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Cloud Connectivity and Contemporary Electronic Dance Music Production

Martin K. Koszolko & Ed Montano
RMIT University

Abstract

Remote music collaboration software enables interaction between global communities of musicians across transcultural and transnational spaces, creating globalized networks of connected music producers. Examining practices around contemporary music production in the cloud generates new perspectives on how technological change impacts upon connectivities across the international mediascape. This article analyses the various characteristics of electronic dance music production in the cloud that are engaging international collaborators across global space, tracing how shifts away from traditional studio settings have redefined notions of music production, and how new technologies have impacted on interaction between music producers. In doing so, it makes broader points about how social networking combined with cloud-based music production technologies can lead to new and alternative approaches to music production in international contexts, and how this subsequently impacts on understandings of local music scenes.

Keywords: Music production, cloud software, electronic dance music, music technology, music scenes.

Résumé en français à la fin de l'article

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Introduction

The practice of remote music collaboration has undergone a phase of unprecedented growth in recent years. Capitalising on previous developments in the field of networked music collaboration, contemporary remote music collaboration software (RMCS) enables interaction between global communities of musicians. This technology has opened new avenues for the crowdsourcing of musical input and collective work, facilitating sustained connectivity across the global music production space. Platforms such as Ohm Studio and Audiotool provide the tools for musicians across the globe to come together and build creative relationships that previously may never happened. In this process, the role of local aspects in shaping music appears to be undermined. Communities of practice are no longer tethered to immediate geographical surroundings. In remote music collaboration, the online space anchors the creative practice of composers and producers, replacing the physical and material spaces of rehearsal rooms and recording studios.

This article explores contemporary electronic dance music (EDM) production in the cloud. Drawing on over a decade of ethnographic research in Australian EDM culture, together with the creative practice of one of the authors, this article looks at the communication tools embedded within RMCS to consider how new global connectivities are being formed between EDM producers, and the impact of these on our understanding of local music activity. The practice of online music collaboration is evolving rapidly, supported by the various platforms that have been developed over the past few years to facilitate collaborative music production. These platforms accommodate various modes of inter-connected work and are designed as social networks where musicians can meet and engage remote partners, learn from each other and create music collectively. The article focuses on three examples of RMCS that facilitate collaborative music production in the cloud: Ohm Studio, Audiotool and Blend. The recent development of this technology is shifting the creative practice of globally dispersed EDM producers, and in doing so is creating new connectivities and interactions between these producers, and new paths of circulation for their work.

Our concern in this article is with the connectivities that are generated through the different communication tools embedded within and related to RMCS. Internal options (such as private messaging and private chat) can be combined with external options (such as Facebook and Skype) to create communication pathways for music producers to collaborate online.[1] Through the description of three separate music production projects conducted by co-author Martin Koszolko across three RMCS platforms, the article explores how producers connect within and outside of RMCS, and considers what communication tools are most effective for successful online cloud-based music collaboration. Building on Théberge's (2004) work on the "network studio", the article then considers the potential impact of RMCS on our understandings of local scenes. Drawing on interviews with EDM producers and DJs in Sydney and Melbourne, we argue that RMCS and the creative practice it facilitates further detach producers from their immediate locality. We see this as a continuation of processes that gathered pace with the introduction of music downloading and online distribution in the late 1990s alongside the development of the home studio, challenging the materiality of music formats but also championing the global dissemination of music styles. As Prior notes, "the laptop and the software forms that inhabit it both afford and intensify music's non-materiality and hyper-mobility, lubricating its diffusion into myriad spaces (virtual and face-to-face) and practices (collective and individual)" (2008: 928).

The global has become an increasingly present component of the outlook of music producers, particularly those who work within EDM, a style of music that is arguably the least reliant on the communities and infrastructures of local practitioners. Rock music, by comparison, often relies on the coming together of local musicians to form bands that require local rehearsal spaces. That is not to say RMCS does not accommodate the work of rock artists, or that rock bands avoid online production methods, but rather EDM (and electronic music more broadly) seems the style most likely to benefit from the new modes of collaboration that occur via RMCS. Furthermore, while we do not suggest that the studio of the EDM producer sits within some kind of abstract space separate from any connection with the local, RMCS takes the producer's work into the global sphere. As Pignato and Begany explain, "[t]oday's musicians

[1] We use the term "producer" in a broad sense, to refer to someone who composes, arranges, performs and produces. As Macedo observes, by the end of the 1970s "the term *producer* could encompass a wide range of different roles, including creative activities such as arrangement, composition and studio performance" (2013: 212; original italics).

are plugged in and progressively more connected to content, friends, publications and potential opportunities distributed far afield of their own geographic locations" (2015: 112).

Music Production and Technology

Various aspects of RMCS platforms and the collaborative opportunities they present are indicative of a major "paradigm shift" (Duckworth, 2005: xv) in music production. In much the same way as the Internet caused significant upheaval for the distribution of recorded music and forced the music industry into a variety of reactionary measures (Spotts, 2010; Arditi, 2013; Burkart, 2013), RMCS has significant disruptive potential. Carson (2014) compares the disruption caused by RMCS to such seismic shifts in the music industry as the introduction of radio, the move from analogue to digital recording and the development of online music distribution. As a relatively new field of practice, it is no surprise that little scholarly attention has been given to RMCS, and thus one aim of this article is to start a discussion concerning these new systems. The article is situated in the growing scholarly fields of EDM production (see, for example, Morey and McIntyre, 2014; Nardi, 2014; Solberg, 2014; Zeiner-Henriksen, 2014) and more broadly the art of record production (see, for example, Frith and Zagorski-Thomas, 2012; Zagorski-Thomas, 2014; McIntyre, 2015). Duckworth (2005), Théberge (2004) and, more briefly, Wherry (2015) explore some of the pioneering developments in online musical collaboration that occurred during the 1990s, such as the Rocket Network and Beatnik. More recently, industry media has given some attention to the hardware and software tools required for remote music collaboration (Pejrolo, 2014), although not all of this has been positive, with Wherry concluding his discussion of the history of online music collaboration by asking "whether online collaboration has so far failed to take off because nobody has found the right way to implement it, or if it's simply the case that online collaboration just isn't a good idea" (2015). Hajimichael (2011) discusses online music production, drawing on his own collaborative experiences and concluding that the "virtuality of online creation has its strengths and weaknesses". This would apply to most online creative and collaborative media practices, not just music production.

Some of this questioning discourse arguably sits within a broader historical trajectory of reactions to the impact of technology on music production and consumption. From the concerns of the record industry about radio in the 1920s through to its initial reluctance to embrace

downloading in the early 2000s, and the concerns of musicians and producers to the perceived threats of samplers, synthesizers and Auto-Tune, technology often experiences initial periods of rejection prior to widespread acceptance. Marshall describes how "[n]ew inventions . . . get challenged and ridiculed by parties whose interests may be threatened by new social practices of music-making and music-consuming" (2015: 177). Specific to EDM, Farrugia and Swiss refer to "moments of resistance" in their article on vinyl and new DJing technologies in the digital age (2005: 33). DJing has become riddled with tensions around the use of different formats and technologies (Attias, 2013). These tensions have been articulated through debates on what represents the authentic skills of DJing, and on the different ways these skills are displayed in the contexts of "turntablism" and "controllerism" (van Veen and Attias, 2011, 2012), terms that are used to distinguish between those who mix records on turntables and those who employ laptops and other gear to engage in something closer to live remixing. The different feel and tangibility of digital technologies impact upon the way DJs choose to engage with particular formats, while there are the various affordances (Hutchby, 2001) of these technologies and formats, which subsequently impact upon the way clubbing crowds perceive the skills of a DJ (Montano, 2010). Similar discourses of authenticity also circulate around the use of old and new instruments in the production of EDM (Zeiner-Henriksen, 2014).

Of particular relevance to this article for the way it conceptualizes the recording studio as decentralized is Théberge's idea of the "network studio", where technological developments have generated a global music production environment in which local recording studios can be connected digitally across international lines. For Théberge, this raises questions around the relationships between the recorded sound and local scenes, local musicians and local aesthetics. Notions of space and place become problematized, and are then typically framed within processes of globalization. In a recording landscape where "just about anyone with a computer, anywhere in the world, can participate in the recording of music" (Théberge, 2004: 760), the studio seemingly becomes a "non-place" and "non-space" (Augé, 1995; Théberge, 2004). Composition occurs via "material and non-material flows that radically decentre where music is made and accelerate its distribution across space and time" (Prior, 2008: 919). In turn, local styles seem to be suppressed by dominant Western homogenized sounds. The local becomes obscured (Whelan, 2008: 8).

Yet, as Théberge observes, it is not simply a case of the global superseding the local. The diffusion of accessible, affordable (at least for some) digital technologies around the world has allowed musicians to explore and fuse music styles drawn from beyond their locality, "using low-cost studio technologies to cut and paste the sounds of global pop with local musics, thus living out the contradictions of 'global' and 'local', of culture and identity in a (super)-modern world on their own terms" (Théberge, 2004: 774). In one sense, the local is presented via the global. In another, the global is the means through which the local is produced. Yet the recent growth in the use of RMCS seems to further problematize this local/global divide, reflecting the "*glocalised* experience of electronic technologies" (Rietveld, 2012: 354; original italics). While users may draw on their own local sounds and experiences, the interaction facilitated by the platforms situates users within a "global space of flows" (Prior, 2010: 399). The only place of relevance for the RMCS user is their studio space, which is now often located within the home. Electronic music production does not require the vast rehearsal spaces and recording studios associated with rock music culture. Modern recording and computing technologies facilitate flexible and portable music production. Musicians can now make "music on the move with others. . . . They are untethering cultural production from fixed locations and sending music into a fluid network of exchanges" (Prior, 2010: 405).

Beyond the specifics of music production and technology, we also situate this article in the field of electronic dance music studies. The increasing prominence of EDM as an area of study has given rise to a variety of both scholarly and non-scholarly literature and research projects. With much of the work on DJs and dance music culture taking the form of historical overviews (Poschardt, 1998; Reynolds, 1998; Rietveld, 1998; Brewster and Broughton, 2000; Fikentscher, 2000; Bidder, 2001; Haslam, 2001; Lawrence, 2003; Phillips, 2009), or scene-specific analysis (Murphie and Scheer, 1992; Gibson, 1999; Weber, 1999; Luckman, 2001; Brennan-Horley, 2007; D'Andrea, 2007; Gibson and McGregor, 2011; Reitsamer, 2011), there remains much to be said on the practices and processes that underpin the production of the music itself. While the skills, techniques and technologies of DJing have been given some consideration (Klasco and Michael, 1992; Langlois, 1992: Hadley, 1993; Attias, 2011; van Veen and Attias, 2011, 2012; Farrugia, 2012), there is a noticeable absence of analyses of the socio-economic and techno-cultural contexts that frame EDM production.

Methodology

This article is based on a methodology that combines ethnographic research in the Australian electronic dance music scene with creative practice fieldwork. Our research has involved interviews with various music industry personnel, including producers, DJs, promoters and journalists. Co-author Martin Koszolko has been involved in various aspects of electronic dance music performance and production for the past 15 years. The participant observation conducted by co-author Ed Montano has involved work at Central Station Records in Sydney, together with regular attendance at club nights and festivals, and writing for local dance music media.[2].

The production fieldwork that informs this article involved collaboration undertaken by Martin Koszolko on a dozen musical compositions with approximately forty participants located in various geographical locations on three continents: Europe, North America and Australia (see also Koszolko, 2015a, 2015b). The collaborative projects were conducted within two online DAWs: Audiotool and Ohm Studio. Also used was Blend, a content management collaborative system that allows multiple users to work with several established offline DAWs in an asynchronous way.

Communication Tools[3]

The RMCS used in this research provides various methods of communicating musical ideas. These proved essential when discussing project objectives and working collaboratively. It is important to communicate one's aims clearly when searching for collaborators as well as during the pre-production phase when setting the musical direction, in order to establish that both parties share the same artistic and production objectives. When users fail to communicate or when they contribute musical ideas without explanation, projects come to a halt or people leave feeling they cannot articulate their own creativity or contribute in a meaningful way. Online collaborations often involve more than two people, which can increase the complexity, in which case effective communication is even more essential. As Hajimichael (2011) notes in his

[2] Central Station was one of the city's main independent dance music record stores, and at one point one of six independent record stores all in the same inner-city suburb of Darlinghurst, and all now closed down. The store was part of the Central Station Records Group, which also included other stores around Australia and a record label that has played a significant role in the development of electronic dance music in the country. See Gibson and McGregor (2011) for an account of how some of the Sydney record stores influenced McGregor's own DJing in Dunedin, New Zealand.

[3] In this and subsequent sections, use of the first person is by Martin Koszolko, although all material is co-authored.

discussion of music production online, there are "pros and cons" to the various modes of communication facilitated by "text (MSN/Skype/Facebook), video/sound (Skype) and email (thread of exchanges)".

During my collaborative work, some discussions with users were conducted outside of RMCS, for example via email, Facebook or Skype. One reason for this was that the functionality of private messaging in RMCS is limited. This is particularly evident in Blend, where (at the time of writing) a user sending a message has no access to an archived copy. The only visible messages are the received ones. Even in the case of the more advanced messaging systems available in Ohm Studio, some users prefer functionality such as video chat, unavailable in RMCS but easily facilitated by software such as Skype or FaceTime. Another reason was that some collaborators were using RMCS infrequently and preferred to use an external messaging system that they were monitoring more closely. Finally, an additional reason was that I knew some collaborators before inviting them to work with me within RMCS, and therefore we used pre-existing external communication channels.

Communication within the three researched platforms is facilitated via the following tools: discussion forum hosted by the platform (Ohm Studio); musical contribution in the form of composition and/or recording; private messaging (Blend, Ohm Studio); private chat (Ohm Studio); public project publication; public chat (Ohm Studio); posting a comment on a user's project wall (Audiotool, Blend, Ohm Studio); a system of "sticky" notes (Ohm Studio); and tagging. In addition, I used non-RMCS online communication tools such as email, external private messaging on Facebook, external user groups on Facebook, and video conferencing via Skype.

There is a link between the communication tools on offer in each of the RMCS platforms and the depth of discussions that can be had. Such tools are crucial in negotiating project outcomes, enabling efficient project promotion and engaging new collaborators. In order to foster creativity and increase community engagement, each of the platforms facilitates different forms of contests and creative events. This is particularity evident on Ohm Studio where themed collaborative events are promoted on a weekly basis, and on Blend where a variety of high-profile recording artists regularly stage contests and upload stems of their compositions to be

remixed or new compositions to be developed with a crowdsourced approach. All of the platforms facilitate connectivity for music production, which "fosters not only an educational experience, but a connection between people who might never have met, let alone worked together" (Carson, 2014).

User Engagement in Crowdsourced Projects

RMCS crowdsourced projects typically begin with project creators calling for expressions of interest from potential collaborators. Such expressions of interest are classified differently, depending on the RMCS platform. On Ohm Studio, users are classified as "contributors" as soon as they open a project. On Blend, users need to "pull"[4] a project, and on Audiotool they can request to be added as a contributor to the original project, or remix an existing one and thus create a new version.

One of the misconceptions around how a piece of music functions in the online space is that it can attract attention merely by being available online to an unlimited number of people. Commercial music releases are typically made available to purchase for consumers via online music stores such as iTunes, Bandcamp and Beatport. In the sphere of RMCS, musical ideas are uploaded to engage collaborators. However, my experience as both a music producer selling music online and a RMCS user indicates that the vast majority of projects simply uploaded online will attract very little to no attention. The uploading needs to be followed by a series of promotional efforts. My interactions with other musicians selling music as well as observations of other RMCS users confirm that a passive approach to music dissemination often leads to projects being ignored. Therefore, a key element to success involves those responsible for the music taking a proactive approach to marketing. However, also important is taking a proactive approach to building relationships. For selling music online, such relationships are with fans, as potential buyers of the music. For RMCS, such relationships are with other users, as potential collaborators. All of this is necessary in a contemporary context "characterized through changes and new modes of music production, distribution and consumption as a consequence of digital technology and the new musical arenas opened by the Internet" (Danielsen, Zeiner-Henriksen and Hawkins, 2015).

[4] "Pulling" is the term used on Blend to describe the downloading of an entire published project to the user's Dropbox folder that needs to be synced with the corresponding Blend account.

In order to achieve creative objectives and lead one's projects to completion, music producers face the task of successfully engaging the community. Achieving such user engagement is the marker of a successful production campaign. The level of community engagement in the crowdsourced campaigns I conducted can be linked to the following factors: the available communication tools; the music style/genre interests of users; and the sound editing and processing features available in the platform. The social networking component of RMCS enables browsing through a multitude of user profiles on each of the platforms. The insight into these profiles is, however, simply the first step in building engagement. The next is dependant on the specific communication options that are available.

RMCS users connect and build relationships via the available communication tools. This is linked to the most important modus operandi of building relationships—engaging in conversations with other users. These conversations need to involve much more than simply a call for collaborators. Constant calls for collaborators are akin to taking without giving back, and therefore the potential "reciprocity" (Makelberge, 2012) of RMCS is not fully realised. The effort spent on building relationships with other RMCS users leads to increased trust and knowledge of users' musical capabilities and interests. Even platforms with limited communication tools, such as Audiotool, have thriving communities. Users find ways to overcome limitations. However, platforms with more complex and useful communication tools, such as Ohm Studio, allow for a higher level of interaction. Ohm Studio's private chat, public chat and discussion forum tools were the most useful, alongside private messaging, which is also available on Blend. Private messaging allowed me to achieve more immediate results and build stronger bonds with other users, which I found more difficult within Audiotool.

The level of RMCS user engagement in collaborative projects is affected by other factors too. I observed that the duration of time since the initial uploading of a composition can affect the level of RMCS user interaction. Across all three platforms, the number of plays, downloads and comments is higher for newer songs than older songs. This could be related to newer songs appearing in news feeds on Audiotool and Blend, and in the list of recent public projects on Ohm Studio. Older compositions get pushed down the lists and as such are much harder to find. Therefore, it is important to take advantage of the momentum of a newly published project, as it is likely to receive less user interaction as time passes.

Jaques and Salmon (2010) discuss group behaviour in the online space and refer to how participation can decrease as group numbers increase. In my experience this is the case for large-scale collaborative work in RMCS. I have worked effectively on projects with a small number of participants, but have found problems trying to engage a larger group. Much more important than the number of collaborators is the level of commitment to the project and the subsequent level of involvement.

Examples of Collaborative Projects

For the purpose of this article we present three examples of collaborative EDM-related projects involving communities of users of Audiotool, Blend and Ohm Studio.

Project #1

Platform: Ohm Studio / Blend

Number of active participants[5]: 5

Number of total participants[6]: 10

Background

This composition was started without a pre-defined musical style in mind. It was initiated after a chance encounter with another Ohm Studio user on a public chat. The project is an example of improvisational collaboration (Sawyer 2007). We agreed to conduct a spontaneous recording session where I chose the initial tempo and contributed the underlying chord structure. After the initial collaboration, I took on the role of executive producer and aimed to connect with other users to assess how the song could be developed collaboratively. I continued to crowdsource other musical input in the days following the initial session. Sourced contributions included guitar and bass lines, and additional synthesiser lines. Following these contributions I attempted to find additional song-writing input from other users of Ohm Studio. The main communication tools utilised in this process were private messaging, private chat, public chat, tagging, public project publication and musical contribution. Although my attempts led to several other users joining the project, no other useful input was recorded for over two months. In addition to the input I actively crowdsourced, five other users joined the project without contributing anything. I classify these users as passive participants.

5 The number of users who were creative contributors to the project.

6 The number of users who joined the project, regardless of whether they contributed anything.

The lack of further response via Ohm Studio led to engaging with the external user group on Facebook. Simultaneously to communicating with the external user group, I migrated the initial mix from Ohm Studio to Ableton Live where I added further production and song-writing elements. I decided to publish this new mix on Ohm Studio and Blend. From this point, I engaged in further interactions with users of these two platforms.

Searching for further collaborative input on Ohm Studio led me to incorporate the public chat communication tool. I found that direct calls for participation did not bring desired results. However, during one of the chats I mentioned the project in passing, which led to another user joining and discussing various song-writing ideas via private chat. This user became an active participant in the project and his input included further arrangement changes and co-production. As soon as the new structure, lyrics and vocals had been incorporated into the song, I changed its status on Ohm Studio from public to private, which meant that users wanting to participate now needed to respond to an invitation to join the project.

Evaluation

This composition was an improvisational collaboration. The first difficulty arose when it became clear that contributors came from varied musical backgrounds. For example, one user was a heavy metal player who I initially invited to contribute a bass line, but who ended up contributing several electric guitar lines as well. As a result, received musical contributions were quite disparate. The initial improvisation was not planned, and as such the project lacked clear creative objectives from the beginning. In my subsequent crowdsourcing work, I aimed to steer the composition in a direction aligned with my musical strengths and experiences.[7] However, I gave up on this when I realised the Blend remixes were exploring very different genres from the original, and when one user's work in Ohm Studio led to the incorporation of lyrics and vocals which changed the song substantially. Unlike some of my other collaborative compositions where I provided a set of initial musical ideas, the improvised session starting point of this song meant that I was unable to control the stylistic outcome to the same extent as my other projects. Interactions between project participants impacted and inspired my song-writing and production ideas. The outcomes of the project, particularly within Ohm Studio, suggest that while fast collaborative song writing can be difficult to achieve, it is ultimately

[7] See, for example, my work as KOshowKO: http://www.koshowko.com/ (accessed 25 February 2016).

possible as long as effort is dedicated to participating in public discussions with the use of the public chat tool. Some safeguarding techniques that could be useful in future jam sessions include placing stronger emphasis on initial analysis of the musical interests of participants, as well as on their willingness to commit to more than simply contributing a few short musical phrases.

The early phase of work conducted in Ohm Studio was highly interactive with multiple private and public chat discussions taking place. These discussions allowed for the brainstorming and analysis of ideas. Overall, requesting specific musical contributions to already developed longer song forms has been relatively easy. On the other hand, it seemed initially quite difficult to produce a fully developed song structure and expand the early musical sketch into a longer piece. Ultimately, the connectivity facilitated by Ohm Studio's chat tools was instrumental to the eventual breakthrough and final shape of this composition.

The starting point for developing musical ideas in Ohm Studio was highly spontaneous and unplanned. However, once certain ideas were recorded, further developments became more considerate of the existing elements. In Ohm Studio, I felt a sense of responsibility to preserve the contributions of one of the project initiators. Such considerations did not exist for the two participants on Blend who approached the process as remixing and discarded the drums in both cases.

The production style of another user, who was responsible for the expansion of the initial ideas into the first remix on Blend, was characterised by a very strong adherence to the dub genre. I was interested to hear how he could transform the initial musical sketch into this style. The resulting production did not utilise many of the original stems, and instead made use mostly of the guitar tracks featured in the original mix I posted on Blend. The lack of more prominent use of other initial musical ideas led to this remix being too far removed from the original concept. As such, I perceived the resulting composition as an experiment, which does not have a strong musical connection to the previous incarnation of the track. This is not due to the dub style of the music, but rather the removal of original synthesiser parts.

Upon reflection, the initial song-writing roadblock on Ohm Studio, which led to moving the song into Ableton Live and subsequently publishing it on Blend, was a valuable development. Having the same composition available on two RMCS platforms illustrates how a particular idea might develop, depending on the platform on which it is published. This project demonstrates that Blend productions are very likely to take the form of remixes in different EDM styles, whereas collaborative work within Ohm Studio is likely to include sustained compositional work on just one version of a song, and may incorporate live instruments and elements of other styles beyond EDM. However, the development of this project on Ohm Studio is an illustration of the potential of this platform for simulating face-to-face jam sessions and harnessing the "global cultural flow" (Appadurai, 1990: 301) of EDM. Synchronous writing and production is an exciting process where there are strong motivations to come up with interesting contributions on the spur of the moment. This closely resembles working with band members in the same physical space and geographic location.

Project #2

Platform: Audiotool

Number of active participants: 2

Number of total participants: 2

Background

This project is an example of an externally instigated composition, as my participation was a result of responding to a call for collaboration posted by another user on the Audiotool Artists Facebook group. This project marked my first participation in a project instigated by another Audiotool user. I was invited as a "co-author", the term used on Audiotool to describe contributors. The creative objective was to produce a composition in the EDM subgenre of trap. After the song was published, I learned that as a co-author I could not open the project anymore in order to add further changes. I reported the problem via email to the platform's developers, and it was recognised as a potential bug. However, as Audiotool had been recoded using the HTML 5 programming language, it was made clear to me that such software bugs will not be resolved in the existing Flash version of the platform.

Evaluation

The creative output of this project is a result of working around the various limitations of Audiotool affecting connectivity between collaborators. The key restriction was the software bug preventing me from working on and updating the initial version of the composition. This led to presenting the final mix of the composition as a remix of what essentially should be considered a demo version. For communication I used external user groups and external private messaging.

Even though the written communication via Facebook was limited, I felt musically inspired by the original project draft. However, a lack of discussion creates doubts about another user's involvement in the project and could be interpreted as a sign that the silent user does not have much interest in the project or its outcomes. This poses a question about the motivations of RMCS users choosing to participate in externally instigated compositions. Working on this type of project can prevent contributors from taking charge, as this is often linked to being credited as a key artist, songwriter or producer. Contributors can eventually become songwriters or producers, which is dependant on the scale of their creative input as well as their ability to negotiate with the project creator. Audiotool as well as other RMCS platforms allow for all users involved in a project to be automatically credited. On this composition, my collaborator included my artist name in the title of the first project he published, so it read as "Lose (ft. KOshowKO)". While developing my own version I credited the project to KOshowKO vs. Paolo Palacios and renamed it "Lose", which identifies publically the key artists behind the composition.

Project #3

Platform: Blend

Number of active participants: 3

Number of total participants: 13

Background

I started this project by producing the initial sketch on an iPad using the Egoist app and then migrating it to the Ableton Live DAW. The creative objective promoted to Blend members was to develop and expand the existing sketch into a longer song form. As such, the key skills being

crowdsourced were song writing and music production. As this was one of the first projects I uploaded to Blend, I did not know many members of its community. This meant I relied on users unknown to me to join the project and contribute ideas. Over time I became a more proactive user of Blend, utilising private messaging to contact potential collaborators. However, for this composition the only communication methods used to crowdsource contributions were public project publication and tagging.

The connectivity between project participants was strengthened by posting comments on user project walls, where users posted feedback and questions regarding different versions of the composition. This included users who only considered participating in the project and had pulled various versions without contributing or publishing anything. The project received a small promotional push via the Blend blog, which led to an increase in user participation.

Evaluation

Collaborative work on this project makes evident strengths of the Blend platform, such as the ability to access full Ableton Live sets created by other users and the ability to publish subsequent versions of the initial composition. The incorporation of wall posting as a key communication tool allowed users to provide comments on versions of the project as well as indicate their willingness to participate. Users have no other option but to take turns in publishing their musical ideas. Therefore, the creative output is developed not by shaping ideas through verbal conversations during synchronous sessions (as possible on Ohm Studio), but by taking a user's mix as a starting point and responding with one's own amendments. These are shaped through autonomous work and take the form of another mix published on the platform in response to the previous mix.

As evidenced by the fieldwork detailed above, the built-in communication tools of RMCS are essential to facilitating successful collaboration and keeping collaborators engaged beyond their initial expression of interest. Depending on the platform, producers either conduct independent work that involves a series of exchanges and remixes, or the collaboration can more closely resemble that of the instant, in-the-moment interaction of live music rehearsals. Different modes of work are afforded by different RMCS platforms, and thus it is important to consider all features when assessing the suitability of a platform for a particular project. For EDM

production, the fieldwork indicates that Audiotool and Blend are the most suitable for work in this style.

In light of this analysis of RMCS as a collaborative music production tool, we now look more broadly at the global diffusion of EDM. RMCS has the potential to further this diffusion, bringing scenes together and eroding points of difference. As demonstrated by the above project examples, the internal and external communication tools related to RMCS facilitate collaborative, connected workflows that are unrestrained by time or location. In the following discussion we draw on ethnographic research in the Sydney and Melbourne EDM scenes, and consider some of the ways in which EDM scenes are both connected and isolated. The purpose of this is to situate RMCS in a broader techno-cultural landscape that has become increasingly dominated by media connectivities.

RMCS and Local Scenes

The increased global spread and availability of music that has occurred over the past 20 years through online technologies has brought geographically disparate scenes closer together. While dance music scenes may once have been characterized by musical distinctions brought about through the tyranny of distance, Straw noting 14 years ago how "the availability of vinyl has become one of the important ways in which national musical cultures remain differentiated" (2002: 175), such distinctions seem increasingly hard to identify in contemporary scenes where access to music is instantaneous. EDM culture now revolves around an international interconnectedness, Sydney DJ and producer Seb Chan describing how "it is hard to say now that these scenes have boundaries. They don't have national borders nowadays, but they certainly did before the ability to transmit music became so easy".[8] RMCS will only serve to enhance and further this connectivity, breaking down the stylistic boundaries and markers that used to divide scenes in different geographic locations. This global network of dance scenes has been reinforced by DJs moving their music buying away from record stores and across to the online space. The use of RMCS shifts producers away from local collaboration and over to global interaction. DJs and producers are thus exposed to a wider variety of styles and sounds. For Sydney DJ and producer Mark Alsop, this expands the sonic palette of his DJ performances:

[8] Seb Chan, interview with the author (Sydney), 25 August 2005.

> Back when I first started [DJing], I used to go to three record stores, twice a week, and still not find a lot of the music that I knew was out there. Now, you can sit in the privacy of your house and listen to [web]sites with new releases [each] day. That influences your set, it influences your sound, it influences your style, because it is stuff that, without the Internet, you would never have sourced and never have known about.[9]

Yet while there may seemingly be a globalization of EDM scenes, locality and identity still serve to create place-specific dance scenes that have unique practices and infrastructures, or rather as Thornton suggests, even if the music and fashions of club culture are marketed on a global scale, "the crowds are local, segregated and subject to distinctions dependent on the smallest of cultural minutiae" (1996: 99). As Olson highlights in his discussion of scene as a concept, each scene has its own unique shape, or rather "scenes have identities independent of their relationships to or differences from other scenes" (1998: 279). Scenes are defined not just by the music that is produced and performed within them. A range of factors influences the distinctions between scenes, from fashion and audience behaviour through to venues and climate. Seb Chan suggests it is the laws and geographical and meteorological factors that shape the Sydney scene into a unique entity:

> Why is Sydney different to Melbourne? Licensing laws, geography, no beaches in Melbourne, shittier weather in Melbourne, or perceived shittier weather in Melbourne, venue spaces, people, demographics, cultural things. . . . Why did a techno scene spring up in Melbourne and die out in Sydney? Why are there more art galleries in Melbourne than in Sydney? Why are there more beachside cafes in Sydney rather than Melbourne? Why does lemon gelato sell more in Sydney than in Melbourne? Sydney is different because it's got the beach and it's got the bush close by. People go out more to those kinds of things. They invest less of their time in indoor cultures, like music, art, and books. That would be my blanket statement, which is probably unfounded in many cases, but generally, I would say that Melbourne is an artier city, because there's not much else to do there. The weather is shit so you've got to go out in any case, and you'll go out when it's raining. You try putting a club on here and it's raining, no one comes. Just really simple things like that [make a scene unique].[10]

While there may be certain features that are unique to the Sydney and Melbourne scenes, EDM culture is grounded in an international sensibility. Scant regard is shown for the geographical origins of tracks, producers or DJs, whereas in rock music place is often tied to the cultural authenticity and credibility of an artist or style, for example Liverpool and 1960s beat groups, Manchester and late-1980s indie, and Seattle and its association with early-1990s grunge. This is not to deny the importance of places such as Detroit, Chicago and Ibiza in the historical

9 Mark Alsop, interview with the author (Sydney), 17 July 2006.
10 Seb Chan, interview with the author (Sydney), 25 August 2005.

development of dance music culture, but EDM largely transcends national borders. RMCS has the potential to push this further. In a world where collaborative opportunities are located within global flows, it seems likely that isolation and separation will no longer be defining factors in the production of music and the development of scenes. This will, we hope, bring about new and original music, although it seems less likely that scenarios such as the one described below by Sydney DJ and producer Stephen Allkins will ever exist again:

> Infusion, Itch-E and Scratch-E, Robert Racic … we were doing stuff in the 1980s. We didn't wave flags, and just got on and did it, and it was incredibly ahead of its time. If you listen to early Itch-E and Scratch-E albums now, producers weren't doing it in England, they were still doing piano-based house, whereas in Australia, because we were so isolated, we didn't need references.[11]

Conclusion

With RMCS the producer is no longer constrained by the limitations of their immediate environment. Musicians can be sourced from all over the world. Locality becomes irrelevant. In the connected world of remote music collaboration, it is digital, and not physical, environments that drive the interaction. This connectivity generates new methods of working and new modes of collaboration. While place will always have a role in the coming together of musicians and the production of new music, Weinberg arguing that "a graphical user interface cannot replace the personal, unmediated connection provided by tactile interaction with physical instruments in a local space" (2005: 28–9), EDM does not rely on such place-centred interaction.

The emerging technologies of music production in the cloud challenge the myth of online work as an isolating and solitary practice. The communication tools incorporated into cloud production software facilitate relationship building and continued interaction. While such interaction is constrained by language, access to equipment and ability to use that equipment, RMCS presents opportunities for musicians across the globe to engage in instant and sustained collaboration. In doing so, scenes are further embedded within global media flows and connectivities. RMCS creates new connectivities between music producers, "displacing the need to be physically co-present with collaborators" (Prior, 2010: 405). In doing so, global flows of the World Wide Web become the main routes through which music travels. For EDM, this detaches the production process even further from local scenes. Of course, such flows and processes should not be romanticized as globalized and democratized (Bates, 2012), as Internet

[11] Stephen Allkins, interview with the author (Sydney), 19 January 2006.

access, equipment ownership and user knowledge exist within quite specific contexts that run mostly through affluent Western societies, even if, as Thorgersen suggests, increases in Internet and computer speeds "available for people with average incomes in the developed world, combined with fairly recent advances in Internet browser technology, have led to an explosive development of browser-based software" (2012: 138).

Overall, RMCS is an example of how "[i]n recent years, new forms of networking have led to the establishment and sustaining of new communities across geographical and stylistic boundaries" (Danielsen, Zeiner-Henriksen and Hawkins, 2015). Further research on RMCS could take a musicological approach on performative practice or composition analysis and look more closely at the work produced through the platforms; or a sociological angle could be explored and attention given to the relationships and interactions between RMCS users; or focus could be placed on the political economy of RMCS by looking at how some of the music enters the commercial marketplace, how users negotiate copyright and collaboration, or the business models employed by the platforms.

While we do not propose that RMCS will connect all corners of the world any time soon, current engagement with the three researched platforms demonstrates that cloud-based technologies have the potential to generate new creative relationships that extend far beyond the confines of the studio. We disagree with Wherry's (2015) suggestion that "nobody wants to work this way" and assertion that "[t]he best collaborations between musicians generally happen when people are in the same physical studio, and any virtual alternative is usually just a compromise". RMCS has been embraced globally, and musicians are engaging in collaborative work in ways that represent their preferred mode of working. It may be an alternative, but there is definitely no compromise.

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Appendix

Project #1 URLs:[12]

Ohm Studio version (92 BPM, duration 03:33):

<http://www.ohmstudio.com/session/270672/wild-hard-happy-and-high>

First version in Blend (92 BPM, duration 01:48):

<https://blend.io/pos/something-darkish>

Second version in Blend (120 BPM, duration 05:44):

<https://blend.io/Spage/something-darkish-from-pos>

Third version in Blend (125 BPM, duration 02:50):

<https://blend.io/pasztor/something-darkish-stems-from-pos>

[12] All URLs were valid at the time of writing (July 2016).

Project #2 URLs:

First version (155 BPM, duration 02:22):

<http://www.audiotool.com/track/lose_ft_koshowko/>

Second version (146 BPM, duration 04:19):

<http://www.audiotool.com/track/koshowko_vs_paolo_palacios_-_lose/>

Project #3 URLs:

First version (71 BPM, duration 01:00):

<https://blend.io/project/54ec8036ac320eaa4300fc45>

Second version (133 BPM, duration 05:24):

<https://blend.io/project/54f6c0f74e9b88b41b000894>

Third version (122 BPM, duration 06:00):

<https://blend.io/project/5502366ea11bc9c76d001b06>

Fourth version (128 BPM, duration 05:39):

<https://blend.io/project/55088789bd6bcb55720000d0>

Fifth version (122 BPM, duration 05:48):

<https://blend.io/electrobongo/koshowko-eastern-egoist-from-pos>

Ed Montano is a lecturer and tutor in the Bachelor of Arts Music Industry program at RMIT. His current research explores the contemporary electronic dance music scenes of Sydney and Melbourne, with a focus on clubs, DJs and the music industry. He is currently on the executive committee of the Australia-New Zealand branch of the International Association for the Study of Popular Music, as Web Coordinator and is Music Area Chair and Web Coordinator for the Popular Culture Association of Australia and New Zealand. He is also on the editorial board of The Australasian Journal of Popular Culture, *and a production assistant for* Dancecult: Journal of Electronic Dance Music Culture.

Martin Koszolko teaches at RMIT University. He has been also responsible for production and remixes for Philosophy Of Sound, Kamp!, Koshowko, Mirror People, Disco Stu, B(if)tek, Winduptoys, Valley Forge as well as reworking of Severed Heads' 'Ugly Twenties' among other production credits. Other composition credits include appearances on numerous compilation albums.

Résumé

Les logiciels de collaboration musicale à distance permettent l'interaction entre les communautés mondiales de musiciens, disséminés à travers des espaces transculturels et transnationaux, créant ainsi des réseaux mondialisés de producteurs musicaux connectés entre eux. Étudier les pratiques de la production musicale contemporaine dans le nuage génère de nouvelles perspectives sur les façons dont les changements technologiques ont eu un impact sur les connectivités à travers le paysage médiatique international. Cet article analyse les diverses caractéristiques de la production de musique électronique de danse dans le nuage mobilisant des collaborateurs à travers le monde, retraçant d'une part comment les écarts par rapport aux studios traditionnels ont redéfini les notions de production musicale et, d'autre part, comment les nouvelles technologies ont influencé les interactions entre les producteurs musicaux. Ce faisant, il élargit la vision sur les manières dont le réseautage social, combiné aux technologies de production musicale du nuage, peuvent conduire à des approches nouvelles et à des alternatives à la production musicale dans un contexte international, et comment cela a des répercussions sur la compréhension des scènes de musique locale.

Mot-clés: production musicale, logiciel en nuage, musique électronique de danse, technologies musicales, scènes musicales.