MSI263 Individual Report - Michael Freeman (Holmes) - 6th May 2024
Live Performance Title: "EarthBeat"

The importance of liveness in electronic music has been expressed by successful performers such as Orbital.

"*It's a bit disappointing if it's purely electronic music and there's no interaction at all, not even playing or singing over a backing track. Audiences are wise to it, I think, and they do feel disappointed if they can shut their eyes and hear exactly what they would hear playing the records at home. It's important to us that the live situation is a performance, an event.*" (Ward 1993)

I was inspired by attending a live performance by The Orb (Freeman 2024b).

Fig 7: The Orb playing live.

A live performance (KEXP 2010) which depicted the performer using control surfaces that were tilted towards the audience, gave me an approach to combine live visuals with displaying the controls of two Roland Aira Compact devices on a screen to emphasise live manipulation and create more interactive liveness.

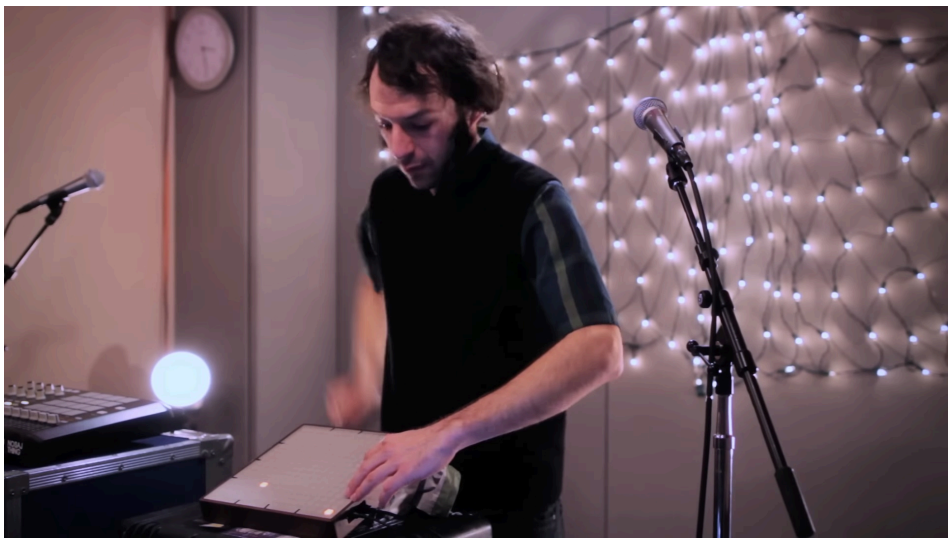

Fig 1: Daedelus with live performance equipment tilted towards the audience.

One area where visibility is important is the DJ turntable. The DJ shows off his skill of scratching which is part of the audience participation. There's also a heightened sense of liveness and tension due to the possibility of mistakes being made.

> "*'I was looking for her to make a mistake but she didn't' (cited in Reason and Reynolds 2010). For audiences, therefore, interest and tension aren't dependent on something actually going wrong, but the awareness of that possibility.*" (Reason 2017)

Emphasising the view of live manipulation of Aira controls by putting them on a screen was intended to emphasise this effect.

I was attracted to using Unreal Engine as I'd originally used Blender Game Engine and FI Studio ZGameEditor to display live video in a 3D world (Freeman 2023, 2015). I streamed video into the Unreal game engine (Freeman 2022) as well as developing a 3D particle system (Freeman 2024d). I found that Unreal is Apple agnostic due to disputes between Apple and Epic (Pothen 2024) and I could not use a live input with Unreal. I looked into digitising the camera to low latency live streaming video (Zakaryaie 2021). This rapidly became over complicated. I abandoned Unreal and I moved towards Cycling 74's Jitter.

I developed a way to influence the mesh of a sphere in Jitter along to the audio (Freeman 2024). This would take the form of audio input changing the surface of the sphere while the bass drum would throb the sphere in and out with the sphere shrinking to a point at the peak of the bass drum hit and then growing back to full size between each beat. This approach allowed the performance to have specific types of liveness to be emphasised.

"*[…] a presence in space and time distinct from the human performer (spatio-temporal liveness); to reveal the causes of sounds (corporeal liveness) […]*" (Waite 2019)

These types of liveness were emphasised by the bass drum beat through the throbbing (size change) of the 3D Jitter sphere, which visually signified, along with the camera view of live manipulated controls, when I was manually stopping and starting the beat (corporeal liveness). A pattern selected live *with* the bass drum would throb the sphere. Another pattern would *not* have the bass drum sequence in it and the sphere would stop throbbing and its surface would be left to react to the remaining frequencies, signifying to the audience that I had manually stopped the beat. This was an attempt to emphasise the live manipulation of controls as well as combatting preconceptions that audiences have about live performances in the electronica area.

> "*People are always asking, before and after the show, 'do Orbital mime?'. We had a bouncer at one gig who got really angry about all the keyboards that weren't being touched, even though they were all being triggered from the sequencers. And there was one punter who spotted a DAT machine - which was recording the gig - and triumphantly pulled out the mains lead. You should have seen the look on his face when the music just carried on playing.*" (Ward 1993)

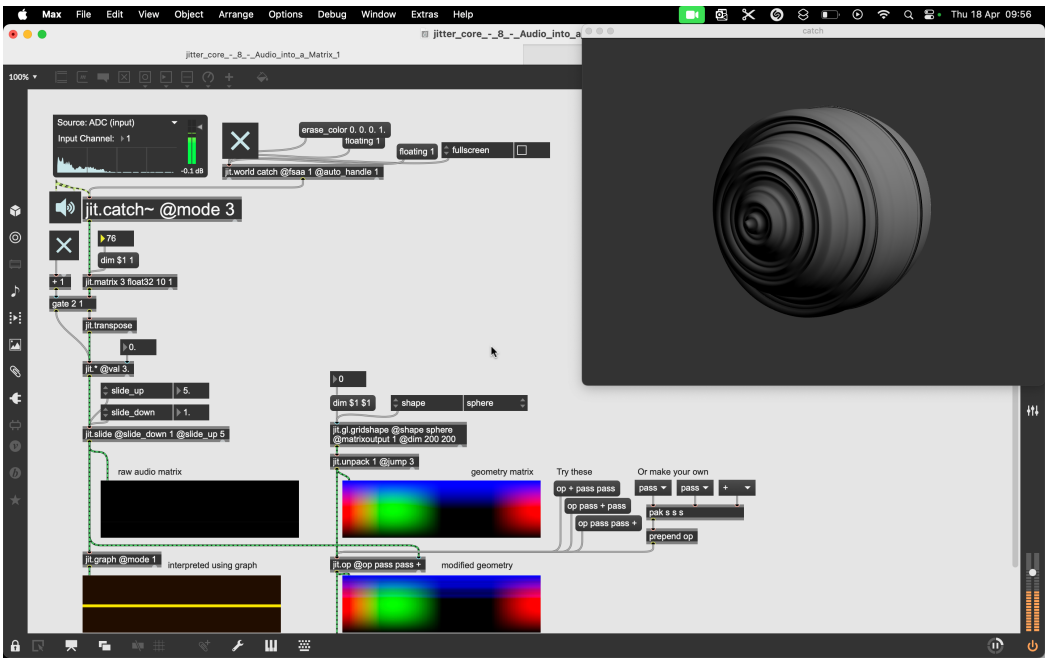

Fig 3: Max audio into a matrix

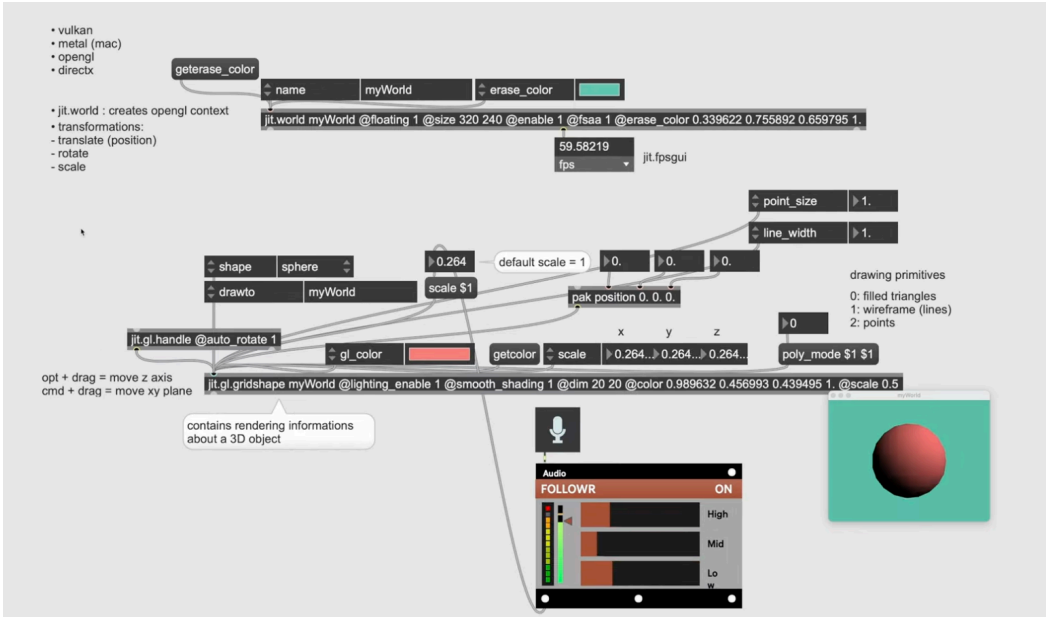

Fig 4: Approach with Audio Control not MIDI

I developed a compositional approach for the T-8 and S-1 (Shamoon 2022). Roland uses DSP to emulate an analogue sound. Roland made a major breakthrough with the Analogue Circuit Behaviour technology.

> "*ACB-based sounds would be more flexible than samples, and the machines would probably sound more like the classics than fully analog recreations could, too. Because analog circuits age, there's a good chance that new circuits copied from old ones might not sound quite right anymore.*" (Rothlein 2015).

I prepared a performance plan that resembled a set list.

Minute 1:

A: Select Pattern 16 on S-1 !

B: Start with Pattern 1 (on C key) but just with 303. Start with controls low and then turn up RESO and ENV.

B: Bring in Bass Drum.

Minutes 2 to 7 (up to 10): Composition progresses naturally per minute, per pattern advance and then tuning S-1 while taking out bass drum and all percussion sometimes and delaying snare.

Fig 2: Performance plan or set list.

Yellow pattern buttons represent patterns with the bass drum removed. This approach was necessary due to finding that when using audio input to control the size of the sphere in Jitter, I could not completely isolate the bass drum (Fig. 4). I switched to using the MIDI out note of the bass drum to trigger sphere size change (Fig. 5).

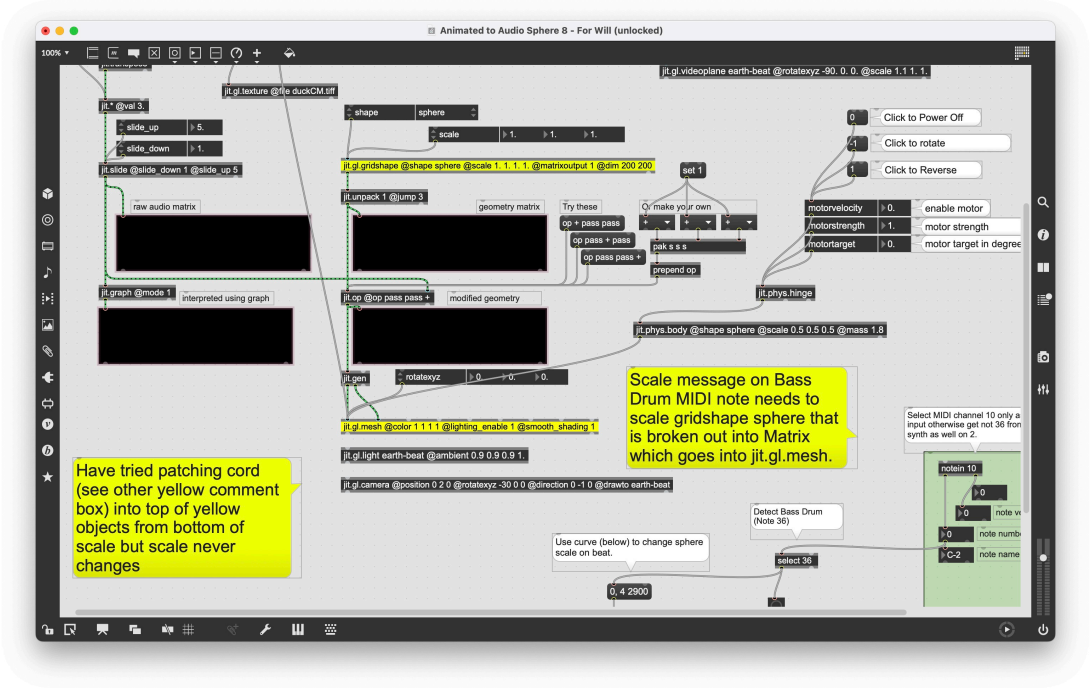

Fig 5: Using MIDI note as trigger as well as size problem with matrix.

I dealt with a problem of being unable to map a texture to a “matrixified” *jit.gl.mesh* object. This was resolved by finding an *Amazing Max Stuff* video (Foderaro 2017) that showed how to add the appropriate *jit.gen* output to allow mapping of the texture (Fig. 6). I had a problem with no longer being able to scale my sphere once it had a matrix output. This was resolved by adjusting “@matrixoutput 1” (Fig. 5) to “@matrixoutput 2”.

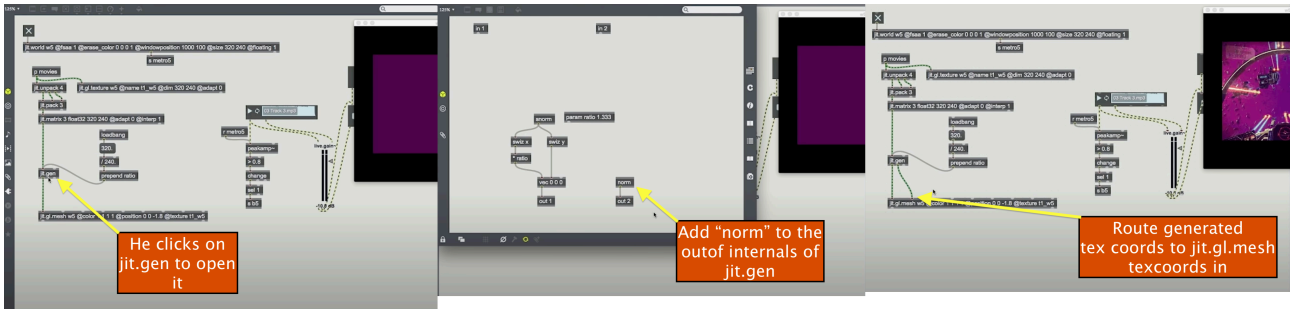

Fig 6: Adjusting git.gen to allow texture coordinates.

I acquired new skills in the area of using Unreal Engine for live performances. I also gained experience with Cycling 74 Max Jitter and the way its orientated as a much more appropriate form of technology for audio, music and live performance with visuals (whereas Unreal is primarily orientated towards games). I also gained skills with using the modern versions of key Dance/House/Rave/Techno instruments. I had used these in the form of the, now outmoded, Propellerhead RB338 software, having only briefly used the physical versions of the Roland devices when they were still available back in the 1990's.

I regarded the live performance as successful as the compositional and visual elements worked well together. In the future I would work on combining the webcam view of manipulating the Aira devices into a more comprehensive live 3D screen projection with more advanced elements such as Physically Based Rendering (Freeman 2024c). Furthermore I had neglected to realise that using a standard table meant I was forced to sit down at the live performance which did not exactly emphasise the live nature of the event. At a future performance I would use a higher table or "DJ Riser".

(WC 1089)

LIST OF FIGURES

BIBLIOGRAPHY 1 (Cited in text)

FREEMAN, Michael. 2015. 'Blender Video Textures as Projector'. www.youtube.com [online]. Available at: https://youtu.be/PKIS4CcseOA [accessed 4 May 2024].

FREEMAN, Michael. 2022. *Streaming internet video into Unreal Engine* [Film]. Available at: https://youtu.be/I8LKB9JCcLE [Accessed 4 May 2024].

FREEMAN, Michael. 2023. 'My 303 Day Track with New Video'. *www.youtube.com* [online]. Available at: https://www.youtube.com/watch?v=Aop1iNjhqvs [accessed 4 May 2024].

FREEMAN, Michael. 2024a. 'Jitter Audio into a Matrix'. *www.youtube.com* [online]. Available at: https://youtu.be/BEOsoBweLI4 [accessed 5 May 2024].

FREEMAN, Michael . 2024b. 'The Orb Live @ the Pavilion Falmouth - Part 2 - 09/03/2024'. *www.youtube.com* [online]. Available at: https://youtu.be/Kh__z0RBIdk?si=Hp1N2MrU-8l3KYaF [accessed 6 May 2024].

FREEMAN, Michael. 2024c. ‘Cycling 74 Max Jitter Physically Based Rendering 2’. www.youtube.com [online]. Available at: https://youtu.be/6Q9pUzHzLN0 [accessed 6 May 2024].

FREEMAN, Michael. 2024d. ‘Niagra Particle System in Unreal Engine Reacting to Audio.’ www.youtube.com [online]. Available at: https://youtu.be/n2U6s8ORNfI [accessed 6 May 2024].

FODERARO, Federico. 2017. ‘AMT - ALT-J “3WW” Video Effect Remake in Max/MSP’. *www.youtube.com* [online]. Available at: https://youtu.be/UwfFY6KTd7w?t=713 [accessed 5 May 2024].

KEXP. 2010. *Daedelus - DJ set (Live on KEXP)* [Film]. Available at: https://www.youtube.com/watch?v=Z_zlvFYQWig [accessed 3rd May 2024].

POTHEN, James. 2024. “Apple Blocks Epic’s Rival App Store.” *Marketing Dive*.

REASON, Matthew and Anja Mølle LINDELOF (eds.). 2017. *Experiencing Liveness in Contemporary Performance Interdisciplinary Perspectives*. New York: Routledge.

ROLANDCHANNEL. 2014. ‘AIRA — Analog Circuit Behavior’. *www.youtube.com* [online]. Available at: https://youtu.be/cy428RHu1mw [accessed 5 May 2024].

SANDEN, Paul. 2013. *Liveness in Modern Music: Musicians, Technology, and the Perception of Performance*. London: Routledge.

SHAMOON, Evan. 2022. ‘Getting to Know AIRA Compact: The Basics’. *Roland Articles* [online]. Available at: https://articles.roland.com/getting-to-know-aira-compact-the-basics/ [accessed 4 May 2024].

WAITE, Simon. 2019. *Liveness and Interactivity in Popular Music*. Routledge.

WARD, Phil. 1993. ‘The Magic Circle (MT Jun 1993)’. *Music Technology* (Jun 1993), [online], 56–60. Available at: http://www.muzines.co.uk/articles/the-magic-circle/5538 [accessed 5 May 2024].

ZAKARYAIE, Zana. 2021. ‘Low-Latency Full-HD Video Streaming from Raspberry Pi’. *imrid.net* [online]. Available at: http://imrid.net/?p=4396 [accessed 4 May 2024].

BIBLIOGRAPHY 2 (“Please list everything you have read, watched and listened to that directly informed your project.”)

ANALOG TO THE FUTURE. 2023. ‘Roland Aira Compact T-8 Overdrive/Distortion TUTORIAL No Talking’. *www.youtube.com* [online]. Available at: https://youtu.be/QZ_DXqzQ_KA?si=pDYhrznhPz-3b5q0 [accessed 6 May 2024].

CRUZ, Luigi. 2024. ‘Luigifcruz/Kimera’. *GitHub* [online]. Available at: https://github.com/luigifcruz/kimera [accessed 6 May 2024].

CYCLING74. 2024a. ‘Jit.phys.body Reference - Max 8 Documentation’. *docs.cycling74.com* [online]. Available at: https://docs.cycling74.com/max8/refpages/jit.phys.body [accessed 6 May 2024].

CYCLING74. 2024b. ‘Jit.gl.material Reference - Max 8 Documentation’. *docs.cycling74.com* [online]. Available at: https://docs.cycling74.com/max8/refpages/jit.gl.material [accessed 6 May 2024].

CYCLING74. 2024c. ‘Tutorial 34: Using Textures - Max 8 Documentation’. *docs.cycling74.com* [online]. Available at: https://docs.cycling74.com/max8/tutorials/jitterchapter34 [accessed 6 May 2024].

CYCLING74. 2024d. ‘Tutorial 38: Basic Performance Setup - Max 8 Documentation’. *docs.cycling74.com* [online]. Available at: https://docs.cycling74.com/max8/tutorials/jitterchapter38 [accessed 6 May 2024].

DOUGLAS, Adam. 2023. ‘Hands-On: Foundations of Live Electronic Music Performance’. *Roland Articles* [online]. Available at: https://articles.roland.com/hands-on-foundations-of-live-electronic-music-performance/.

FODERARO, Federico. 2019. ‘Let’s Create a Generative Periodic Noise Shape with Max/MSP’. *www.youtube.com* [online]. Available at: https://youtu.be/5DdGRHDVJE0?si=Mau4YuQnXkgSIdNX [accessed 6 May 2024].

FODERARO, Federico. 2023. ‘Jitter in Max/MSP Beginner Course - 06 - Texturing & Shading’. *www.youtube.com* [online]. Available at: https://youtu.be/qaKoAK_pe0Y?si=nYcPbQPZCgcPQDpZ [accessed 6 May 2024].

GROSSE GREGORY TAYLOR , DARWIN. 2022. ‘Tutorial: Rainy/Snowy Day Max, Part II: Meshes and 3D Spirographics | Cycling ’74’. *cycling74.com* [online]. Available at: https://cycling74.com/tutorials/rainysnowy-day-max-part-ii-meshes-and-3d-spirographics [accessed 6 May 2024].

HRISHIKESH ANDURLEKAR. 2023. *Build Stunning Real-Time VFX with Unreal Engine 5*. Packt Publishing Ltd.

JANNONE, John. 2021. ‘Max Tutorial: Intro to Jit.gl.material’. *www.youtube.com* [online]. Available at: https://youtu.be/jgfLko6Anfk?si=5dVUTueQ8ai5eQx9 [accessed 6 May 2024].

JONES, Randy and Ben NEVILE. 2005. ‘*Creating Visual Music in Jitter: Approaches and Techniques*’. Computer music journal 29(4), 55–70.

LECHNER, Patrik. 2014. *Multimedia Programming Using Max/MSP and TouchDesigner*. Packt Publishing Ltd.

PALOMBA, ANTHONY. 2013. ‘Texture Mapping 3D Object with Video - Jitter Forum | Cycling ’74’. *cycling74.com* [online]. Available at: https://cycling74.com/forums/texture-mapping-3d-object-with-video [accessed 6 May 2024].

RAMIREZ CORY METCALF, Rob. 2019. ‘Tutorial: Best Practices in Jitter, Part 1 | Cycling ’74’. *cycling74.com* [online]. Available at: https://cycling74.com/tutorials/best-practices-in-jitter-part-1.

ROMERO, Marcos, Brenden SEWELL and Luis CATALDI. 2022. B*lueprints Visual Scripting for Unreal Engine 5*. Packt Publishing Ltd.

SEYELENTECO. 2024. ‘Unreal Editor Needs to Request Mic / Camera Permissions on Mac Os Mojave?’ *Epic Developer Community Forums* [online]. Available at: https://forums.unrealengine.com/t/unreal-editor-needs-to-request-mic-camera-permissions-on-mac-os-mojave/219725/6 [accessed 6 May 2024].

TUULACULT. 2023. ‘Roland T8 Tutorial | How to Use Roland Aira Compact T8’. *www.youtube.com* [online]. Available at: https://youtu.be/tBI6n8eI57w?si=aFZXXtIu_F64eOsj [accessed 6 May 2024].

TAYLOR , GREGORY. 2012. ‘Tutorial: Gen Tutorial 2b: Adventures in Vectorland | Cycling ’74’. *cycling74.com* [online]. Available at: https://cycling74.com/tutorials/gen-tutorial-2b-adventures-in-vectorland [accessed 6 May 2024].

TAYLOR , Gregory. 2020. ‘Article: An Interview with George Lewis and Damon Holzborn, Part 1 | Cycling ’74’. *cycling74.com* [online]. Available at: https://cycling74.com/articles/an-interview-with-george-lewis-and-damon-holzborn-part-1 [accessed 6 May 2024].