Developing a Pedagogy and Framework for the Analysis of Contemporary Electronic Music

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ABSTRACT

In this paper I examine the development of a new course on the analysis of contemporary electronic music that began with two simple questions: what is music theory and what does it mean to analyze contemporary electronic music?

In addition to the examination of sonic and technological elements of the music, this presentation draws upon recent scholarship in cognitive science (Stanislas DeHaene), critical and digital pedagogy, music theory (Philip Ewell), and Data Feminism (Catherine D'Ignazio and Lauren Klein) to create a theory-based examination of electro-acoustic music that does not erase the people behind the music. It is my argument that by including these concepts we can create a "socially responsible and meaningful" examination of this music that takes into consideration "how power is organized, maintained, and challenged" in the world of music theory, music technology, and music composition.

This presentation will also look at other texts that examine the relationship between bodies and technology and how this informs the development of this pedagogy.

1. INTRODUCTION: WHAT IS MUSIC THEORY?

This paper traces the development of the Contemporary Electronic Music Analysis course I created for our university's music program. It grew out of a need for more coursework in music technology and contemporary technology-based practices as we developed a pathway with a focus on technology through our Master of Arts in Music degree. There was a clear need for a contemporary theory option that moved beyond the idea of 1950s music as modern. We wanted to attract tech-focused grad students and, in conversation with them, we learned that most of our incoming students did not want to take another western-European art music (WEAM) analysis course, a requirement of our program at the time. Our goal then became to create a "yes and" environment that included WEAM for other students of the general master's program that might prefer that course of study, while also developing a contemporary music offering.

Anecdotally, speaking from my experience as a professor at several universities and colleges, it appears that music theory work at the college/university level is frequently about the perpetuation of certain ideologies. This is demonstrated by the works selected for analysis and the analytical methodologies used. For this paper, I will be drawing upon author, literary/critical theorist, and Distinguished Professor of English Literature at Lancaster University Terry Eagleton's ideas on ideology, mainly, that ideology is "a question of who is saying what to whom for what purposes (Eagleton 2007)." While ideologies might have specific lexicons and idioms, as music theory does, "what is primarily ideological about these terms is the power-interests they serve (Eagleton 2007)." This includes works selected for analysis that reinforce ideas of canon, historically constrained time periods that provide an illusion of selection by the student, as well as what author, music theorist, and CUNY Graduate Center professor Philip Ewell refers to in his book *On Music Theory, and Making Music More Welcoming for Everyone* as exclusively "notes on the page (Ewell 2023)." In other words, pitch- and rhythm-based methodologies. At times these methodologies feel like a rite of passage and seldom, if ever, are used by students upon leaving the university environment. Students see courses that reflect these values, and they are increasingly outspoken about how the works selected and methodologies used further a particularly ideological view of music. These same students are not as open to arguments from authority as previous generations of students. I.e. an administrator or professor saying "this is necessary for your education because I say it is," is no longer enough.

Students desire coursework that is relevant to their personal musical practice, which for some may indeed be WEAM and music seen as canonical in specific circles. For those with a contemporary practice, they may want an introduction to the lineage of music theory through the lens of WEAM practices, but not have that lineage make up the entirety of their coursework. They frequently desire more popular and contemporary music theory options.

Relevance is key to the brain's ability to learn. As neuroscientist and Stanford professor David Eagleman in *Livewired: The Inside Story of the Ever-Changing Brain*, writes,

> Reward is a powerful way to rewire the brain, but happily your brain doesn't require cookies or cash for each modification. More generally, change is tied to anything that is relevant to your goals. If you're in the far north and need to learn about ice fishing and different types of snow, that's what your brain will come to encode. In contrast, if you're equatorial and need to learn which snakes to avoid and which mushrooms to eat, your brain will devote its resources accordingly. Using relevance as its North Star, the brain flexibly picks up on important details. Its billions of neurons serve as a colossal canvas for painting the world we

> happen to find ourselves in, and with it we develop expertise in whatever has relevance to us…When a task is roughly aligned with our larger goals, our brain circuitry comes to reflect it (Eagleman 2020).

I sometimes feel that the importance of relevance is lost in power struggles within music departments. Many faculty protect areas that they deem relevant to all, rather than seeing relevance as situational and different for different students. When students question the value of certain coursework, I argue that we should consider their questions and be open to new ways of thinking, knowing, and communicating, using these considerations to constantly address and readdress challenges of historical practices within the academy. As a professor, I am looking for a pedagogy that embraces those ideals.

One problem with much of music theory is that it abstracts sonic data from music made by humans and treats that data separately from the human activity. Why is this a problem? Music making is a human phenomenon. Not only the act of making it, but it is also a cognitive phenomenon that includes conceptualization, ideation, and cultural behavior. Ethnomusicologist and Indiana University professor Alan Merriam wrote the following in 1964: "[M]usic involves not only sound but the human behavior which is a prerequisite for producing sound. Music cannot exist on a level outside the control and behavior of people, and several kinds of behavior are involved." Merriam goes on to write: "[c]onceptual behavior, ideation, or cultural behavior involves the concepts about music which must be translated into physical behavior in order to produce sound (Merriam 1980)."

The abstraction of music from conception and ideation also perpetuates false ideas of objectivity. Or as Donald C. Mikulecky (former Senior Fellow at the Virginia Commonwealth University Center for the Study of Biological Complexity) wrote, from "confusing living organisms with machines" and the output of the organism as separate from the organism (Mikulecky 2007).

Cognitive linguist and philosopher George Lakoff, along with philosopher and professor Mark Johnson, wrote that "Truth is always relative to a cognitive system (Lakoff and Johnson 2003)" and that accepting this relativity to the system is not a giving into "radical subjectivity (Lakoff and Johnson 2003)" but the necessary inclusion of the cognitive system in the analysis, what he refers to as an experientialist synthesis of objectivity and subjectivity that unites reason and imagination, creating an "imaginative rationality (Lakoff and Johnson 2003)." Following this logic, the idea that a perspective of "objectivity" in music theory, which is achieved by abstracting the sonic data from human activity, can then be seen as an incomplete perspective.

"All knowledge is situated and embodied," as data is no longer necessarily seen as objective as Catherine D'Ignazio (professor and Director of the Data + Feminism Lab at MIT) and Lauren Klein (Winship Distinguished Research Professor and Associate Professor in the departments of Quantitative Theory & Methods at Emory University) argue in *Data Feminism*. Abstracting data to gain insights opens up dialogues about power and the use of data to maintain power and privilege. They write,

> We use the term power to describe the current configuration of structural privilege and structural oppression, in which some groups experience unearned advantages—because various systems have been designed by people like them and work for people like them—and other groups experience systematic disadvantages—because those same systems were not designed by them or with people like them in mind (D'Ignazio and Klein 2020).

Whereas they are discussing larger social and political structures and systems, this also pertains to smaller systems and structures, like the classroom and the discipline of music theory.

When data is abstracted, it also becomes "opaque" and scares people off because they think they need special knowledge to understand. In *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* Cathy O'Neil (award winning author, mathematician, and creator of mathbabe.org) writes, "Like gods, these mathematical models were opaque, their workings invisible to all but the highest priests in their domain…Their verdicts, even when wrong or harmful, were beyond dispute or appeal (O'Neil 2016)."

I also believe these arguments pertain to specialized structures such as music education and theory, distributing power to those that have special knowledge about specific models of representation and understanding. This may be a bit of a dramatic statement for music theory, but when the selections for analysis are curated to exclude the music that students are making and listening to, and use methodologies that perpetuate a specific type of understanding, knowing, and value-judgment making—these dramatic statements can pertain.

In addressing the challenges of music theory my hope is to not continue to perpetuate false ideas of objectivity represented in ideas such as: abstraction of materials as a form of objectivity about music, creation of canons, and limiting the value of participation of the actual human in the art form. At the same time I hope to not perpetuate false ideas about subjectivity: that there is indeed value other than what we assign. Like Lakoff and Johnson, my goal and hope here is to unite reason and imagination, and then work from the idea that music theory can be an 'imaginative rationality' opening up multimodal and different possibilities for the construction, representation and communication of knowledge about music.

2. ONE POSSIBLE MODEL

To achieve this pedagogy, I would argue that we must first acknowledge that music is not abstract facts, but is particular to human cognitive and behavioral activity. Methodologies of analysis need to include these topics for a more complete understanding of music.

The second goal is to bring contemporary insight into how humans learn. Modern pedagogical theory and cognitive science are in agreement: learning is not about the transfer of content, but about the construction of knowledge (Freire 2000; Dehaene 2020). The idea that music is about transferable facts can end up constraining what is learned, as “facts” may be perceived by both the student and professor as the endpoints of knowledge, the goals of the course, and what is needed to know for a grade. As neuroscientist and professor Stanislas Dehaene writes, this idea can also lead to professors talking too much, which is one way they can crush the exploratory curiosity of the student as well as constrain what students learn to what the professor gives, limiting new areas of knowledge and discovery through exploration (Dehaene 2020). Students learn more from interacting with the material and interacting with each other about the material than from professors talking about the material.

With these considerations, the classroom environment should then be about the interactive construction of knowledge. Here are some ideas about how this can be accomplished:

1. Lecture no more than 50 percent of the class (Dehaene 2020). I focus on Dehaene’s four pillars of learning: attention, engagement, error feedback, and consolidation. Attention comes through the aforementioned relevance, engagement through encouraging curiosity, error feedback through feedback that occurs close to the engagement of the material, and consolidation through sleep, which is out of our control (Dehaene 2020).
2. Every week, students
    a. Read and write
    b. Discuss readings together in seminar
    c. Have writing or analysis projects due
    d. Present these writing and analysis projects to each other and the professor
    e. Critique each other. This is very important: Criticism needs to be defined not as finding fault, but getting to what is critically important in a presentation and how to best bring that out. This constructs knowledge in multiple arenas, not only providing improvement to presentations but helping students refine the ways they communicate about music and with each other.
    f. This puts error feedback into immediate proximity of the projects, rather than coming weeks later as attached notes and grades.
3. All meetings are about active engagement of the material, contrasted with lecture models.

3. WHAT DOES THE CONTENT LOOK LIKE?

My seminar description goes into a little more detail than our standard student learning objectives, expressing the goals I have for the course. From the syllabus:

> The goal of this course is to increase music students’ understanding of different modes of listening and analyzing, gaining insight into the sonic qualities and social context of electronic music. Students will learn and employ emergent tools for research, analysis, and media-rich digital scholarly communication for their final research projects.
>
> This course will provide students—in combination with the technical and creative work—the opportunity to develop their abilities in oral and written communication: employing the skills and tools of critical thinking, engagement, and the digital humanities.
>
> This will involve: 1) Written communication of research including close listening, thick description, critical reception and other text-based research methodologies. 2) Software-based analysis and annotation (posting of images, notes, videos, audio files) and; 3) Presentation and discussion with the class.
>
> Tools used will be Zotero, Google Docs, Sonic Visualizer with various plugins, Scalar, Hypothesis, Lexos, Zotero, and mind-mapping, graphing, drawing, annotation software of your choice, video editor of your choice, and audio editor of your choice.

The coursework expectations and grading are developed in conversation with the students. I tend to draw heavily upon labor-based grading as developed by Asao B. Inoue, author and professor of Rhetoric and Composition in the College of Integrative Sciences and Arts at Arizona State University (Inoue 2023).

The first question we discuss is, “What is music theory?” This is frequently a difficult question for the students to answer. The usual answer is the description of the activity they do in music theory classes.

This is followed with a week of readings assigned in a variety of scholarly arenas: pedagogy, ethnomusicology, musicology, cognitive science, cultural studies, mixing, genre studies, and of course, music theory. The variety of readings undoubtedly influence the updating of the answer to the previous week’s question. Even as guides in a seminar, professors wield power to create direction by the readings we choose.

Music theory, in discussion with the students, becomes not a singular “thing,” but many things. Students, and myself, are very much attracted to Philip Ewell’s aspirational definition of music theory as, “the interpretation, investigation, analysis, pedagogy, and performance of any music from our planet (Ewell 2023).” (The one exception being that we would like to include music from other planets.)

Ewell brings multiplicity to the definition of music theory, with the understanding that the roots, in particular of American music theory, grew out of a desire to distance theory from the history-focused work of musicology and adhere to scientific idealism in the reduction to formalistic elements of the music, in particular, the score.

> Since its inception in the mid-twentieth century, American music theory has tried to maintain a ‘notes on the page’ distance from the human experience, in which the musical score is paramount and all other avenues of inquiry subordinate (Ewell 2023).

In the mid-twentieth century at the time this was happening, think about "who" was at the top, and who would benefit. From Ewell,

> …music theory's break with the human experience allowed it to further enshrine white cisgender men as those at the top of the heap, those who were allowed to tell music theory's history and its stories, those who reaped the most benefits of a system they contrived for themselves (Ewell 2023).

This directly echoes D'Ignazio and Klein, who "use the term power to describe the current configuration of structural privilege and structural oppression, in which some groups experience unearned advantages—because various systems have been designed by people like them and work for people like them (D'Ignazio and Klein 2020)." In electro-acoustic music, this played out as well. At the same time Pierre Schaeffer, Pierre Henry, Karlheinz Stockhausen, Edgard Varèse were being enshrined, what were the experiences of others such as Else Marie Pade?

4. DEVELOPING FRAMEWORKS

Over the next few weeks, course discussion moves to "what should go into an analysis," the answers given by students certainly being informed by the variety of readings and the discussions. This is the development of their framework/rubric for analysis.

Here are examples from two different semesters of the course, each with similarities but also differences. These examples are from the seminar participants themselves, who created their own framework/rubric for their music theory course projects. In agreement with Ewell, we developed our ideas that a music theory analysis project should cover aspects of many of the elements he mentions, and that an analysis focusing solely on abstracting sonic material would fall short. Whereas the first time I offered the seminar the participants developed a much more detailed breakdown of what should go into an analysis, the second class developed a more synthetic, yet equally as broad, set of requirements. Both courses were small, and had an excellent success rate in creating projects that met the following ideals, which became their framework/rubrics.

Course 1

1. Composer's biographical Information including culture, family, nationality/geographical background, educational background, influences, who they studied and worked with, who they might have admired or emulated.
2. Ethnographic information including information available from interviews with the composer, co-workers, family, enemies, et cetera, including the students themselves reaching out to the composers.
3. Sonic and formal elements of the music including examinations of timbre, rhythms, pitches and their arrangements, samples, processing techniques/audio effects, instruments, text, form/arrangement of sonic material, use of improvisational elements, novelty/interest (ear candy), editing/mixing techniques including balance, frequency range, panorama, dimension/ambience, and layering/texture.
4. The music's cultural significance and function
5. Visual aspects
6. Programmatic elements
7. The method of transmission
    a. Live performances
    b. Notated elements
    c. Recordings used
    d. Physical Media
    e. Radio
    f. Streaming (interactive/radio)
    g. Digital
    h. Social Media
8. Critical Reception
    a. Audience
    b. Critics
9. Physical/Biological/Physiological Response
10. Psychological Response: Individual, Collective.
11. And address possible challenges in the analysis of electronic music including lack of information and lack of scholarly information. (Solution: Go to primary and tertiary sources, do your own ethnographic work.) Lack of prior analyses. (Solution: Do the work.) Lack of access to original recordings, source sounds, and source technologies. Difficulty in general is to be expected: the goal is to find solutions.

Course 2

1. Understand: understand the composer's reason, techniques and ways they present/achieve it. I.e., What is their point? Who is doing it, how are they doing it, why are they doing it, and for what reason?
2. Situate: understand (and be sensitive) to the context (and all that means: social, cultural, embodied) in which the music was created. When and why was it written? "Always historicize (Jameson 1982)."
3. Critically engage: How does this music connect, diverge, or contribute to existing bodies of knowledge about music? How does this music connect, diverge, or contribute to your personal beliefs? What is new? Who cares? Is this music worthwhile? How and why? We do not necessarily perpetuate artist statements, and can even challenge them. Artists' statements may be good, but may be problematic. Disrupting problematic artist statements can be good.
4. Feeling it: what emotions/thoughts provoked.
5. Biographical data
6. Sonic material: durations, tempo, timbre/timbral resources, dynamics, form - engage the form as a whole (through-composed, sectional, et cetera), instruments/textural elements/sound sources (Causal listening) (Chion and Murch 1994), technological resources, pitch, rhythm, harmony, counterpoint, technological affordances (Gibson 1979), and Paul Theberge (Any Sound You can Imagine) (Théberge 1997).
7. Who is being credited, Who is not being credited?

8. Reception: public perception, social media, critical reception.

The students start with presenting multiple examples of other people's analyses and examining them in their own context, and then examine how these analyses might fit—or not—into the framework/rubric they collaboratively developed in class. The students then move onto their own projects and final projects, an analysis of choice following the framework/rubric the students developed with the only real restriction being the music examined must be primarily electronic.

Multiple versions of the final project were completed. The first version of the project was a formal conference paper presented during a seminar that became our mini-conference. The paper was formatted for publishing, including proper citations, and orally presented with an accompanying slideshow that included examples, et cetera. We held a mini-conference where the students presented to each other. In addition to the analysis and constructive critical engagement by their peers to help them further refine their analysis, conference applications came out of this project, students practiced building quality slides, presentation, reading in public, et cetera.

The second version was an expanded version of this conference paper using Scalar. Scalar is a web-based content management system that offers features appropriate for scholars that go beyond traditional web sites. It is developed by the Alliance for Networking Visual Culture, the University of Southern California, and supported by the Andrew W. Mellon Foundation and the National Endowment for the Humanities. From their website:

> Scalar is a free, open source authoring and publishing platform that's designed to make it easy for authors to write long-form, born-digital scholarship online. Scalar enables users to assemble media from multiple sources and juxtapose them with their own writing in a variety of ways, with minimal technical expertise required…Scalar also gives authors tools to structure essay- and book-length works in ways that take advantage of the unique capabilities of digital writing, including nested, recursive, and non-linear formats. The platform also supports collaborative authoring and reader commentary ("Alliance for Networking Visual Culture: About Scalar," n.d.).

Using Scalar, students in the seminar created multimodal presentations with detailed annotations, texts, images, audio cues, video cues: ideas and methodologies that could unfold in a non-time-limited presentation (contrasted with the conference paper).

The works to be analyzed were selected by the students, and were of great variety, including composers that might be seen as part of the canon of electronic music, to more popular artists, noise music, improvisational music, and more. This list is a strong example of the variety of interests and musics that students find relevant. The first class analyzed works by Elliot Sharp, *Virtual Stance*; Carl Stone, *Banteay Srey* (both Stone and Sharp included ethnographic material the graduate students acquired through direct interviews with the composers); Francis Dhomont, *Theme de la Fuite*, and; Real Loud, *Forbidden Subjects*.

From the most recent seminar (that made the more conceptual list as to what to include in the analysis) also featured a commendable variety of music, and I feel all members did an outstanding job on their analyses, examining works by Alexandria Smith, *Heart Music for Milford Graves*; Elvin Brandhi and Lord Spikeheart, *Drunk in Love Hate*; Regan Bowering, *Cleave*; Mort Garson, *Journey to the Moon and Beyond*; and Laurel Halo, *Atlas*.

The examples below are screenshots from two of their Scalar websites. I have title pages with menus showing the sections.

Figure 1. Cover page and menu from, from the analysis of Alexandria Smith's *Heart Music for Milford Graves*

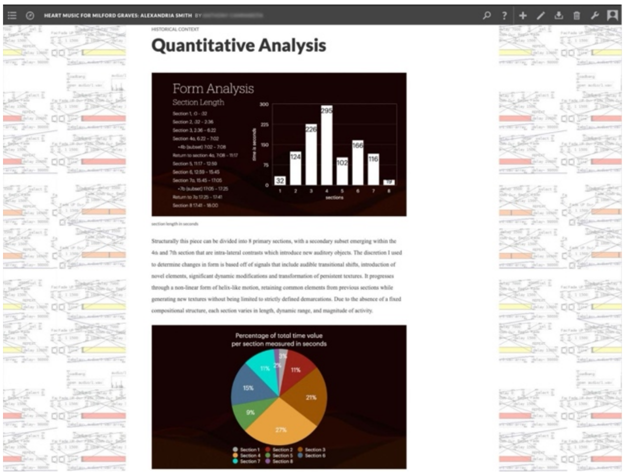

Figure 2. Quantitative Analysis page from, from the analysis of Alexandria Smith's *Heart Music for Milford Graves*

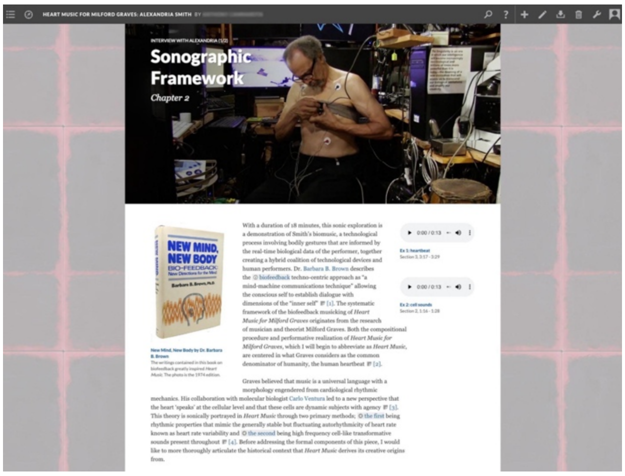

Figure 3. Sonographic Framework page from, from the analysis of Alexandria Smith's *Heart Music for Milford Graves*

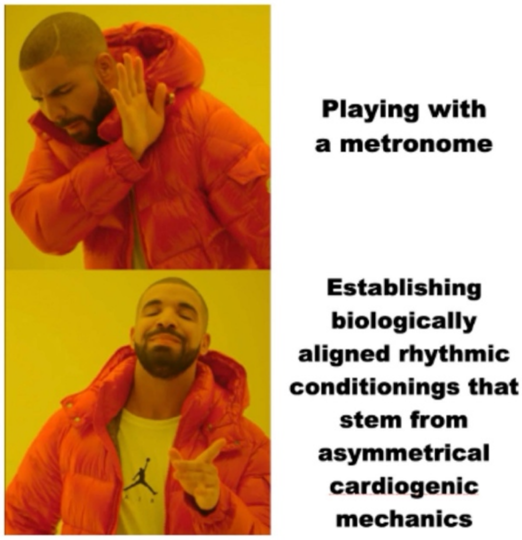

Figure 5. Embracing meme culture, from the analysis of Alexandria Smith's *Heart Music for Milford Graves*

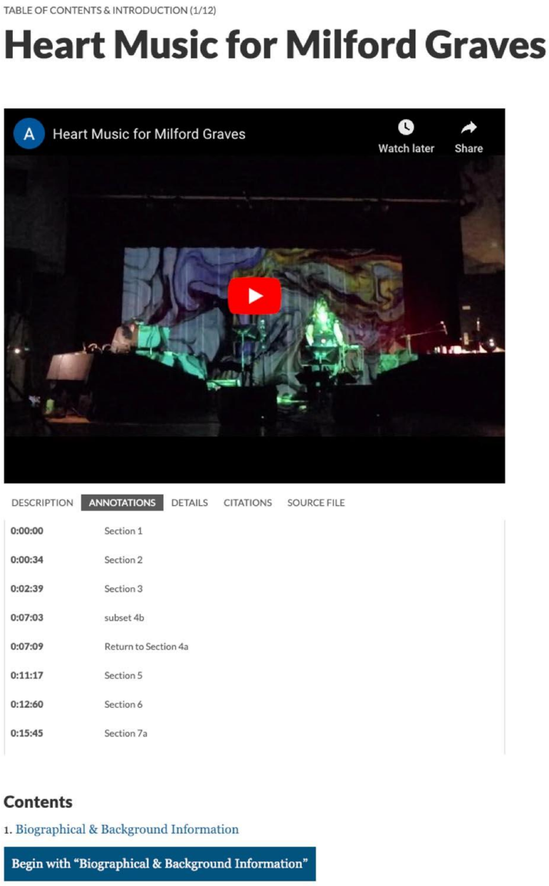

Figure 4. Video cues page from, from the analysis of Alexandria Smith's *Heart Music for Milford Graves*

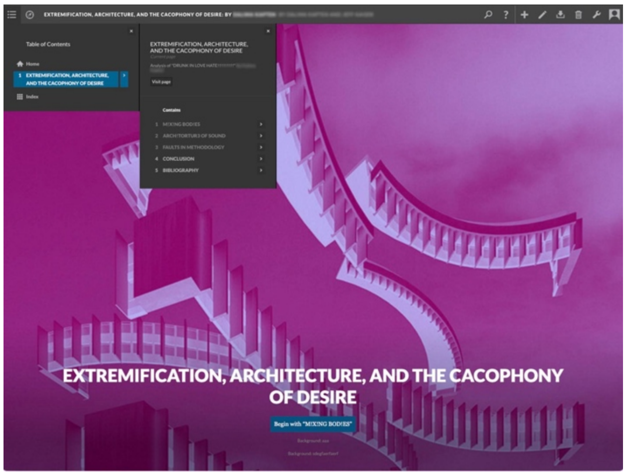

Figure 6. Cover page and menu from, from the analysis of Elvin Brandhi and Lord Spikeheart's, *Drunk in Love Hate*

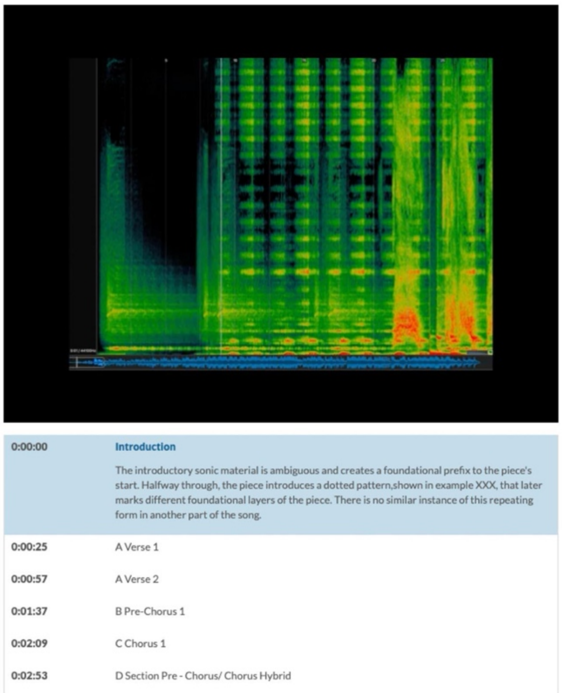

Figure 7. Sonograph from, from the analysis of Elvin Brandhi and Lord Spikeheart's, *Drunk in Love Hate*

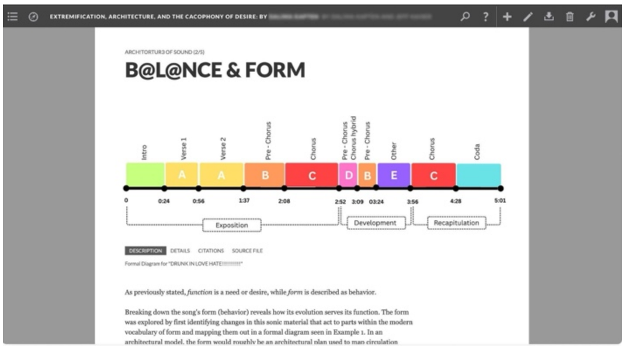

Figure 8. Form from, from the analysis of Elvin Brandhi and Lord Spikeheart's, *Drunk in Love Hate*

5. CONCLUSION

The focus of the first section of this paper was on pedagogy, "what is music theory," and to a certain extent, an examination of ideology and power structures in music theory, giving us the "why" we should consider different ways of doing music theory. The second section was an examination of "how" things could unfold. The third section shared "what" it looked like as it unfolded in my course. These topics are all meant to inform decisions as to how and what to include, and to encourage us to constantly examine the "why" behind the courses we design, allowing students to create their own frameworks/rubrics that embrace imaginative elements as to what should be included in an analysis, and work towards the goal of "imaginative rationality."

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