

Authenticity and Liveness in Digital DJ Performance

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Introduction

Within the context of electronic dance music events, the DJ (Disc Jockey) can be understood as a musician who manipulates music recordings, synchronizing and blending these into a soundtrack, a musical journey for an audience of dancers, participants, listeners, bystanders (Brewster and Broughton, 2012; Fikentscher, 1997, 2000, 2003, 2013; Lawrence, 2003). Fikentscher defines “the club deejay (as) a pioneering force transforming the relationship between music as defined by performance and music conceptualized as authoritative text” (2003: 290). And Katz (describes performative hip-hop DJs as *turntablists*, “who treat their turntables more like musical instruments than playback devices” (2012: 33). In this way, the DJ operates as a type of curator as well as performing producer (Fikentscher, 2001; Rietveld, 2011, 2013a).

Butler (2014) differentiates between traditional DJs, who assemble a soundtrack from distinct vinyl-based (analogue), and the laptop performer, who in effect brings a miniaturized version of the digital studio to the stage. However, as DJ practices have turned digital, not only in terms of CDs and digital mixers but, more radically, by engaging with the fluid affordance of production software, the distinctions between music production, remixing, DJ-ing and music performance are more difficult to maintain. Within the practices of the *digital DJ*, a musicianship is emerging that

invites a reassessment of the relationship between audience and performer. It will thereby be argued that an authentic sense of live performance can be generated not only through the spectacle of performance but through the embodied engagement by and between all participants of an electronic dance music event.

DJ technology

The digital DJ uses a range of hardware and software that each implies different performative, creative and sonic affordances, or potentials. Many digital DJ technologies tend to emulate vinyl-playing turntables, DJ tools that historically may be regarded a *residual media* in the realm of hip-hop, disco and electronic dance music (Rietveld 2007). Such *skeuomorphism* is to be expected, as this enables the continuation of established creative and performative practices, yet this does not fully take advantage of the current potential of digital music technology. To understand some of the debates and concerns regarding the digital DJ, the discussion first will provide a brief overview of the development from the vinyl turntable and the CD player to digital mixers and software-based DJ technologies.

DJ-specific vinyl record playing turntable is an adaptation of the record player, and was first made commercially available on the market by Technics in 1972. This enabled musical solutions, not only because disk could be moved forward and backward to line up a recording (slip-cueing), ready to segue into the audio mix with another recording, but also because it enabled turntablist techniques, such as back-spinning and scratching. As Katz (2012: 4) explains, “turntablists are not only performative DJs but create “wholly new music through their complex manipulation of recorded sound”. Specific to the turntable-vinyl combination is the tactile relationship to an analogue recording where, unlike digital files, the visible and touchable grooves in the vinyl record represent the sound they reproduce. During the 1970s, DJs started to edit and remix recordings to suit the requirements of their crowds, bringing these

to the dance floor in a variety of formats, including test pressings, dub plates and audiotape, heralding the emergence of the DJ-producer (Fikentscher, 2001). This practice could be extended during performances with special effects units, additional live musicians. During the 1980s, underground electro and house music DJs also explored the additional use of the electronic drum machine to enhance the beat.

Contrasting to analogue recordings, digital files differ in that they are based on numerical conversion rather than on analogue representation. Although untouchable in an immediate sense, these numerical values can be tweaked and altered, almost like putty, offering extensive creative possibilities. Digital manipulation of recordings was possible through the use of samplers since the mid-1980s; initially, these could only record very brief sound bites, to be entered into an audio recording. The sampler seems to have partly been developed from digital delay effects, a sound engineering device that could enable audio insertions within the process of multi-track recording and mixing (Porcello, 1991). Sampling was also a component in the development of digital synthesizing technology. As soon as the cost and physical size of such equipment made samplers affordable and transportable, it was adopted by DJs to reshape recordings during their DJ performance as well as in their (remix) production work. The low sample bit rate and short sample time resulted in a crude but effective aesthetic during the 1980s electronic dance music genres, including electro and house music in New York and Chicago respectively. Here, the roles of DJs and producers start to merge within an interactive performance framework, adapting their music in response to the dancefloor.

Residual Techniques

Over the years, sampling technology has developed into sophisticated components of the DJ's kit, not only for special effects and as part of mixing consoles, but also as a function in the CD player, the CDJ, specifically made for performative

DJs. First explored by Pioneer during the early 1990s, by the early 21st century CDJs had become commercially popular, enjoying an uptake in the era of digital music files and rewritable CDs, CDRs (Gwertzman 2004). Hereby the latter took on the function of the earlier dub plates and audiotape. A CDJ can be understood as a digital turntable with a jog wheel on top of the unit, which can be handled similarly to a turntable through what seems direct (yet mediated) touch. This Human Interface Device (HID) enables the manipulation of music recordings on CD in a turntablist manner; this is a simulation, however, as the CD keeps spinning. The advantage of CDJs is firstly that it is easier for the DJ to travel with a wide selection of music files, aiding their popularity with international DJs who, although creative with the audio spectrum equalizing controls (EQs) on the mixer, use the turntable in a relatively traditional manner.

CDJs offer more than a simulated turntable experience though, in terms of digital sound processing, such as the creation of digital sound samples on the spot, enabling stuttering, looping and rhythmic repetition. This can be further enhanced by connecting the CDJ directly via digital cable to a DJ mixer with digital processing components, enabling extensive creative potential in the manipulation of recordings. An example of how, using this type of DJ set-up, distinct recordings can be morphed into a cohesive musical journey, can be found in a DJ performance by Japanese DJ-producer Goth-Trad (Takeaki Maruyama) for Boiler Room in January 2015, at Back to Chill, Tokyo. Although he is also known to perform his own music with a range of electronic instruments and audio processors, on this occasion he DJs with a Pioneer set-up of two CDJs and a digital 4-channel DJM 900NXS mixing console, with a built-in 24bit/96kHz sound card. A range recordings are played, including examples of Goth-Trad's latest productions, that share a nihilistic edge dominated by bone-shaking deep bass and industrial sound, sprinkled with screams and hints of Japanese percussive instruments (bells, wood blocks), shifting within a calm self-

contained *Adagio* tempo, between 87 and 66 BPM (beats per minute), with the odd track at around 144 BPM, but due to the context can be perceived as halved, 72 BPM. If human voices are present, they are processed almost out of existence. The overall genre could be identified as dubstep; yet, unpicking the material in the mix, a range of genres can be distinguished that each, on their own, belong to different sound cultures that are as contrasting different as dub reggae and sludge metal. The result is a trademark soundscape: a deeply textured dark and digitally warped labyrinthine sonic space, kept cohesive through constant attention to the EQ settings, framed within a head nodding meditative pace.

Software based DJ tools, mostly used in conjunction with laptops, tend to emulate conventional DJ set-ups, either visually on the computer screen or haptically, via a vinyl-based interface played on a turntable. An example of the former is Virtual DJ, which visualizes several spinning disks onscreen that simulate a traditional CD or Vinyl DJ set up, while the software is also able to process sound and to VJ (Visual Jockey) an additional video show. The vinyl-based digital interface, by contrast, is used with vinyl emulation software or Digital Vinyl System (DVS). DVS enables playback of digitally stored files to be physically handled by vinyl records that have a digital time-code engraved on them. In effect, the conventional DJ turntable is transformed into a HID between the DJ and the computer-stored digital files. Popular examples of DVS are Final Scratch and Serato's Scratch Live. The former was first sold in 2001, developed by DJ-producers Richie Hawtin and John Aquaviva, and after a series of corporate change-overs is now developed by Native Instruments as Traktor Scratch Pro (van Veen, 2001). The DVS has proven to be a popular interface within music scenes that place high (sub)cultural capital on vinyl records and dub plates, while a the turntable itself is a performative and haptic device that many DJs are used to. However, digital audio files can also be manipulated using CDJs, or

handled with a MIDI-controller and other HIDs, making it possible for a mix of formats to be used during a DJ session.

For example, during a session by New York DJ duo Masters at Work (MAW: 'Little Louis' Vega and Kenny 'Dope' Gonzales) for Boiler Room in London, August 2014, each have three CDJ players at their disposal, which seems to be there more for the visual effect than necessity. Although each takes turns to spin in tracks with the CD players, Kenny Dope keeps an eye on audio files displayed on a computer screen as they play a series of known dance club classics, many their own remixes and productions. This particular set remains blended at a fairly consistent *Allegro* pace, of around 128 BPM (resembling an average heartbeat during exercise), until a distinct break in the set, which moves blending classic dance club to a selection of slower (around 112 BPM) funk and disco recordings.

Louis Vega manipulates the EQs using a rotary mixer and handheld headphone, a residual set of tools from the analogue days of the New York underground dance scene. Such EQ manipulation, or 'filtering', can be used to emphasize specific elements in the recording through the volume amplification or reduction of a specific frequency range, such as a particular vocal, instrument or bassline, which can invite the crowd to participate by singing 'missing' vocal lines, for example. Other DJs from this American underground dance scene, for example Ron Trent, Joe Claussell, or Theo Parrish, can be more extreme in their filter techniques, obliterating recordings and skillfully disorienting dancers, bringing back music coherence just in time to maintain attention, fine-tuning their dialogue with the crowd through peaks and troughs of textures. Although this filter technique developed within an analogue setting, it set the scene for the creative manipulation of recordings within digital DJ settings. Here we have seen how the DJ enters into a producer's role on stage. Vice versa, producers enter the arena of DJ-ing, using equipment that resembles tools from the music studio.

Performing DJ-Producer

Moving away from residual turntable set-ups, a different entry point into digital DJ-ing is made via the Digital Audio Workstation (DAW), software that allows prepared sections of recorded music and sounds to be uploaded and placed into specific arrangements during music composition and during performance. A good example is Ableton Live, which like other digital DJ tools was also first commercially available in 2001. Initiated by Gehrard Behles and Robert Henke (Butler, 2014) and developed in Berlin, it is similar to other studio-based digital composition software, or Virtual Studio Technology (VST). It is compatible with other creative digital media art tools, such as Max/MSP, and hosts a wide array of VST plug-ins, from samplers and synthesizers to special effects. Yet, it simultaneously makes improvisation possible during performance, in terms of programming, arrangement and sound processing. As a performance tool, the on-screen interface is compacted for single screen use with pop-up windows, in two views, arrangement view and session view; the latter is particularly used for performance purposes. Although compatible with a range of MIDI controllers, Ableton Live works most effectively with multi-functional and intuitive performative human interface hardware, such as the flat visual grid of multifunctional square LED buttons of AKAI 's APC40, Novation's Launchpad and Ableton's own hardware interface, Push.

The combination of interactive performative hardware and creative software takes the performance of the digital DJ into an engaging and creative, yet blurry, territory of studio-based pre-production and improvisation that occurs live on stage. The studio-based producer can make a relatively easy transition into the realm of the performative DJ, while the DJ reaches further into the real of music production. For example, although he performs with a range formats and audio media, for studio production Goth-Trad uses Ableton Live with a MIDI keyboard (Asanuma, 2014). A

mix of analogue and digital music technologies is also possible, such as DJ-Producer Paula Temple's set-up:

Macbook Pro with Ableton Live 9, Push (for live and remix elements), Allen & Heath Xone K2 (for digital DJing), Technics 1210 turntables (for vinyl non-digital DJing). This way, I can test out my new music ideas and perform something exclusive for every gig, play other artists' promos that have not been released on vinyl, and still play some of my older records I love.

A more detailed example can be found in the observation of a performance by DJ-producer Henrik Schwarz for the Boiler Room, in Berlin, 6 December 2012. The camera faces Schwarz, so it is not possible to see the screen of his Apple laptop; however, sources elsewhere confirm Schwarz uses Ableton Live (Music Radar, 2014; *Ableton*, 2015), stating at a Red Bull Event that 'I don't prepare anything for a set. Everything I have ever done live is still in Ableton, I save it all' (Amsterdam Editor, 2013).

Tracks and musical fragments are mixed in a deep blend of contemporary techno with an archive of funk and jazz recordings. Samples of soul and highlife vocals appear in between large sections of instrumental music, enabling Schwarz to 'speak' to his audience. The recordings are mixed with his own music programming, in particular the drums that are evidenced by the consistent use of recurring drum pads, especially the emulation of Roland TR-909 or Roland TR-808 snare and high-hat sounds, at a consistent pace of around 123 BPM (beats per minute). Repetition of specific musical segments enhance to the overall groove. The musical components are treated with special effects that add not only virtual space through resonance and echo, but also alter the EQ and waveforms of the sound. Rather than relying solely on software plug-ins for specific sound processing, that would be invisible to the audience during performance, these special effects are also produced through hardware effects and, rather than solely relying on a keyboard and mouse interface with the laptop, these special effects are manipulated and controlled through hardware interfaces, such as a small DJ mixing console and a Novation

Launchpad (characterized by multi functional square push buttons) enabling a visibly kinetic performance.

Schwarz makes an explicit visible connection to his music, not only through the use of HIDs, but also through his expressive facial and body language, bouncing to the groove as he engages with the screen, selecting recordings and adjusting effects. Like many other DJs and digital performers, he does not make eye contact with his audience during the gig, not to the dancers behind and around him or to the camera, but his facial expressions seem synchronized with his creative decision-making and manipulation of digital audio devices. Importantly he embodies the musical output as heard by the audience, including miming most of the lyrics, some of which include his own vocal recordings, such as from his recording with Japanese artist Kuniyuki, 'Once Again' (2010, Mule Music) that can be heard at the end of his set.

Although Schwarz stresses the importance of improvisation, he does keep tight control over the way in which his set sounds:

'I always start my set with more or less the same intro. In 15 min. I do a little soundcheck, listen to the sound of the room and adjust my sounds accordingly. I rather not work with presets. It might be easier, but it doesn't sound as good.' (Amsterdam Editor, 2013)

Schwarz' facial expressions seem to indicate an intense decision-making process during the performance, yet some viewers still suspect that Schwarz delivers an entirely pre-programmed set, and therefore accuse this as being an inauthentic performance, a type of miming. Such debate regarding technologized performance, in which risk and unpredictability of interaction and live presence are valued, requires further unpicking.

Audience Expectations

As has also been argued by Cascone (2002) in the context of laptop-based music performance, the audience experience of authenticity in digital music

performance is central to understanding the success of the performance of a digital DJ. A music recording is *acousmatic*, as sound is separated from its visible originating source. The absence of the performer in recordings can lead to a fetishization of a material object, or subject, that seems to stand in its place. Vinyl has long played this role for the collector, now replaced by ubiquitous designer MP3 players. Also, the performing DJ can take on the role of embodying absence during DJ shows, like a god magically breathing life into otherwise 'dead' recordings (Middleton, 2006). From the perspective of a live performance, electronic music is even more abstract, as it is created, recorded and produced in studio settings in a way that cannot be reproduced in unmediated form. In the case of the DJ-producer, the two roles, of recording artist and performing DJ may well coincide. This enhanced role can be exploited in a lucrative business of the spectacular DJ, who not only sonically dominates an electronic dance music event but who is effectively staged and marketed in a visually dominant manner (Rietveld, 2013b).

Auslander (2008) argues that in the age of studio-produced music, live music performance is often expected to mimic the recorded event. He borrows Jean Baudrillard's concept of *mediatization* to make sense of performance that is technologically reproduced and circulated, showing that the virtual and the real have become indistinguishable, and argues that, "the historical relationship between liveness and mediatization must be seen as a relation of dependence and imbrication rather than opposition" Auslander (2008: 56). He further states that, "audience perception (is) likely to be most influenced by the dominant media of the time ... interactions among media, and between live and mediatized forms, needs to be understood in relation to a concept of dominant media" (Auslander, 2011: 194). Following up this argument in the context of the DJ, the recorded and distributed DJ mix, remix or music production would create a specific audience expectation. As DJs are marketed and mediated within a range of visual media, from magazines to videos,

a shift has taken place in the role of the DJ, from interactive music selector to stage performer. The shift towards the visual stage performance was particularly noticeable for marketable higher paid DJ-producers at music festivals and dance clubs during the early 1990s.

A well-known example is French DJ-producer David Guetta, who was filmed raising his arms to share the celebratory atmosphere of Belgium's *Tomorrowland* Festival in 2012, with seemingly all volume sliders down on his mixer, while the music continued to play (Abbott, 2012; Attias, 2013). Critics wondered if Guetta actually DJ-ed at all. Given that Guetta entered the DJ profession as music producer, such detail may not be too high on his list of priorities, especially when playing to a crowd of thousands with synchronized fireworks, when advance planning is all-important. In such circumstances, perhaps the notion of a digital music performer, rather than of a digital DJ may be more appropriate. However, Guetta is marketed as a DJ, with the specific audience expectations that this role entails, which includes not only Auslander's notion of mediatized *liveness*, but also the idea of interactive presence, as part of a participatory dialogue.

Participation

Against Auslander's argument regarding the *mediatization*, and thereby *hyperreality*, of contemporary music performance, Steve Dixon (2007) argues that *Live Presence* in (digital) performance invites communal interaction, activating the audience, and thereby bringing *liveness* into a performance. Interaction between the digital DJ and the audience, then, may be crucial in producing a sense of authentic performance. In his discussion of attitudes towards analogue and digital DJ styles, Attias (2013) notes the importance of 'risk' in how audiences judge a DJ-set, in particular when synchronizing, through beat-matching, two or more recordings in the mix. However, digital DJs benefit from beat-matching functions, such as the sync (synchronization) button that minimize the possibility of making mistakes during a

layering segue between recordings. This means that the technical turntable skill to align the tempo of recordings, which gained an almost obsessive popularity during the 1990s with techno and house music DJs and fans, is now less central to digital DJ performance (the flipside being that for DJs who use turntables to play analogue vinyl recordings, beat-matching is regarded as a crucial skill). Instead, live remixing is emphasized — for example, through the re/combination of recording fragments and a percussive use of special effects. In addition, Fikentscher (2013) argues that the music program, meaning the selection of the ‘right’ record at a specific moment in the sequence of the DJ performance, has returned in importance in the era of digital DJ technologies. Hereby, a creative approach to the arrangement of available music elements actively contributes to a sense of *live presence*, comparable to jazz improvisation performances. In such cases, of taking risk and in programming a DJ set, a live feedback loop between dancers and the DJ seems crucial to the audience experience of authenticity.

Feedback between DJ and dancers can take on a range of sensory aspects from ‘feeling the vibe’, based on dance movement, audible responses, increase and decrease of heat; however, in a visually dominated culture, this seems often interpreted in terms of visual interaction. Butler (2014) notes that many of his respondents seem to associate the laptop more with administrative activities such as checking email than with music performance. This can be illustrated further by a DJ-training blog, where in DJ Sean Gallagher (2012) comments that,

The challenge ... is that DJs are now even more boring to watch. Lots were fixated on the mixer and the decks to begin with. While this was boring itself its (sic) not as boring as watching someone click a mouse on their laptop ... If you just stand there pressing the Sync key between loading tracks, that’s not really a show.

Indeed, there is a visual disconnection between the minimal physical finger movements that the digital equipment requires and the dynamics of electronic dance music, or what sound artist Cascone calls a lack of “gestural theatre” (in Turner,

2001: online source). According to Butler (2014: 66) the digital DJ compensates for such an audio-visual discrepancy through “a coupling of aural and visual signals through the medium of movement”, because “nerve cells ... fire not only when an individual performs a certain action but also when he or she observes that action performed by someone else”. Hence, the addition of hardware interfaces and effects to a computerized live set-up, as is noted in the performance of Henrik Schwarz, not only helps the digital DJ to perform in a tactile and kinetic manner, but also to make their shows visually more engaging.

There is also a trend for DJs to ‘tweak’ (adjust) effect and EQ controllers, to process sound from a wide range of sources. In all three performance examples discussed above, Goth-Trad, Masters at Work and Henrik Schwarz, this is an ongoing practice through-out the performance in order to produce a cohesive soundscape, to deconstruct or emphasize aspects of a music production and to ensure a strong audio delivery. However, in the case of laptop and CDJ performances, these actions may seem the main evidence of live performance. This has led to some critical ridicule, especially of well-paid DJs, as illustrated in videos such as “What DJs Do These Days ...” (FelsarMusic, 2014). This clip shows DJs Sander van Doorn, Laidback Luke and Steve Aoki seemingly doing little else than raising their hands in the air, nodding their heads to the beat, playing air guitar and twisting the occasional audio controller, accompanied by satirical comment boxes to point out their ‘knob turning’ antics.

Although visually such actions do not seem to directly connect with the music, Butler (2014: 106) proposes that such ongoing audio adjustments perform a type of “listener orientation”, a “dual consciousness” in which the DJ is both producing and consuming the music. The DJ is thereby a participant in the event within an active feedback loop with a “performing audience” (112), a point that resonates with Ferreira’s (2008) argument regarding the collective experience of a DJ performance.

Ferreira (2008) argues that the embodiment of recorded music takes place not in the DJ but on the dance floor, as participants dance to the music and thereby bring it to life. In this model, although the DJ makes decisions about what to play and when, the dancers, the participants, make important contributions to this creative process as they literally vote with their feet. In such circumstances, the musical skills of the DJ to interact and improvise with the crowd are crucial. Through the manipulations of a range of aspects, including the music, the dance space and the imbibing of “body technologies” (Rietveld, 1998), a core of participating dancers “work” towards a peak experience, where the different elements of a dance event fall into place (Pini 2001: 176), including a synchronicity with the performing DJ (St John, 2009). Such interaction can be based on sonic dominance, rather than on visual performance. For example, a study of DJ-led Jamaican sound-system events by Henriques (2011) shows an emphasis on the immersive auditory experience of dancing to recorded music, in which the musical vibe of the dance floor is emphasized. A DJ performance, whether digital or not, can therefore be audibly live in an improvised sense in response to crowd, as part of a stimulating (rather than simulated) dialogue.

Conclusion

In summary, on the one hand, risk and improvisation are heralded as measures of authentic DJ performance, creating a sense of *live presence*, while on the other hand authenticity can be based on the mediatization of the DJ’s production work a comparison of existing productions to a performance. To achieve an authentic sense of presence within the performance of a digital DJ, participation by all relevant actors seems key. This may be the result of the ability of the DJ to interact with the crowd, sometimes through the music alone, through sonic immersion, but also through a visual connection between the musical dynamics, and the actions of the DJ and of

other performers, in dialogue with the audience. In this way, the DJ can appear to be part of, and yet separate from, the audience, while as participant, the audience is part of the musical performance, creating a live feedback loop, in which improvisation of music arrangements can be an important component. Nevertheless, improvisation in music programming, is not always practically possible as during large spectacular events, a set can be pre-produced due to complex logistics, to achieve a sense of *liveness*. Such issues are not new for DJs, whether analogue or digital. However, an increased invisibility of what digital DJs actually *do* during a performance exacerbates the debate regarding the authenticity of a live DJ set. In addition, the affordances of digital performance technologies have intensified a blurring between music production and music performance, as well as between pre-set composition and improvisation. In summary, audience expectations are not only historically shaped, but are also formed by the mediated and technologized contexts of a DJ performance.

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References

- Abbott, Jeremy (2012) Has David Guetta Been Caught Faking It? *Mixmag*. 13 August. <http://staging.mixmag.net/words/news/has-david-guetta-been-caught-faking-it> Accessed 20 August 2012
- Ableton (2013) Paula Temple on “Colonized”, Live 9, and Push. *Ableton Artists*. 3 June. <https://www.ableton.com/en/blog/paula-temple-colonized-live-9-and-push/> Accessed 28 February 2015
- Ableton (not known) Schwarzonator II by Henrik Schwarz. *Ableton: Max for Live*. <https://www.ableton.com/en/packs/schwarzonator/> Accessed 28 Feb 2015

- Amsterdam Editor (2013) Red Bull Music Academy FT. Henrik Schwarz. *Red Bull Studios Network*. 27 June 2013. <http://www.redbullstudios.com/articles/red-bull-music-academy-session-ft-henrik-schwarz-0> Accessed 27 February 2015
- Asanuma, Yuko (2014) Goth-Trad: A New Epoch. *Ableton Artists*. 30 April <https://www.ableton.com/en/blog/goth-trad-after-dubstep-a-new-epoch/> Accessed 28 February 2015
- Attias, Bernardo A. (2013) Subjectivity in the Groove: Phonography, Digitality and Fidelity. Attias, Bernardo A., Gavanas, Anna, and Rietveld, Hillegonda C. (eds) *DJ Culture in the Mix: Power, Technology, and Social Change in Electronic Dance Music*. London and New York: Bloomsbury Academic: 15-50
- Attias, Bernardo A. and van Veen, tobias c. (2012) Off the Record: Turntablism and Controllerism in the 21st Century (Part 2). *Dancecult*, Vol 4, No 1. <https://dj.dancecult.net/index.php/dancecult/article/view/332/328>
- Auslander, Philip –
- (2011) Afterword: Is There Life After Liveness? In Susan Broadhurst and Josphine Machon (Eds) *Performance and Technology: Practices of Virtual Embodiment and Interactivity*. Basingstoke and New York: Palgrave Macmillan: 194-198
- (2008) *Liveness: Performance in a Mediatized Culture*. Second edition. London and New York: Routledge
- Baudrillard, Jean (1988) *The Ecstasy of Communication*. New York: Semiotext(e).
- Brewster, Bill and Broughton, Frank (2006) *Last Night a DJ Saved My Life: The History of the Disc Jockey*. 3rd Edition. London: Headline.
- Butler, Mark J. (2014) *Playing with Something that Runs: Technology, Improvisation and Composition in DJ and Laptop Performance*. Oxford and New York: Oxford University Press.

- Cascone, Kim (2002) "Laptop Music—Counterfeiting Aura in the Age of Infinite Reproduction", *Parachute Contemporary Art*. Issue 107, June: pp 52-60.
<https://www.zotero.org/pedroliveira/items/itemKey/8QM5JPHV> [Accessed: 4 April 2015]
- Dixon, Steve (2007) *Digital Performance: A History of New Media in Theater, Dance, Performance Art, and Installation*. Cambridge MA and London: MIT Press
- Ferreira, Pedro Peixoto (2008) When Sound Meets Movement: Performance in Electronic Dance Music. *Leonardo Music Journal*. Special Issue: *Why Live? Performance in the Age of Digital Reproduction*, Vol. 18: 17–20.
- Fikentscher, Kai –
- (2013) "It's Not the Mix, It's the Selection": Music Programming in Contemporary DJ Culture. Attias, Bernardo A., Gavanas, Anna, and Rietveld, Hillegonda C. (eds) *DJ Culture in the Mix: Power, Technology, and Social Change in Electronic Dance Music*. London and New York: Bloomsbury Academic: 123-150.
- (2003) "There's not a problem I can't fix, 'cause I can do it in the mix": On the Performative Technology of 12-Inch Vinyl. Lysloff, René T.A. and Gay, Jr, Leslie C. (Eds) *Music and Techno Culture*. Middletown CO: Wesleyan University Press: 290-315
- (2001) 'The DJ as Composer, or How I Became a Composing DJ'. *Current Musicology*, 65: 93–8.
- (2000) *'You Better Work!' Underground Dance Music in New York City*. Hanover, NH and London: Wesleyan University Press.
- (1997) 'The DJ as Performer'. In Helmi Järviuoma and Tarja Hautamäki (eds) *Music on Show: Issues of Performance*. Tampere, Finland: Department of Folk Tradition, University of Tampere: 70-74

Frith, Simon (1986) Art Versus Technology: The Strange Case Of Popular Music. *Media, Culture & Society*. July. Vol 8: 263-279.

Gallagher, Sean (2012) How To DJ On A Laptop: A Beginner's Guide To DJing On A Laptop. *How To DJ Fast.com*. <http://www.howtodjfast.com/how-to-dj-on-a-laptop/>
Last accessed 4 November 2014

Gwertzman, Michael (2004). With a Nod to Vinyl, CDs Take Over the Turntable. 23 September. *The New York Times*.
http://www.nytimes.com/2004/09/23/technology/circuits/23basi.html?_r=0
Accessed 5 January 2015

Henriques, Julian (2011) *Sonic Bodies: Reggae Sound Systems, Performance Techniques, and Ways of Knowing*. London and New York: Continuum.

Katz, Mark (2012) *Groove Music: The Art and Culture of the Hip-Hop DJ*. Oxford and New York: Oxford University Press.

Lawrence, Tim (2003) *Love Saves the Day: A History of American Music Culture, 1970–1979*. Durham, NC and London: Duke University Press.

Middleton, Richard. (2006), "'Last Night a DJ Saved My Life": Avians, Cyborgs and Siren Bodies in the Era of Phonographic Technology', *Radical Musicology* 1: 1-31.

Music Radar (2014) Henrik Schwarz's favourite music software. *Music Radar*. 27 June <http://www.musicradar.com/news/tech/henrik-schwarzs-favourite-music-software-602671> Accessed 27 February 2015

Pini, Maria (2001) *Club Cultures and Female Subjectivity: the Move from Home to House*. London: Palgrave.

Porcello, Thomas (1991) The Ethics of Digital Audio-Sampling: Engineers' Discourse. *Popular Music*. Volume 10 / Issue 01 / January: 69-84

Rietveld –

- (1998) *This Is Our House: House Music, Cultural Spaces and Technologies*, Aldershot: Ashgate
- (2011) Disco's Revenge: House Music's Nomadic Memory. *Dancecult: Journal of Electronic Dance Music Culture*. 2 (1): 4-23 <http://dj.dancecult.net>
- (2013a) Introduction. Attias, Bernardo A., Gavanoas, Anna, and Rietveld, Hillegonda C. (eds) *DJ Culture in the Mix: Power, Technology, and Social Change in Electronic Dance Music*. London and New York: Bloomsbury Academic: 1-14.
- (2013b) Journey to the Light? Immersion, Spectacle and Mediation. Attias, Bernardo A., Gavanoas, Anna, and Rietveld, Hillegonda C. (eds) *DJ Culture in the Mix: Power, Technology, and Social Change in Electronic Dance Music*. London and New York: Bloomsbury Academic: 79-102.
- (2007) The Residual Soul Sonic Force of the Vinyl 12" Dance Single, in: Charles Ackland (Ed) *Residual Media*, Mineapolis MN and London: University of Minnesota Press: 97-114
- St John, Graham (2009) *Technomad: Global Raving Countercultures*. London and Oakville: Equinox.
- van Veen, tobias c (2002). Digital DJing: Richie Hawtin and (the) Final Scratch, from *Discorder*, Jancember. *Quadrant Crossing*.
<http://www.quadrantcrossing.org/papers/DigitalDJing%28Hawtin%2902-Disc-tv.pdf> Accessed 4 December 2014
- Yu, Jonathan (2013) Electronic Dance Music and Technological Change: Lessons from Actor-Network Theory. Attias, Bernardo A., Gavanoas, Anna, and Rietveld, Hillegonda C. (eds) *DJ Culture in the Mix: Power, Technology, and Social Change in Electronic Dance Music*. London and New York: Bloomsbury Academic. 151-173.

Video

Boiler Room (2012) Henrik Schwartz live in the Boiler Room Berlin. *YouTube*, 3 December <https://www.youtube.com/watch?v=hyVq--qZVEI> Accessed 6 January 2015

Boiler Room (2014) Masters At Work Boiler Room London DJ Set, 28 Aug <https://www.youtube.com/watch?v=tfRJhmC-G1Y> Accessed 27 February 2015.

Boiler Room (2015) Goth-Trad. Tokyo: Back to Chill. *Daily Motion*. 29 January <http://boilerroom.tv/recording/goth-trad/> Accessed 24 February 2015.

FelsarMusic (2014) What DJs Do These Days ... (Original)" 7 April, *YouTube*. <https://www.youtube.com/watch?v=Nh9C7nQHmII> Accessed 7 January 2015

Discography

Henrik Schwarz & Kuniyuki (2010) 'Once Again (a Henriks Version)'. (Mule Music 46). Japan: Mule Music