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Score, Recording, and Bytes: Influence of Musical Medium on Analysis

ABSTRACT

I draw explicit connections between the ontological status of musical work and the four modes of buying music: 1) paying for a musician; 2) for a score; 3) for a physical recording; and 4) for a streaming service. Among the four modes, I argue that the physicality of scores and recordings — the second and third modes — influenced the development of music analytic methods that generally concern the functionality of music's internal elements and their organization. A physical object can be taken apart into smaller pieces and then be put together to return to the original condition, which influenced the method of analysis that segments music into smaller pieces for closer investigation. A musical work without a physical medium — the fourth mode — does not afford such physical experience of dis- and re-assembly. The difference of tactile experience regarding the mediums, in turn, generates different relationships between listeners and music. The marketplace for music solidifies the concept of musical work because the experience of exchanging money and music requires a clear ontological boundary as a product on the market. As the way we acquire music shifts from purchasing physical mediums to non-physical ones, music analyses that focus on the function of the internal components might lose its explanatory potential. A musical work, as a raw material for music analyses, would be considered no longer as a result of the functional connection of its parts but would be considered, for example, as a collection of sonic artifacts in temporal succession.

1. INTRODUCTION

KH000//Kopimashin is an art installation by Peter Sunde, the co-founder of the website *Pirate Bay*. Made with a Raspberry Pi, an LCD display, and Python code, *Kopimashin* 'creates an endless amount of copies of a specific audio track (Gnarls Barkley's 'Crazy')' at the rate of one hundred copies per second (Sunde 2015).¹ The bottom of the display shows 'amount of copies created and the dollar value it represents in losses' for the copyright holders of the song, Warner Music and Downtown Records. Each copy is calculated at 1 dollar 25 cents (Sunde 2015). Extending the copyright holder's claim *ad absurdum*, Sunde seeks to 'bankrupt the recording industry' by inflicting millions of dollars of damages on the record label. But, of course, the record companies are doing just fine.

Besides the playful criticism of the inadequacy of current copyright law, the installation raises questions about the ontology of musical work in the context of the post-industrial society of abundant self-same copies. Does the fact that it takes just a few clicks to make exact copies change the way we think about musical work? What is the ontological status of the duplicated audio track? What is the ontological status of original works that are prone to this type of unlimited duplication? The

development of recording and distribution technologies, particularly the rise of streaming music services in recent years, demand us to think critically about the answers to these questions. Less than in a ten year's time, music streaming services became the dominant mode of accessing musical experience (Friedlander 2017).² Some questions regarding the ontology of musical work had been raised by numerous musicologists and philosophers in relation to the history of the copyright law (Lütticken 2002; Barron 2006), the performance-oriented ontology (Davies 2009; Cook 2013), the rise of the recording industry (Ashby 2010), and the ontological status of performance (Alperson 2010; Kania 2011; Love 2016).



Fig. 1. *KH000 // Kopimashin*.

In this talk, I draw explicit connections between the ontological status of musical work and the four modes of buying music: 1) paying for a musician; 2) for a score; 3) for a physical recording; and 4) for a streaming service. Doing so takes seriously the medium of musical work and how its physical form may shape the way music is conceptualized. It also helps me to build a common ground for the ontology of musical work which can be elusive depending on the writers on the subject. I adapted the four modes from Attali's 'four stages of music' from his book *Noise: The Political Economy of Music* (1985). Similar to his theory, the four modes have emerged at different historical moments and reshaped how one conceptualizes music.

Among the four modes, I argue that the physicality of scores and recordings — the second and third modes — influenced

¹ The destination folder is '/dev/null' which effectively deletes the copied files as soon as each copying process is completed.

² According to one estimate, between 2015 and 2016, music streaming services gained 75 % increase in the total music consumption in the United States while the sales number for CD albums, digital albums, and digital tracks all decreased more than 15 % (Nielson 2017).

the development of music analytic methods that generally concern about the functionality of music's internal elements and their organization. A physical object, particularly an industrial product, is readily available to be taken apart into smaller pieces and then to be put together to return to the original condition. A musical work without a physical medium — the fourth mode — does not afford such physical experience of dis- and re-assembly. The difference of tactile experience regarding the mediums, in turn, generates different relationships between listeners and music. The marketplace for music solidifies the concept of musical work because the experience of exchanging money and music requires a clear ontological boundary as a product on the market. As the way we acquire music shifts from purchasing physical mediums to non-physical ones, music analyses that focus on the function of the internal components — e.g., tonal function and formal functions — might lose its explanatory potential. A musical work, as a raw material for music analyses, would be considered no longer as a result of the functional connection of its parts but would be considered, for example, as a collection of sonic artifacts in temporal succession.

First, I will present the four modes of buying music and how they relate to Attali's theory. Afterward, I will focus on the modes of purchasing physical mediums and how they may have influenced the development of the conventional music analytic tools. I will end with a short case study of a DJ mix set by Four Tet's *0181*, that use the sample from Joe Henderson's 1976 recording of *Black Narcissus*, as an example of how the music without a physical medium might be analyzed. I chose a DJ mix because it is commonly heard in a club as a communal experience without an explicit exchange of money and music. Although one can purchase a mixed set as a physical recording, I believe that these recordings are the secondary mode of consumption to the experience of listening in a club. This way, a DJ mix becomes an example of music as a collection of sound objects whose meaning is derived not from the functional relationship of its internal parts but from the external reference — because it is outside of the mix — of the samples used.

2. FOUR MODES OF TRANSACTION

2.1. Attali's Four Stages of Music

In *Noise: the Political Economy of Music*, Attali outlines 'three strategic usages of music by [political or economic] power':

it seems that music is used and produced in the ritual in an attempt to make people *forget* the general violence; in another, it is employed to make people *believe* in the harmony of the world, that there is order in exchange and legitimacy in commercial power; and finally, there is one in which it serves to *silence*, by mass-producing a deafening, syncretic kind of music, and censoring all other human noises. (Attali 1985, 19, his emphases.)

Each of the three usages — forget, believe, and silence — maps on to sacrifice, representation and repetition.

When power wants to make people *forget*, music is ritual *sacrifice*, the scapegoat; when it wants them to *believe*, music is enactment, *representation*; when it wants to *silence* them, it is re-produced, normalized, *repetition*. (Attali 1985, 20, his emphases.)

He adds 'composition' as the fourth stage that breaks the cycle of duplication in the repetition stage. But the composition stage is not supported by as much historical evidence as the other three because it was a speculative forecast at the time of writing rather than a formulation of the past events. The four stages are not mutually exclusive although the introduction of a new stage marks a shift of power and change of power relation.³

Since the writing of Attali's book in 1977 (French edition), a lot has changed in music distribution as well as the global economy. The composition stage did not overturn the repetition stage as he imagined. Instead, the repetition intensified beyond the physical realm as music sheds its physical container thanks to the development of digital file sharing capabilities. Instead of the record company and ultimately the economic power dictating the means of repetition, the new technology allowed anyone with a computer and access to the internet to copy and distribute freely. Initially, websites like *Napster* and *The Pirate Bay* facilitated the spreading of illegal copies of audio files. As demonstrated in Sunde's art installation, digital piracy is different from stealing goods. And the emergence of a new technology necessitated an entirely different source of revenue to regulate and commodify the new medium for the copyright holders. Initially, the economic machine sought to fight against the new technology through legal means of the old code, which is through a cease and desist letter to copiers and uploaders. But ultimately, a new mode emerged. A listener/consumer no longer pays for a single musical piece or an album, but pays a monthly subscription fee and gain access to unlimited amount of music through a service like *Spotify*, *iTunes* and *Google Music*. The music industry positions these new services as a way to regain control of their financial interest. The fight against online piracy, for example, was one of the legitimating arguments for the Spotify's free service. The CEO of Spotify Daniel Ek said: 'Here's the overwhelming, undeniable, inescapable bottom line: the vast majority of music listening is unpaid. If we want to drive people to pay for music, we have to compete with free to get their attention in the first place' (Welch 2014).

The music streaming service makes the need to collect recordings to 'stockpile use-time in the commodity object', a central concept in Attali's theory (41), obsolete because the listener is granted access to an already stockpiled collection of music whose potential duration for playback could exceed one's lifetime. Attali makes a similar observation in regards to recordings, but the main difference is that the streaming service eliminates the process of buying records. Previously, 'stockpiling [was] a substitute, not a preliminary condition, for use' (101). People bought recordings not merely to listen from beginning to end, but to put them on the shelves for the possibility to listen and enjoy on demand. The subscription service democratized the stockpiling by granting access to a nearly limitless resource of music. For this reason, I consider the

³ This narrative resembles Foucault's *épistème* from his book *The Order of Things* (1970), but Attali does not reference Foucault's book as a basis for his ideas. He only cites Foucault once when discussing the intrinsic and extrinsic values of music and its representation (Attali 1985, 58). Considering the date of the publication, the time it took to write a book, and Attali's Marxist influence, it is possible to suppose that Attali had arrived at his thesis independently from Foucault's ideas in *The Order of Things*.

streaming service as a stage separate from Attali's repeating stage.

2.2. Four Modes of Transaction

The first three modes correspond to Attali's three stages: sacrifice to paying for performance, representing to paying for the printed score, repeating to paying for recording. Attali's last stage, composition, is replaced with paying for streaming service (Table 1).

Attali's Four Stages		Modes of Transaction
Sacrifice	→	Performance
Representation	→	Score
Repetition	→	Recording
Composition	→	Streaming Service

Tab 1. Correspondence between the four stages and modes.

My four stages correspond to the historical development of musical transaction. Before the standardized music notation and score, music and musicians were inseparable. One could only pay for musicians to experience music. As Lydia Goehr claims, 'prior to 1800, the work-concept existed implicitly within musical practice' (1997, 114).⁴ With printed scores, musical work began to emerge as an autonomous object separate from the musician. Attali also observes:

In representation, the musician no longer sold his body. He ceased to be a domestic, becoming an entrepreneur of a particular kind who received a remuneration from the sale of his labor. (Attali 1985, 57.)

Because a separate marketplace for printed scores had emerged beside hiring musicians, a printed score became a separate medium of value. With recording, which corresponds to Attali's repetition stage, one could access the sound of music directly as interpreted by professional performers. A recording, whose value is only realized in real-time playback, made possible 'stockpiling' of time (Attali 1985, 88–9). Through buying and selling recordings, the marketplace came to exchange the time that is embedded in a recording.⁵ Streaming services dissolved the fixed duration of each recording into one continuous time. Previously with recordings, one could purchase each recording separately, which, in turn, regulated the access to the recorded performance by means of monetary transaction. The more financial resources you have, the longer you could listen to music. With streaming, the access to recording was democratized by allowing a subscribed member of a streaming service nearly unlimited duration of playback. From the perspective of the market, therefore, the nature of the product is completely different.

2.3. Physical Mediums and Music Analytic Tools

The emergence of the marketplace for printed scores necessitated a method of explaining music that is independent of

how the musicians might interpret in their performance because the distributions of the medium occurred according to the demand of the market, outside of the control of the musicians. Although the scores were valuable because of what they represent in them, which is the performances of them, separate marketplaces for the score and the performance led both to 'exist as bearers of value', to borrow Foucault's language from his analysis of the political economy of during the same period (1970, 190). As a bearer of value and as a physical object, the scores came to have a life of its own as it were. The music of the late eighteenth and nineteenth centuries took on the characteristics of a physical object, more specifically a living organism, which could be segmented and examined to determine the function of its internal parts. The concept of musical function, in this context, could be considered as a metaphoric adaptation of the concepts from biology during the same period. Foucault, through the investigation of Georges Cuvier's comparative anatomy, argues that:

The analysis of organisms [...] presupposes [...] a table, composed not of the elements, which may vary from species to species, but of function, which, in living beings in general, govern, complement, and order one another: not a polygon of possible modification, but a hierarchical pyramid of importance. (Foucault 1970, 290.)

In other words, the actual shape of hearts may differ between species, say between a frog and a human, but their function as a cardiovascular organ makes them identifiable as a functionally equivalent organ. A similar turn of treating functionality as the organizing mechanism also found fertile ground in music analysis.

Growing number of music analytic methods began to use the concept of function as one of the main avenues to explain away how a piece is put together. This trend was made possible through the widespread popularity of printed score and later recordings. For example, the terms tonic, dominant, and sub-dominant were originally used by Rameau to describe the relationship between adjacent chords. Later, each term grew to accommodate more than just the three notes by each becoming a tonic function, dominant function, and sub-dominant function. At the same time, any notes or chords that are outside of the three functions became non-functional, which meant less important. Above quote from Foucault can be easily turned into the statement which describes the rise of a new type of music analysis during the late eighteenth and nineteenth centuries: the analysis of music presupposes a table, composed not of the individual notes and chords, which may vary from pieces to pieces, but of function — such as tonic, predominant, and dominant —, which, in tonal music in general, governs, complements, and orders one another. The three main functions form a hierarchical pyramid of importance.

Based on this observation, we see analyses coalescing around two categories. One is the analyses that seek the meaning of music based on the relationship of its internal elements. This category of analyses, I argue, is rooted from the autonomy of a physical medium, and it mostly discusses the functionality of the internal element. Many of the conventional music analytic tools produce this type of analyses. The other category is one that seeks the meaning from outside sources. This type, I argue, is not bounded by the limitation set by a physical medium because, in referencing external sources, the musical piece becomes less of an autonomous object and more

⁴ Goehr builds upon Attali's idea (among other sources) to claim that the musical work-concept emerged in the late eighteenth century as a regulative concept that shaped how composers, performers, and listeners behaved (Attali 1985).

⁵ Attali makes a distinction between the time it takes to play the recording and the time that is embedded in the recording. Adopting Marx's terms, the 'use-value' and 'exchange-value', Attali calls the former 'the use-time' and the latter 'the exchange-time' (Attali 1985, 101).

a part of a network of signification. The topic theory which discusses how an internal musical element calls out an image outside of the music — e.g., birdcall and hunting horns — is one such example. An analysis without physical medium would be more in the second category because, without the material boundary, an internal logic of functional connection would not be possible.

In categorizing the two types of analyses, the musical work becomes a boundary that defines inside and outside. With the boundary of musical work as the extremity, an analysis can begin disassembling the musical work into smaller pieces for a closer investigation. But, as Kevin Korsyn observes, the boundary is not always clear-cut. Korsyn, by citing four groups of theorists with distinctive view on interpreting Chopin's Preludes Op. 28 shows that it is often a part of music analyst's jobs to draw a convincing line of segmentation. Korsyn writes:

music analysis often tries to police the boundaries of a piece by differentiating legitimate repetitions that create motivic coherence within the piece from illegitimate repetitions that lead outside that piece, disrupting the hierarchy between inside and outside, content and frame. (Korsyn 2003, 98.)

Lines of segmentation are sometimes apparent on the musical surface. But often, the line could be only deduced afterward by grouping together coherent units within the piece. Constructing coherence within a piece of music, in turn, clarifies the disjuncture within it. In any case, there is always an undeniable boundary when dealing with a physical medium, which is the physical object itself. On a conceptual level, the segmentation of a musical work, whether it comes before or after the analysis, can always be grounded in the tactile experience of holding a printed score or a recording in hand.

3. ANALYZING MUSIC WITHOUT A PHYSICAL MEDIUM

A music analysis often begins with a question: 'why did the composer choose to use this sound here over others?' In the analysis of a conventional tonal music, the answer often comes from investigating the internal relationship between the melody and harmony. For example, a half-step upper neighbor figure in the opening melody might be linked up in the middle section's modulation to the key that is a half-step above the tonic. Likewise, a large leap in the melody followed by the stepwise motion later in the piece might be explained as filling up the gap created by the leap. These answers provide a satisfactory explanation of the musical events as they relate to other internal musical elements. If you were to take a DJ mix seriously and to analyze it with the similar degree of analytic vigor, what would the analysis look like? On the one hand, segmenting a DJ mix into small functioning parts seems to be an exercise in analytical truism because, by definition, a DJ mix is a collection of musical quotations. Without much effort, the shorter units of the mix are often aurally identifiable. On the other hand, to construct an overarching narrative spanning the entire set, as you would in the conventional tonal music analysis, would seem superfluous because the mix itself is a type of a narrative performed by the DJ. Adding analyst's narrative to form such a narrative would require hierarchical relationship among the tracks. Since all internal tracks are borrowed from preexisting tunes, it would be hard to convince a single narrative, other than, perhaps, the constant bpm of the mix.

This does not mean, however, that one can investigate the transition from one track to the next. In fact, linking tracks that are otherwise considered unrelated is how DJs usually demonstrate their technical prowess. As Kyle Adams observes mashups by DJ Earworm and Girl Talk, 'the cleverness and intricacy of their combination become the locus of creativity in the composition' (Adams 2015, 11). In this regard, many DJs incorporated classical and jazz music to prove their ability to contextualize in their work the types of music that are often considered highbrow and unrelated to a dance floor.⁶ In 2013, an English electronic musician Kieran Hebden, who is best known for his stage name Four Tet, compiled the materials that he had been working on between 1997 and 2001 and released them as an online mixtape, *0181*.⁷ Twelve minutes and fifty-five seconds into the set, there is a sample from Joe Henderson's 1976 recording of 'Black Narcissus' from the album with the same title — perhaps the only contributing factor for recognizing this sample as an alteration of the Henderson recording the timbre. The chord progression, which is often the primary identifying factor for a jazz music, is non-existent; it only repeats a single chord, the A-flat minor ninth. The meter has changed from 3/4 to 4/4 with added high hats and drums keeping the tempo. There is even no melody present in the sample other than the Fender Rhode from the rhythm section repeating B-flat. In determining how the DJ manipulated the source, the analysis must seek outside of the mixset itself. It is how the DJ manipulated the original material, not the materials themselves, that needs to be investigated, what Adams calls a 'performance of nothing' (Adams 2015, 19). This way, the analysis becomes an analysis of performance, not that of a composition.

Investigations into how precisely Four Tet manipulated the original is outside of the scope of this talk. However, I would like to raise one question relating to the jazz origin of the sample. If he were to manipulate the source material so heavily, why would he even bother to use the sample instead of recording the synthesizer himself? What is the merit of using a jazz sample here? An industrial musician Genesis P-Orridge's comment on h/er creative process might explain the impulse of using the jazz recording:⁸

No matter how short, or apparently unrecognizable a 'sample' might in linear time perception, I believe it must, inevitably, contain within it (and [make] accessible through it), the sum total of absolutely everything its original context represented, communicated, or touched in any way. (Reed 2013, 60.)

In light of this, the DJ may have wanted his mix to possess an image associated with the original tune, or perhaps the prestige associated with jazz listeners in today's listening culture. Also, for the listeners who could identify the origin, his act of re-shaping the original would prove his skills at digital manipulation of the sound.

⁶ Other than the Four Tet example that follows, DJ Mitsu The Beats also used *Black Narcissus* as part of his mix set called *28 Roses*. Also, British electronic musician The Wiseguys used Rachmaninoff's Prelude in C-sharp minor, Op. 3, No. 2 as a sample for their track 'Face the Flames' in their 1999 album *The Antidote*.

⁷ It is released as a free online album and is available at <<https://soundcloud.com/four-tet/0181-1>>, accessed 27/06/2023.

⁸ H/er is the possessive gender pronoun that P-Orridge uses (Battaglia 2016).

4. CONCLUSION

By way of conclusion, I will summarize my talk. I began by raising questions about the ontological status of music when music is primarily bought and sold through the non-physical medium. I then listed four modes of purchasing music. Among the four modes, I argued that paying for printed scores and paying for physical recordings necessitated a method of explaining a musical work on its own terms because scores and recordings are distributed outside of the composers' control in a commercial market. I, then, draw a connection between the biological theory of the late eighteenth and nineteenth centuries and the conventional music analytical method developed during the same period to show that analyzing musical works according to the functionality of their internal elements may have been influenced by the newly emerging biological science at the time. As the way music is distributed changes from physical to non-physical mediums, I argued that analyzing a musical work according to the function of its internal parts may make ways to a different type of analytic methods which seeks to draw a connection between the internal musical elements with the external sources. My investigation into a possible influence of musical mediums as commercial objects on different music theoretical methods shows that music analysis ultimately reflects the society that incubates it.

KEYWORDS

EDM, Musical Ontology, Musical Epistemology, Copyright Law, Musical Medium.

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