

DIGITAL MUSIC USE AS ECOLOGICAL THINKING: METADATA AND HISTORICISED LISTENING

Andreas Helles Pedersen

ABSTRACT

In claiming that metadata possess the power to put historical awareness into the act of listening, this article examines digital music use as an aesthetic situation driven by potentialities of becoming. Working from a theoretical foundation amalgamating digital music archives and metadata as environments the article discusses Georgina Born's notion of musical assemblages alongside the concept of virtuality, and by letting these meet the article argues for a musical assemblage built from sensibilities of becoming rather than layers of mediation. The inner workings of digital music use constitute an ecology in which recorded music history moves and reconnects, and this makes the historicity of recorded music be fluid, thus turning listening into a historicised action. In exemplifying this, the article discusses some of the strategic programming of metadata on the digital music platform Diskoteket, and through an analysis of sampled music, the prospects of recorded music's historicity are shown as affective capacities.

KEYWORDS

Metadata, Digital Music Archives, Musical Assemblage, Virtuality, Listening, Ecology, Recorded Music History

In this article, I explore how the digital life of music impacts listening. I investigate the practices of digital music use as building on musical assemblages.¹ By taking this approach, I discuss metadata as an element that puts interpretive meaning into the actual listening situations of digital music use, and I do so by conducting an analysis of the structuring of metadata on Diskoteket, which is the digital music platform constructed on top of the digital music archive of the Danish Broadcast Corporation (DR).² I have chosen to look at Diskoteket due to its qualities as an enclosed platform and a research tool embedded in a public service organisation. Designed without commercial interests, the main purpose of metadata is here to encourage an informed

listening experience rather than to set out clever ways for indirect control. For that reason, Diskoteket exemplifies a platform letting listening and metadata enter into a dialogue. It is the hypothesis of the article that metadata have an impact on how the content of listening is being historicised by the user-listener. Historicised listening unseals dynamic traces of music histories. The article defines digital music use as the experience of encountering music in a digital setting both aurally, visually, and reflexively. To speak of digital music use is an aesthetic attempt to apprehend a specific formal and material condition that shapes the prospects of the digital music experience. Common for all digital music use is that the nexus of the music's visual presentation and aural perception is formed by the archival (infra)structures that guide the user-listener's experience. I explore digital music use as an endowed aesthetic situation that destabilises the actual listening situations by potentiating imaginaries of listening. This happens due to metadata. Metadata can sculpt the modalities of listening with a relational character that injects an affective level into the reflexive experience. Thus, the article situates metadata as a catalyst for reflexive listening in digital music use.³ The logistical role of metadata plays a huge part in how musical narratives are, and can be, perceived. Because of metadata, digital music use is built up by virtual potentials of reference that can be actualised.⁴

I examine whether the structuring of metadata on a digital music platform can act as a factor capable of historical re-contextualisation in actual listening situations. This examination happens through analytical insight into Diskoteket, which I explore through an example showcasing the platform's programmatic logic in the case of sampled music. Before getting to that, I provide an overview of recent research within the field of streaming music, most of which evade cultivating aesthetic perspectives on actual listening situations. From this overview, I fuse the concepts of digital music archives, metadata, and environment in order to develop a theoretical platform from which to conduct the analysis. Thereafter, I establish a temporal and sensual framework. I discuss Georgina Born's notion of musical assemblages, which I develop with an aesthetic dimension by widening it with the concept of virtuality. Thereby, I cultivate an assemblatic approach to digital music use wherein I maintain that metadata can reinvent the representational character of music. Believing that digital music use fruitfully can be read as a resonant ecology, I argue for the user-listener's experiences as continual amalgamations of musical sound and information that

release new imaginaries of listening.⁵ Through an analysis of some of Diskoteket's assemblatic qualities, I consider how this platform aesthetically makes sense of music as data and in what ways metadata here create a becoming of listening that opens towards dynamic historicised contexts.

TRENDS IN THINKING STREAMING MUSIC

In the last two decades, illuminating academic scholarship that examines streaming music has seen the light of day, and much great work has been done in regards to the impact of technological achievements on musical cultures and listening practices. Much of this research stands on the shoulders of studies that shed light on the transitions in the commodified forms of music since the turn of the millennium. Especially pertinent is the transition from CDs to MP3s. In reflecting on the effects of networking technologies for the actual listening situations, Mark Katz argues that the online accessibility brings radical changes to our relationship with music;⁶ Jonathan Sterne debates the social effects of digitally induced organisation of music and stresses that the MP3 format has strengthened the thingness of music;⁷ and the term “digital music commodity” is used by Jeremy Wade Morris to signify the shift from CDs rooted in familiar packaging to the intangible flimsiness of digital music files as ones and zeroes.⁸ Morris' argument is about remediation, but he also claims that it might work in this way due to infomediaries that present musical narratives through “algorithmic effects.”⁹

On music streaming platforms, listeners are, according to Robert Prey, constructed through a dialectical movement of recommendation systems growing out of listening behaviour and a shattering of fixed identity markers.¹⁰ Prey hinges his analysis on Gilles Deleuze's seminal essay *Postscript on the Societies of Control* (1992), stating that “individuals are seen as ... endlessly subdividable ‘dividuals’.”¹¹ The Society of Control is Deleuze's diagnosis of a system consisting of digital machines. When subjected to control one has no solid core, no stable position; one is everywhere and nowhere. Control is a process of subjectivation that disbands the individual identity, making one a part of the information stream.¹² Likewise, Eric Drott takes advantage of Deleuze's insightful analysis in his critical view on how recommendations and curated playlists feature in giving out subject positions to users through constellations of music. He describes it as follows:

By using the accumulated data from activity logs, combining this with user information collected during the registration process, contextual data picked up by various sensors, and the plethora of music data that platforms derive by means of machine listening or data mining, recommendations can be pitched not just at the individual level, but at what Deleuzians call the *dividual* level.¹³

According to Drott, personalised recommendation leads to a feeling of musical scarcity, giving the user-listener the impression that there is only ever one song that will work for each consecutive instant in time. Opposite to Prey's analysis, Drott sees this as a different dynamic in which "the streaming service apparently interpellates us as ourselves and as nothing else. We are not hailed as members of some abstract category, but as a concrete particular."¹⁴ Given that Deleuze sees the notion of the *dividual* as a potential for regaining singularity, I think Drott is on to something. The entwinement of a digital music platform and a user-listener makes for a self-organisation of numerous processes that Deleuze would label *individuation*, which, as a principle, let all virtual points in a recommendation system be open for actualisation.¹⁵ I will return to the interplay between the virtual and the actual below. As we will see later, *Diskoteket* is a platform that bypasses the sort of algorithmic control emphasised by Prey and Drott; here, metadata act as a dissemination of relational information rather than as a mutating vessel of information about user-choices that can strengthen a personalised recommendation and thus surveil a user-listener.

In a methodical qualitative study, Raphaël Nowak traces many of the structural elements of music consumption in the digital age by analysing how music works and affects young people's everyday life.¹⁶ In similar fashion, Sofia Johansson points out how metadata on digital music platforms can give users the power of deep discoveries that they can share through social media, thus giving them the feeling of being knowledgeable disseminators of music.¹⁷ Working from an outset in actor-network theory, Susanna Leijonhufvud argues that music streaming as an epistemological process creates us with the technologies as musical cyborgs.¹⁸ The actual listening situations have changed and are arranged by technological means; today's listening practices are characterised by a move from Theodor W. Adorno's notion of an "expert-listener" to a world of "ubiquitous listening" as argued by Anahid Kassabian.¹⁹

The aim of the present article is to provide the theoretical landscape of studying streaming music with an aesthetic consideration of the phenomenon. The actual listening situations afforded by digital music platforms might be continuously re-contextualised due to metadata, and this has consequences for all levels of perception and understanding of recorded music. The article's key contribution is a proposal implying that metadata can set listening as a vibrant potentiality that go together with the formal and material constituents of the mediating technologies as well as with the perceiving human body. Metadata purport to be add-ons between the music and the user-listener, but in fact, metadata transform the connections within digital music use. Furthermore, the article will contribute with insight into Diskoteket—a digital music platform hitherto not subjected to academic analysis. As a platform Diskoteket is structured as a mixture of a pulsating database and a visualisation of a physical archive of recorded music, and it works along the lines of metadata in a way that no commercial streaming services (to my knowledge) do. Before getting to that, the next section seeks to provide some conceptual clarification vital to the coming theoretical discussion.

DIGITAL MUSIC ARCHIVES, METADATA, AND ENVIRONMENT

To discuss the ramifications of digital music use requires a clear vocabulary regarding digital music archives, metadata, and environment. Digital music archives continue an ongoing de-contextualisation process of music as recorded sound,²⁰ and they have to be accessed through platforms that do not show their content in an ordered manner. Digital music archives show more affinities with Lev Manovich's definition of the database than with the traditional understanding of an archive.²¹ I agree with Patrik Åker that in the case of streaming music “the database and the archive are two sides of the same coin.”²² Thus, digital music archives are fluid and transitory. We have witnessed a “radical metamorphosis of the aesthetics of storage” in which the emphasis “shifts to regeneration, (co-)produced by online users for their own needs,”²³ which not just opens up for new archival understanding but forms a new base for historical understanding as well. In the words of Wolfgang Ernst, the archival order “is being replaced by the *dynamics* of the archival field.”²⁴ Digital music archives designate such “fields,” and they communicate recorded music history due to a dynamic memory that collapses the temporal distinctions between past and present.²⁵ On a digital music platform, user-listeners leave traces through searching and

listening that algorithms detect and reformulate as information compiled as big data, which leads the archive to generate different classifications of the music resulting in a new arrangement of the music that the user-listener can engage with and so on. What happened then and what happens now is not important. Sorting as storage is not the defining factor, but relocating selection is. Here, music is data, and as Lisa Gitelman and Virginia Jackson has noted “[d]ata need to be imagined *as* data to exist and function as such, and the imagination of data entails an interpretive base,”²⁶ which means music needs to undergo metadating to carry any meaning at all. Streaming music requires interpretation to function *as* music.

Metadata sometimes get described as today’s marginalia,²⁷ but in terms of digital music archives, they are more than that. Depending on the structuring of them, they might focus one’s listening experience in a certain direction and possibly even transfigure one’s perception overall. Like the translation of marginalia found in a book, metadata let digital music use get infinite interpretational layers. Metadata are, for example, technical, descriptive, or administrative data about other data that in terms of digital music use create findability and accessibility. Further, the use of a digital music platform entails an intricate audio-visual world-making where noise takes shape as timbres hovering autonomously as music through sound-reproduction technologies, all the while variable graphic clusters of information mediate a mutable knowledge production, thus engendering a causal loop for the music to be perceived and contextualised anew. It might be thought of as an aesthetic situation that, provoked by its own generative nature, establishes a breeding ground for continuously getting new imaginaries while listening. The interpretive meaning we put into music via metadata assumes great importance, in that we read flexible versions of our musical selves into the actual listening situations.²⁸ Metadata take charge of the narrative critique distilled in digital music archives by telling the comparable temporalities of music and digital media as histories about recorded music history. Or put another way, metadata registered on digital music platforms have the power to nurture a different manner of thinking a representational interpretation of music.

The abovementioned world-making process is the result of a perceptual erasure of the categorical distinctions between digital music archives and metadata that forces the actual listening situations through as environments. Here, I understand an environment as a prerequisite for a becoming that interconnects

with an ecological thinking, which I will return to below. The environment of digital music use is closely connected to a Deleuzian control. Actual listening situations, then, seem political, and they are in that they are affective. They let the user-listener's body get attuned to the potentials in listening to music sparked from the non-temporal dynamics of an archival field that repositions itself nonstop due to the music's referential representation. They are listening environments thriving from an "augmented relationality" that repurposes the techno-ontological relations of digital music use as well as the possible perceptions of relations within recorded music history.²⁹ The following section turns to the temporal aspect of the musical assemblage as theorised by Georgina Born, which I will inoculate with the concept of virtuality.

THE MUSICAL ASSEMBLAGE AND DIGITAL MUSIC USE

In her analysis of musical mediation, Born speaks of digital technologies that can generate "new practices of difference and interrelation in music."³⁰ She argues that creativity-with-technology is what drives many artists nowadays; creative agency is distributed in time and informing artists' oeuvres and gradually expanding the possibilities for what music ontology can entail.³¹ Essential for this is the question of time, and it is the reading of Edmund Husserl's phenomenological idea of a time-consciousness that is of interest in her argument. According to Born, for Husserl "the same event is modified when apprehended from the point of view of present, past or future. The past and future are themselves dynamic, continually altering in cognitive time."³² This time-experience occurs because the present always contains both retentions, which are "memories or traces of the past," and protentions, which are "projections or anticipations."³³ Both are constructions of the present, continuously undergoing changes as the present progresses. Born touches upon this ramified temporality by analysing music (in its mediations) as binding in assemblages that go together in musical assemblages, which underline the historical courses that music follows. In so doing, she engages in thinking difference. But, her characterisation of the assemblage is present-centred and cannot deepen the analysis of digital music use. In Born's version of the assemblage the concept fixates on different layers rather than on potentialities, which, for my purpose, misses out on the affective side of the assemblage as well as fails to see it as part of the ecology of digital music use. Gilles Deleuze and Félix Guattari describe the assemblage in terms of potentialities, delineating it as an entangled construction

that formulates an ontological framework. For them, the assemblage is constituted by a territorialising ordering of bodies, and the vigorous energy of the assemblage lies in it *not* being static but containing an omnipotent potentiality of disrupting its own articulations and putting them together again in new ways—a potentiality of re-territorialisation.³⁴ In digital music use, a digital music platform, a user-listener, and a sound-reproduction technology compose a musical assemblage of heterogeneous elements that cut across different realms of reality—across the personal, the biological, and the technological.³⁵

With a focus on potentialities, I will propose a different understanding of the musical assemblage. The interaction between a human body and levels of technology should be analysed as inseparable parts establishing a complex structure. In this configuration, the human body and technology are continuously levelled in a way of being that liquidises time. To create meaningfulness, and to comprehend digital music use aesthetically, we have to understand time as expanded and the world as made up of non-linear dynamics. Even though music per definition is bound by time as a certain timbral structuring, digital music use cultivates a boundless non-linearity due to the shapeshifting potentialities emanating from digital media. Interaction with digital media is an accentuation of virtual entities. For my purpose, the Husserlian idea of a time-consciousness should be put aside and replaced with the concept of virtuality. In anti-reductionist fashion, Henri Bergson visually conceptualises virtuality as built up by “images” that are existences “placed halfway between the ‘thing’ and the ‘representation’.”³⁶ These “images” have an inherent pure recollection that steps forward in the act of perception, which is why there is a simultaneity between recollection and perception, according to Bergson. Recollection exists in a virtual state that peeps into the actual state.³⁷ The past is only discernible as past when it is actualised and expanded into the present *now*. Here, Bergson differs from Husserl in that he explains our being as actualisation of manifolds, whereas Husserl seeks to describe the essence of acts of consciousness, roughly speaking. For Bergson, our perceptions are both actual and virtual—the present is in a state of becoming. This leads Deleuze to let virtuality as a concept leave the philosophy of existence; he argues that the virtual does not oppose the real but the actual—*“The virtual is fully real in so far as it is virtual. ... the virtual is not opposed to the real; it possesses a full reality by itself.”*³⁸ Virtuality is pasts not differing from reality understood as a

present reality, or as summarised by Ulrik Schmidt: virtuality “completely corresponds with reality, but it does so as the real that *just now* has passed by as a pure past folded into the present.”³⁹ All pasts coexist with each and every present and this coexistence of time defines virtuality. All times that are not right now in being are already present *now*. In the musical assemblage, meaningfulness can, therefore, be detected in the tension of sensations emerging from a continual coalescence of human body and levels of technology. Digital music use is an aesthetic situation that makes sense virtually—as a sensibility of becoming.

Born defines the musical assemblage as a “particular combination of mediations (sonic, discursive, visual, artefactual, technological, social, temporal) characteristic of a certain musical culture and historical period.”⁴⁰ She, therefore, argues that mediation both gives music its meaning and lets it transfigure into cumulative interrelations. Elsewhere, Born discusses the musical assemblage as characterised by four planes of social mediation that are irreducible to one another and get mobilised by the musical assemblage.⁴¹ When it comes to the qualities in digital music use, I believe this view to be inaccurate. In her analysis of the musical assemblage as a constellation of heterogeneous mediations, Born’s errand is ontological, whereas mine is mainly aesthetic. To me, the notion of the musical assemblage can crystallise a different sort of knowledge production if focus lies on music being an entangled part of a virtual entity that can be actualised as clanging sound emanating from a sound-reproduction technology. Born focuses on music as a creative act undergoing countless mediations, and she states that music indicates “that there need not be a physical artefact or a visual object or symbol at the centre of the analysis of materiality, mediation and semiosis. ... Musical sound is non-representational, non-artefactual and alogogenic.”⁴² But, for an aesthetic understanding of musical sound accessed in a digital setting music *does* in fact need a physical entry-point. This is a prerequisite for cognising the musical assemblage as a technologically initiated multiplicity of time and sensation. The virtuality of the musical assemblage is defined by interactions on a material level that are performed through actualisations. It might not be there, but it is real. It does not make sense to speak of musical sound as being non-representational, as if the idea of music solely depends on a dialectic of extra-musical connotations projected into, and experienced as deriving from, what Born calls “the musical sound object.”⁴³ That is an ontological view on music that only bears the promise of music. Music is not only a

complex aggregation of mediations. Any musical sound begins somewhere, as an actualisation of its own virtual capacities, and all music is perceived by a listener as some kind of affective statement with a given representational character. Musical sound is produced in susceptible performance, meaning that the semiotic properties used to describe music are inchoate for knowledge formation through music. Musical sound is a sensibility of human experience that steps forward by way of technical mediation: it seems non-representational, but the mediation provides a material tangibility that, from the outside, drags representational energy into the musical sound. In terms of digital music use, music is part of the assemblage, and we have to accept that to make any sense of it. Music is dissolved and reduced to code, enmeshed in a knot of high-speed cabling, but it is still right “there” for us to engage with, in an ever-changing web of infinite possibilities of new connections and histories. In the ensuing, I will vocalise the musical assemblage as constituting a referential listening that favourably can be understood as drifting within a pulsating affective ecology. It is argued that listening with metadata has the potential of inducing a becoming that opens towards new historicised connections.

HISTORICISED LISTENING

As I fleshed out above, digital music use can be understood as past(ness) fused with future(ness)—as an inseparable unity of the virtual and the actual. The aspects of digital music use that I have hinted at can seem rather flimsy, but as a matter of fact, they are in many ways very tangible. Archival strategies of mass digitised environments showcase music in certain ways—in ways that make the user-listener merge with information that reaches into various dimensions of the construct of music history. Historicised listening gives way to a continual renegotiation of the historical positions of any given piece of recorded music and this has to do with metadata (or the lack hereof). I believe that metadata have the power to convert the experience and perception of music. The question is when they do that, and what listening with metadata actually causes. To grapple with that, we first need to address the ecology of digital music use.

The user-listener can roam free, feeling as singular as ever. And she or he can do so because the intertwined structuring of technological components and datafied music, which are crucial elements of the musical assemblage, reveals digital music use as being without a telos. The virtual stature of the musical

assemblage stresses that digital music use signifies an ecology, and it must be thought ecologically to impose meaning for the user-listener. The assemblatic coexistence of music, coding, sound-reproduction technologies, and a human body sums a totality needed to give user-listeners' singularity.⁴⁴ In this view, digital music use manifests as resonances in the vitality between all its constituents. The musical assemblage of digital music use is thus formed by the relational workings of affective bodies repositioning all the time, and this impacts listening.⁴⁵ Along these lines, digital music use formulates possible narratives in a continual rewriting through and by the ears. Digital music use fosters referential listening environments, and it is so because digital music use emulates a dividualisation process. Everything is interconnected, and by this every possible user-listener becomes more united yet more different—what Félix Guattari in ecological terms deems a process of “continuous resingularization.”⁴⁶ When you are listening to a piece of recorded music on a digital music platform, your listening will inadvertently cut across the different realms of the digital music archive, potentiating every instant with virtual listening situations always already in progress. No matter the situation, this is going on. If a digital music archive is blessed with a certain level of metadata, the act of listening to a piece of recorded music can be historicised. In this way, digital music use hands out a correlational referentiality that might co-construct the user-listener's awareness of a certain piece of recorded music. Thus, if you listen with metadata digital music use might release new imaginaries of listening.

The ecology of digital music use contains an ecology of recorded music history. Jacques Attali speaks of “composing” as an act of listening that rewrites music,⁴⁷ and digital music use catalyses listening environments capable of this re-contextualising act. If you listen to a piece of recorded music on a digital music platform and actively let your listening get informed by metadata connected to this piece of recorded music, you are potentially tweaking the listening situation and changing the listening experience. You are listening with the metadata, which (as is the case with Diskoteket) in many instances connect to other metadata, and thereby to other pieces of recorded music. You are listening from within the digital music archive, or as Attali would put it, you are rewriting the music. To listen with metadata is to compose and make the music anew; it is to rearrange the imaginative values assumed by the music's past constellations; and it is to acknowledge the impact that the link between you and the recorded piece of music has

on the recorded piece of music's historicity. When listening with metadata, listening becomes a historicised action—inside itself it holds the creation of imaginaries of listening, thus, inside itself, it holds a continual rewriting of music history.

From listening over swiping, clicking, and searching to following, engaging with a digital music platform puts one's musical world picture together as a patchwork that continuously is ripped apart and recombined. Thinking digital music use as an affective ecology entails a rethinking of recorded music history. With metadata working as referential penetrators of music, the actual listening situations are aesthetic practices of becoming. As concluded above, digital music use makes sense virtually. When you listen with metadata, the musical assemblage equals a subjectivation-process through a superimposition of all virtual events of the history of a piece of recorded music. Your own personal history of music changes through listening, since time comes to you in the form of musical sound engraved in the dynamics of the archival field. Because of metadata, digital music use makes the imaginaries of listening renegotiable, and your listening gets historicised and constitutes itself as the subject of your history of music. Next, I introduce Diskoteket and analyse an example of sampled music that prompts historicised listening. I argue that metadata slash the archival logic base Diskoteket within the ecology of digital music use.

LISTENING FROM WITHIN THE DIGITAL MUSIC ARCHIVE

In 2014 Diskoteket launched as DR's first digital search system platform containing both sound and music information. It builds on its electronic search system predecessors DISØ from 1977 and MUSA from 2000. Diskoteket is managed by the unit DR Musiktjenester (DR Music services) and was established under the name Grammofonarkivet (the Gramophone archive) in 1949, which changed its name to Diskoteket (the Discotheque) in 1952 (which was then changed to DR Musiktjenester in 2017). The platform is only accessible for DR employees and is mainly used for broadcasting and research issues. As a platform Diskoteket draws on a growing digital music archive including both acquired digital releases as well as digitised releases from DR's physical collection of more than 700.000 releases (largely constituted by 78 RPM records, vinyl records, and CDs). I consider Diskoteket a visualisation of a large digital archive. Thereby, music can be regarded as both visual and aural documents that relate to the user-listener's reality indexically as well as compositionally.

On the surface, Diskoteket seems like an old-fashioned search system with an incorporated play function, and indeed the user interface is a bit clumsy and not as smooth as, for instance, Spotify's. But if we enter an album interface, some peculiar capacities emerge that differ from what we can find on commercial streaming services. Let us look at Diskoteket's view of Drake's 2016 album *Views* (Fig. 1). We find that the platform builds heavily on hyperlink qualities, making it a capacious environment for listening that interpellates the user-listener to be in a reflective state.

It functions as such due to the digital music archive underneath Diskoteket being stratified in an interpenetrating layer-structure,⁴⁸ which hinges metadata on other metadata. The intention behind this way of programming is clearly rooted in a wish for a platform that simultaneously contains the accessibility of commercial streaming services and the organising factuality and independence of public libraries. As an infrastructural logic, this gives the user-listener an array of possibilities that all can inform the listening experience. Engaging with Diskoteket effectuates an ever-evolving musical assemblage consisting of virtual potentials of reference that can be actualised. Whereas the algorithmic governmentality of commercial streaming services, as analysed by Drott, Prey, and Morris, gives you the impression of empowerment through dynamic interfaces, which at the same time muddles the capitalistic totality of the services,⁴⁹ Diskoteket gives you what you are looking for plus it suggests related data, but it is not tampering with your intellect through personalising your experience. What Diskoteket does do is the same for everyone; when you are done listening to the last track of a release, the platform either repeats the last track or (as a default setting) suggests a different track based on a nexus of the amount of airplay and such qualities as genre-tagging and mood-category. The algorithm does not command you to adjust to the system by seemingly adjusting to you, meaning the platform is not capturing you as a subject and using your musical behaviour to manufacture you; but, if you are not actively engaged in the track to come the algorithm might be disciplining you along the lines of the principle of rotation, thus along the lines of the major record labels. To which you can ask: besides not selling my data to third parties, what is the actual difference?

Let us return to *Views*, scroll down and click on the last track (Fig. 2), *Hotline Bling*, and get transported into the interface of this track (Fig. 3). The entanglements get heavier, the possibilities more

Digitaliseringsstatus
 Digitaliseret 20 ▶
 Flere Muligheder

Periode
 Indspilningsår
 2010-2017 4 ▶
 2010-2016 16 ▶
 Flere Muligheder

Genre
 Hip hop 20 ▶
 R&B 2 ▶
 Flere

Format
 Album 20 ▶

Favoritter
 Thomas Dose DR Musik... 8 ▶
 Louise Kjeldsen DR Musik... 6 ▶
 Flere

Land
 Indspilningsland
 Danmark 0 ▶
 U.S.A. 0 ▶
 Flere

Pladeselskab
 Cash Money Records 20 ▶

Views
 Drake
 Album | Lydfil | 2016 | Young Money Entertainment, Cash Money Records

Tilknnyttet ▶ 20 skæringer SKJUL INFO

Type	Officiel Udgivelse	Diskoteknr	9017591
Udgivet af	Young Money Entertainment (29.04.2016 Intet nr)	Status	Færdigregistreret
	Cash Money Records (29.04.2016 Intet nr)	Oprettet af	ARPE (29.04.2016)
		Opdateret af	CBM (06.02.2017)

Nr	Titel	Kunstner	År	Varighed
1	Keep The Family Close	Drake	2016	05:28
2	9	Drake	2016	04:15
3	U With Me?	Drake	2016	04:57
4	Feel No Ways	Drake	2016	04:00
5	Hype	Drake	2016	03:29
6	Weston Road Flows	Drake	2016	04:13

Optagested
 S.O.T.A., Studios, Toronto... 1 ▶
 S.O.T.A., Toronto, ON / ... 1 ▶

Rolle
 Hovedkunstner 20 ▶
 Producer 20 ▶
 Flere

Views
 Drake

Tilknnyttet ▶ 20 skæringer SKJUL INFO

16	Too Good	Drake Feat. Rihanna	2016	04:23
17	Summers Over Interlude	Drake	2016	01:46
18	Fire & Desire	Drake	2016	03:58
19	Views	Drake	2016	05:11
20	Hotline Bling	Drake	2015	04:27

Roler på denne udgivelse

Kunstner	Rolle
Drake	Hovedkunstner, Sang, Rap, Komponist
WizKid	Sang, Co-prod, Komponist
PARITYNEXTDOOR	Rap, Komponist
Murda Beatz	Alle instrumenter, Producer, Komponist
Nineteen85	Producer, Co-prod, Komponist
Noel Cadastre	Lydtekniker

Fig. 1
 Diskoteket's view of the top part of the album interface of Drake's *Views*.
 © DR Musiktjenester, Copenhagen 2020.

Fig. 2
 Diskoteket's view of the bottom part of the album interface of Drake's *Views*.
 © DR Musiktjenester, Copenhagen 2020.

specified. We get cognisant by recording information and have the opportunity to follow most of this in a hyperlinked manner, which has the power to perplex the referential representation of the track. Taking this kind of action while listening re-informs and re-contextualises the track. The architecture of Diskoteket seems to implicate user-listeners as co-functioning intermediaries of recorded music culture, continually adding new meaning to the music and passing it on to themselves in new narrative guises. But the architectural logic seems, in fact, to portray the platform more as an infomediary than as an intermediary. Unlike intermediaries, infomediaries are not presenting and representing symbolic content. Instead, they restructure and renegotiate the mediated information through content connections.

Freely interpreting Morris' definition, I will argue that in the case of digital music use the infomediary is the organisational benefactor letting musical narratives be formed, thus perceived.⁵⁰ Being open to the organisational control let us sense the relationality of the musical assemblage. You belong in this structure; affectively, you tweak yourself into a moebius strip-like autonomy, as "a set of potential connections and movements" always playing out in "an open field of relations."⁵¹

Hotline Bling has more in store for us. The metadata on the track interface potentiate the sounding of the track's representational character, making for a historicised listening. Besides the capability to follow the endless chain of information by clicking on a person affiliated with the track and trail any given occurrence in the interconnected mesh of Diskoteket, the user-listener can also scroll down the page and obtain another sort of information. In the bottom part of the track's interface we see three other tracks being highlighted: Timmy Thomas' *Why Can't We Live Together* (1972), Judith Owen's *Hotline Bling* (2018), and Erykah Badu's *Cel U Lar Device* (2015) (Fig. 4). The first appears under the headline "contains sample from the following tracks," the second appears under the headline "cover version on the following tracks," whereas the latter appears under the headline "versioning on the following tracks."

These options thrust an environmental logic upon the actual listening situations, entailing an ecological thinking. The interconnectedness is exhibited, and the re-singularisation process is manifest, demonstrating how virtual listening situations always already are at work. The scope of possibilities manufactures yet another dimension to the virtuality of the musical assemblage, in that it gives the user-listener a tool to cut

Hotline Bling
Drake
04:27 min. | 2015 | Views (Album | Lydfil)

Indspillet 2015, Multinational
S.O.T.A. Studios, Toronto, ON, Canada / The Yolo Estate, Hidden Hills, CA, U.S.A.

Diskoteksnr 9017591-1-20
Oprettet af ARPE (29.04.2016)
Opdateret af ARPE (27.10.2018)

Sprog Engelsk

Roller på denne skæring

Kunstner	Rolle
Drake	Hovedkunstner, Sang, Komponist
Nineteen85	Producer, Komponist
Chris Athens	Mastering
Noel Campbell	Mixer
Noel Cadastre	Lydtekniker

Indeholder sample fra følgende skæringer

Why Can't We Live Together
Timmy Thomas | 04:34 min. | 1972 | Why Can't We Live Together (Album | Vinyl)
SKÆRING | Digitaliseret | 19 Radioafspilninger | ♥ 2 Favoritter

Coverversion på følgende skæringer

Hotline Bling
Judith Owen | 03:29 min. | 2018 | redisCOVERed (Album | Lydfil)
SKÆRING | Digitaliseret

Versioneret på følgende skæringer

Cel U Lar Device
Erykah Badu | 06:28 min. | 2015 | But You Caint Use My Phone (Mixtape | Lydfil)
SKÆRING | Digitaliseret | ♥ 4 Favoritter

Fig. 3
Diskoteket's view of the top part of the track interface of Drake's *Hotline Bling*.
© DR Musiktjenester, Copenhagen 2020.

Fig. 4
Diskoteket's view of the bottom part of the track interface of Drake's *Hotline Bling*.
Here, relations to other tracks are shown. © DR Musiktjenester, Copenhagen 2020.

across different and seemingly dissociated temporalities of the digital music archive. Here again, one can take the hyperlinked road and click on the three implicated artists, the three tracks as well as the three releases mediating these tracks, and as the orange play buttons indicate the user-listener can also hit play on the three tracks and initiate referred listening while situated in a separated section of the archive. What is not happening now is always already in the process of happening; music not yet sounding, and information not yet informing, exist here, in *Hotline Bling*, as affective capacities, sensed but not really known. If you actively engage with these options, the indexical logic of the archive gets disrupted. In Diskoteket, the programmatic idea of the metadata is threefold: first, the metadata bring your attention to relevant information; second, they let you get involved with them and lead you across the archive; and third, they complexify the actual listening situations by integrating other potential listening situations into these. Actually, there is a fourth element in play; when your experience of listening to *Hotline Bling* gets confronted with interrelated information, which potentially leads you to other strata of the archive, you are listening from within the digital music archive. Effectually, your listening is historicised. If you click on one of the tracks, this gets more conspicuous, as the bottom of the track interface of Why Can't We Live Together shows (Fig. 5). Here, you can clearly see that you can listen backwards and reconnect to *Hotline Bling* as well as other tracks from Erykah Badu's mixtape come into play, and so does a cover version from Sade's *Diamond Life* (1984).

This way of moving around is self-initiated and not subjected to opaque control and commercial interests. But, the intentionality behind Diskoteket's code is still making for an ecological experience of such latitude that cognition of the possible streams of sound and information gets unfathomable, collapsing human cognition with machinic operations. Perhaps we need to leave reflection all together to make sense of the assemblatic logic? Maybe the relationality of this large-scale human-nonhuman processing should be grasped the other way around, as processes of "nonconscious cognition," as N. Katherine Hayles recently has theorised.⁵²

In the case of *Hotline Bling*, Diskoteket gives the user-listener the satisfactory experience of knowing the connections, of knowing more, of knowing how to listen for more, of knowing how to disseminate more. But, understood as an aesthetic situation this experience accentuates a "mode of interpretative

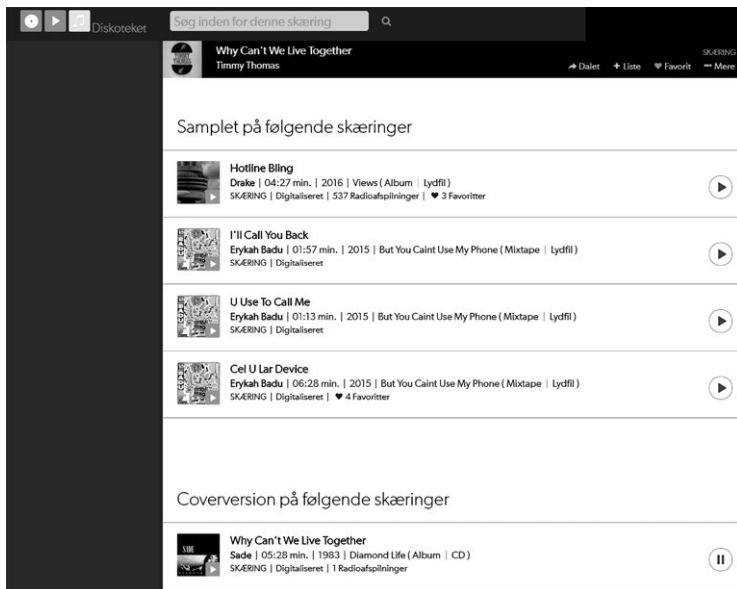


Fig. 5
Diskoteket's view of the bottom part of the track interface of Timmy Thomas' *Why Can't We Live Together*. Here, relations to other tracks are shown.
© DR Musiktjenester, Copenhagen 2020.

discourse,”⁵³ in which this information as metadata creates the user-listener as involved in environmental agency. No parts in this system are given more privilege than others, and that includes the act of listening; listening is, on the surface, nothing more than one of several human activities involved in digital music use that, read through what Mark B. N. Hansen calls a “*radical environmental perspective*,”⁵⁴ melts together with all digital procedures informing digital music use. The affective listening environment cultivated by metadata traversing the digital music archive harpoons a potential historical awareness into the user-listener’s perception in a matter of micro-instances, which stresses a non-representational relationality in the very technicity of the musical assemblage. The constituents of digital music use spark relational agency in their ability to co-evolve with each other, letting the listening environment to diffuse agency and cognition on a material level. The experience experiences itself, so to speak, before the user-listener does so; or, to follow Hansen, the listening environment condenses from a “preaffective impact of technics on sensibility.”⁵⁵ Here, I am thinking of the virtual coexistence of time that, as a premise, unyieldingly resonates in the musical assemblage and collapses the sensibilities of experience, both human and nonhuman, thus configuring experiences to come. This relationality produces the virtual crisscrossing of temporal realms in Diskoteket, and it is in this non-representational ecology that music as something-to-be-perceived gains newfound agency. It is indeed this non-representational relationality of the listening environment that makes for the music’s modulatory representation. You have to cross the threshold and actively inaugurate the musical assemblage by pressing play on a track, making yourself open to the affective statement you will perceive from the music. As a disseminator of music Diskoteket counters Born’s musical assemblage, in that the referential listening in this case of digital music use makes the music meaningful because it is highlighting its connections. For listening to become historicised music has to come from somewhere. For *Why Can’t We Live Together* to interpolate the actual listening situations induced by *Hotline Bling* a concreteness must be present, letting the two tracks resonate together. The tangibility of the music’s mediation is the factor giving it representation and making it logogenic.

STAY A WHILE AND LISTEN

With this article, I try to classify the actual listening situations of digital music use as something dependent on archival connotation

and metadatafied disruptions of said connotation. The digital music archive works due to the character of the apparatus, which already Michel Foucault described as the ungraspable quality of the archive,⁵⁶ and this puts the user-listener in the middle of an accumulating historicity. I define this dynamic as a musical assemblage differing from Born's notion, and I argue for digital music use as bringing an aesthetic sensibility into being that prompts singularity in the act of listening. In discussing the infrastructural logic of Diskoteket and analysing the platform's strategic choices of presentation in the case of Drake's *Hotline Bling*, I claim that Diskoteket is a digital music platform that can foster an environment of referential listening. With Diskoteket, you can listen from within the digital music archive, and the platform comes into existence as a layered field of informed matter. Diskoteket turns listening to recorded music into a historicised action—an action that “tune[s] into the superhuman scales of time and space.”⁵⁷ The ecology of digital music use puts a certain agency into the digital music archive, which informs the user-listener's imaginaries of listening. The digital music archive let you take part in the discontinuities of history, actively thinking, and feeling history. You ooze in and out of history when actively engaged with a digital music platform. While listening, you follow the interrelational metadata and push the boundary of digital music use. You are involved with history—not metaphorically, but literally. Voltage and somatic structure coalesce with music carrying history forward. This whole is a temporal and autonomous ecology that we need to learn how to address in order to invent a historical future of recorded music.

- 1 The notion of musical assemblages comes from Georgina Born. It signifies the layered ontology of music's mediations. See Georgina Born, "On Musical Mediation: Ontology, Technology and Creativity," *Twentieth-Century Music 2/1* (Cambridge University Press, 2005).
- 2 I have negotiated full access to Diskoteket as well as to the digital music archive that the platform builds on.
- 3 Throughout the article, metadata are situated as relational potentialities rather than mere information. Metadata signify that the conditions of listening in digital music use are based on a chimeric premise of infinite change, meaning that a potential future listening is as real as a present listening. As information, metadata let listening turn into a moebius strip of actualised and not yet actualised experiences that affect each other. Not only that, they also affect the user-listener sensorially and cognitively in that they put focus on the human-nonhuman relation of digital music use, making the reflexive experience a bodily experience. It is a matter of relations. See Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation* (Durham & London: Duke University Press, 2002); and Luciana Parisi, *Contagious Architecture: Computation, Aesthetics, and Space* (Cambridge, MA: The MIT Press, 2013).
- 4 I speak of the virtual as a philosophical concept along the lines of Henri Bergson and Gilles Deleuze. See Henri Bergson, *Matter and Memory*, trans. N.M. Paul & W.S. Palmer (New York: Zone Books, 2005) and Gilles Deleuze, *Bergsonism*, trans. Hugh Tomlinson & Barbara Habberjam (New York: Zone Books, 2011).
- 5 Cf. Félix Guattari, *The Three Ecologies*, trans. Ian Pindar and Paul Sutton (London & New Brunswick: The Athlone Press, 2000); and Erich Hörl, "Introduction to General Ecology: The Ecologization of Thinking," in *General Ecology: The New Ecological Paradigm*, ed. Erich Hörl (London: Bloomsbury: 2017), 1–74.
- 6 Mark Katz, *Capturing Sound. How Technology has Changed Music*, revised edition (Berkeley and Los Angeles: University of California Press, 2010), 186–189.
- 7 Jonathan Sterne, *MP3. The Meaning of a Format* (Durham and London: Duke University Press, 2012), 189 and 225.
- 8 Jeremy Wade Morris, *Selling Digital Music, Formatting Culture* (Oakland: University of California Press, 2015).
- 9 Jeremy Wade Morris, "Curation by Code: Infomediaries and the Data Mining of Taste," *European Journal of Cultural Studies*, Vol. 18, no. 4–5 (2015), 458.
- 10 Robert Prey, "Nothing Personal: Algorithmic Individuation on Music Streaming Platforms," *Media, Culture & Society*, Vol. 40, no. 7 (2018), 1086–1100.
- 11 *Ibid.*, 1092.
- 12 Gilles Deleuze, "Postscript on Control Societies," *Negotiations*, trans. Martin Joughin (New York and Chichester: Columbia University Press, 1995), 177–182.
- 13 Eric Drott, "Why the Next Song Matters: Streaming, Recommendation, Scarcity," in *Twentieth-Century Music 15/3* (Cambridge University Press, 2018), 335. doi:10.1017/S1478572218000245.
- 14 *Ibid.*, 336.
- 15 Deleuze theorises individuation as the instigator between the virtual and the actual. See Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (London and New York: Bloomsbury, 2014).
- 16 Raphaël Nowak, *Consuming Music in the Digital Age. Technologies, Roles and Everyday Life* (New York: Palgrave Macmillan, 2016).
- 17 Sofia Johansson, "Music as part of connectivity culture," *Streaming Music: Practices, Media, Cultures* (Oxfordshire and New York: Routledge, 2018), 48. In the same qualitative vein, Anja Nylund Hagen has delved into individual users' experiences of and practices with streaming technologies in their everyday lives. See Anja Nylund Hagen, *Using Music Streaming Services: Practices, Experiences and the Lifeworld of Musicking*, PhD Thesis (Oslo: The University of Oslo, 2015).
- 18 Susanna Leijonhufvud, *Liquid Streaming: The Spotify way to Music*, PhD Thesis (Luleå: Luleå University of Technology, 2018).
- 19 See Theodor W. Adorno, *Introduction to the Sociology of Music* (New York and London: Continuum, 1988) and Anahid Kassabian, *Ubiquitous Listening. Affect, Attention, and Distributed Subjectivity* (Berkeley and Los Angeles: University of California Press, 2013).
- 20 Patrik Åker, "Spotify as the soundtrack to your life: Encountering music in the customized archive," *Streaming Music: Practices, Media, Cultures* (Oxfordshire and New York: Routledge, 2018), 83.
- 21 Lev Manovich, *The Language of New Media* (Cambridge, MA: The MIT Press, 2001).
- 22 Patrik Åker, "Spotify as the soundtrack to your life," 84.
- 23 Wolfgang Ernst, "Archives in Transition: Dynamic Media Memories," *Digital Memory and the Archive*, ed. Jussi Parikka (Minneapolis: University of Minnesota Press, 2013), 95.
- 24 *Ibid.*, 99.
- 25 *Ibid.*, 95–101; see also Patrik Åker, "Spotify as the soundtrack to your life," 85.
- 26 Lisa Gitelman and Virginia Jackson, "Introduction," in *"Raw Data" is an Oxymoron*, ed. Lisa Gitelman (Cambridge, MA: The MIT Press, 2013), 3.
- 27 Nanna Bonde Thylstrup, *The Politics of Mass Digitization* (Cambridge, MA: The MIT Press, 2018), 106.
- 28 This statement is inspired by Eric Drott, "Music as a Technology of Surveillance," *Journal of the Society for American Music*, Vol. 12, no. 3 (2018), 247, doi:10.1017/S1752196318000196.
- 29 Nigel Thrift, *Non-Representational Theory: Space, Politics, Affect* (London & New York: Routledge, 2008), 165.
- 30 Georgina Born, "On Musical Mediation," 11.
- 31 *Ibid.*, 23–24.
- 32 *Ibid.*, 20.
- 33 *Ibid.*, 21.
- 34 Gilles Deleuze & Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1987), 3–25 and 311–350.
- 35 Manuel DeLanda, *Assemblage Theory* (Edinburgh: Edinburgh University Press, 2016), 68.
- 36 Henri Bergson, *Matter and Memory*, 9.

-
- 37 Ibid., 134.
- 38 Deleuze, *Difference and Repetition*, 272 and 275.
- 39 Ulrik Schmidt, *Det ambiente. Sansning, medialisering, omgivelse* (Gylding: Aarhus Universitetsforlag, 2013), 116. My translation.
- 40 Born, "On Musical Mediation," 8.
- 41 Georgina Born, "Music and the Materialization of Identities," *Journal of Material Culture* 16(4) (2011), 378 and 385, doi:10.1177/1359183511424196.
- 42 Ibid., 377.
- 43 Ibid.
- 44 This moulds on the ecosophical ethics of Félix Guattari as well as Timothy Morton's idea of thinking big. See Guattari, *The Three Ecologies*; and Timothy Morton, *The Ecological Thought* (London and Cambridge, MA: Harvard University Press, 2010).
- 45 Jane Bennett discusses the concept of affective bodies in a reading of Deleuze's reading of Spinoza's "associative bodies." See Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham and London: Duke University Press, 2010), 21–23.
- 46 Guattari, *The Three Ecologies*, 69.
- 47 Jacques Attali, *Noise: The Political Economy of Music*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 1985), 135.
- 48 The archive structures its information in four layers—artists, releases/albums, tracks and compositions. All layers hold different degrees of metadata that can inform all other metadata relevant to a specific case. Besides that, the tracklayer also holds the music as data.
- 49 Here, I am inspired by Wendy Hui Kyong Chun, *Programmed Visions: Software and Memory* (Cambridge, MA: The MIT Press, 2011), 9.
- 50 Morris, "Curation by Code," 446–463.
- 51 Brian Massumi, *Politics of Affect* (Cambridge & Malden, MA: Polity, 2015), 40.
- 52 N. Katherine Hayles, *Unthought. The Power of the Cognitive Nonconscious* (Chicago: The University of Chicago Press, 2017).
- 53 Jacques Rancière, *Aesthetics and Its Discontents*, trans. Steven Corcoran (London: Polity Press, 2009), 11.
- 54 Mark B. N. Hansen, *Feed-Forward: On the Future of Twenty-First-Century Media* (Chicago & London: The University of Chicago Press, 2015), 2–3.
- 55 Ibid., 222.
- 56 Michel Foucault, *The Archaeology of Knowledge*, trans. A. M. Sheridan Smith (Abingdon: Routledge, 2002), 142–148.
- 57 Kyle Devine, *Decomposed: The Political Ecology of Music* (Cambridge, MA: The MIT Press, 2019), 189.