gain a better understanding of the work.

Continued study of new genres of music and the forms found therein should be undertaken by all performers with an eye to the increasing world of blurred lines in music. Mason Bates's club/symphonic project, *Mercury Soul*, is well-known and continues with presentations of classical works in dance halls, with fusion of club with classic, and with raves hosted in concert halls at the conclusion of classical concerts. Electronica has become an accepted medium in all facets of music, and knowledge of computer programs that specialize in sound, recording and creation, and sequencing

becomes essential for composers. For example, Bates uses the computer program Ableton to mix beats live with an orchestra and have a varying pulse of the beat, as live performance does not always remain consistent. Likewise, his music utilizes aspects of mixing, turntable work, and beat matching, and the informed performer can correctly know how to practice and prepare this music; the informed listener can have a deeper appreciation of the work and enjoy knowing what has influenced the work. An audience member may feel like more of an insider with program notes containing brief summations behind the outside influences or ideas within a work; it also may draw more people into the concert hall if they are attending a concert of works which feature influences from popular sources. Perhaps a recital of works that are all modeled after or influenced by EDM could appeal to those who regularly attend raves. The clarity of understanding on what drives the music can enhance all the viewpoints of those experiencing it. Looking through the lens of perception widens our relationship to music and how and why we undertake it, perform it, and attend concerts.

To quote Lewis Rowell once again, “A musical work is more than one can ever experience of it. At the same time, our version of such a work may be—for us—a richer and more complex thing than the work itself.”<sup>17</sup> This document provides an analysis of the classical chamber work *Mainframe Tropics* by Mason Bates in order to provide a richer understanding of the influence of Electronic Dance Music on its compositional characteristics. With closer scrutiny, it becomes evident that Bates not only an exceptional composer, but one who understands how to use another genre with which

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<sup>17</sup> Rowell, 144.

he's familiar and incorporate the elements of that genre in an innovative way within his composing. His goal of blurring the lines between the classical and the club successfully imprints both into the music he composes, creating new works that embrace current music styles and breathe relevance into the art of Western classical music.



## BIBLIOGRAPHY

- Anderson, Christopher; Eigenfeldt, Arne. "A New Analytical Method for the Musical Study of Electronica." Paper presented at Sforzando! Electroacoustic Music Studies Conference, New York, 2011.
- Bates, Mason. *Mainframe Tropics*. California: Aphra Music 2011.  
<https://aphramusic.com/collections/chamber/products/mainframe-tropics>.
- Bogaards, Niels; Honingh, Aline; Panteli, Maria. "Modeling Rhythmic Similarity for Electronic Dance Music." Written document of a lecture presentation for the 15th International Society for Music Information Retrieval Conference (ISMIR), 2014.
- Butler, Mark J. "Unlocking the Groove: Rhythm, Meter, and Musical Design in Electronic Dance Music." PhD diss., Indiana University, Bloomington, 2003. ProQuest Dissertations & Theses Global.
- Complex. "An Idiot's Guide to EDM Genres." Accessed November 16<sup>th</sup>, 2019.  
<https://www.complex.com/music/an-idiots-guide-to-edm-genres/>.
- Egolf, Eva J. "Learning Processes of Electronic Dance Music Club DJs." PhD diss., New York University, New York, 2014. ProQuest Dissertations & Theses Global.
- Franz, Joshua Tyler. "Rhythmic and Formal Analysis of Electronic Dance Music: *House and Drums n Bass*." MA diss., State University of New York, Buffalo, 2019. ProQuest Dissertations & Theses Global.
- MasonBates.com. "Website; About; Listen; Gallery; Curating." Accessed November 16<sup>th</sup>, 2019. <https://www.masonbates.com>.
- Midgette, Anne. "Composer of the Year: Mason Bates." Musical America Worldwide, accessed November 16<sup>th</sup>, 2019. <https://www.musicalamerica.com/features/index.cfm?fid=329&fyear=2018>.
- Rowell, Lewis. *Thinking About Music: An Introduction to the Philosophy of Music*. Amherst: The University of Massachusetts Press, 1983.
- San Francisco Conservatory of Music. "Mason Bates." Accessed November 16<sup>th</sup>, 2019.  
<https://sfc.edu/faculty/mason-bates>.

Zeiner-Henriksen, Hans T. "The 'PoumTchak' Pattern: Correspondences Between Rhythm, Sound, and Movement in Electronic Dance Music." PhD thesis, University of Oslo, Oslo, Norway, 2010.