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A Portfolio of Original Compositions (Andrew Dolphin)

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4.4 Spatial extensions of a play space

Mint Cascade (09:56)

Mint Cascade is a multichannel fixed media work for 8 channels, (8.0). The piece has also been realised in 5.1 and stereo formats.¹⁵¹

Programme Note

Mint Cascade explores and extends the spatial motion, and spatial features of recordings of kinetic objects, with all spatial movement in the piece derived from 8 channel recordings of the animated source. The kinetic materials transform, cascade, instigate and collide.

Overview of Work

Mint Cascade is an eight channel fixed media work which explores intrinsically different spatial themes to the other multichannel pieces presented in the portfolio. Whilst certain thematic and aesthetic approaches, and transformation techniques are familiar, the approaches to the spatial themes and spatial features in *Mint Cascade* are distinctly different from any of the other fixed media portfolio works. The piece attempts to achieve spatial complexity through exploration of sound capture (recording), and the extension and transformation of naturally occurring spatial features.

In *Mint Cascade*, spatial motion and inherent spatial complexities are captured, extended and explored as the foundation for a spatial centric composition. The work investigates an approach that attempts spatial complexity using recorded natural spatial attributes as a starting point for composition. This approach attempts to enhance the immersive qualities of the inherently multichannel piece.¹⁵² *Mint Cascade* is intrinsically an eight channel work as the original primary source materials are recorded using an eight microphone array to capture the spatial characteristics of the source. Aspects of the spatial qualities of these original recordings are then 'imposed'¹⁵³ onto additional synthetic materials as a means of

¹⁵¹ A studio reduction and binaural version are included in the portfolio.

¹⁵² Although it should be noted that no formal data is presented to gauge listeners perceived level of immersion.

¹⁵³ Predominantly using convolution or cross-synthesis techniques.

spatially transmogrifying them, or transformed to create abstract materials which retain some semblance of the spatiality of the source recordings.

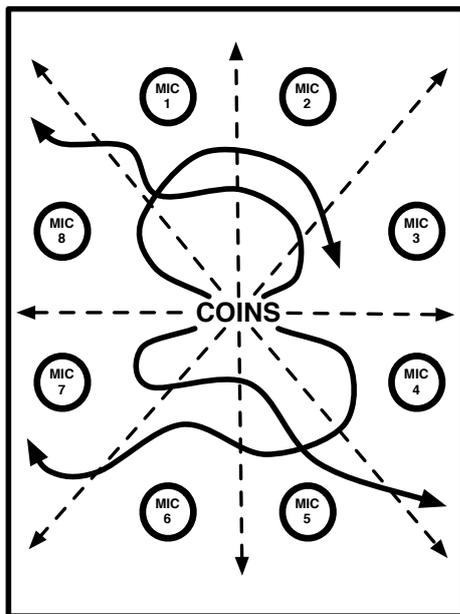


Figure 32. Multichannel Recording & Kinetic Trajectories

Materials

Physical objects are used for creating kinetic motion, with recordings of these kinetic objects providing a form of preliminary spatial imprint for the piece. The primary source materials are coins, and these are alluded to in the title of the work, 'mint'. Coins are rolled to create kinetic motion which is loosely performed. Coins are recorded being thrown, rolled and spun around a room with a wooden floor, the imperfections of the flooring causing indeterminate trajectories of the kinetic objects. Microphones are placed in a similar configuration to the eight channel studio

being used for the composition of the piece, and the intended performance speaker configuration, as seen in Figure 32. The dotted line trajectories indicate that coins were set in motion in all directions, however when rolled and spun their trajectories were erratic, as depicted by the solid curved trajectory paths. The indeterminate trajectories and patterns of motion are considered a feature of the work.¹⁵⁴

Abstract electronic sounds are evident, providing contrast between the chimerical (electronic) and explicit (recorded source) materials, accentuating the impact of the reveal of the primary source, which is considered to be a key perceptual and structural moment in the piece. The overall compositional effect is largely more abstract, however explicit references to the original source recordings are evident, and are used as structural and perceptual pivot points, contributing significantly to the overall perceptual form of the work.

The term 'cascade' used in the title alludes to several different characteristics of the piece. Cascade refers to the flowing mass and fast flow of small objects.¹⁵⁵ This cascading effect is particularly evident in the final section. The term cascade also suggests a succession or flow

¹⁵⁴ Ideas of influence and partial control, but with indeterminate factors adhere to the portfolio's wider creative interests in the allocation of compositional control to an external agent.

¹⁵⁵ Cascading coin objects, hence the title *Mint Cascade*.

of events. Ideas of instigation inform the structuring of the materials and the approach to transitions in the work. Specific sonic events frequently instigate structural changes, successive events and shifts in perspective. Dynamically punctuating events instigate flowing textural masses that cascade and collide with the next successive abstract sonic mass. Shifting textural masses¹⁵⁶ allude to a dense waterfall of kinetic objects moving through space, creating a spatial effect rich in spatial counterpoint that plays with representations of scale.¹⁵⁷

Sound Transformations for Eight Channels

Whilst developing the sound materials for the piece, transformation processes and techniques that extend features of the materials,¹⁵⁸ whilst also retaining or extending elements (or traces) of the spatial features of the original source recordings are investigated. For example, the coin recordings are transformed to create bell like clanging resonances that ring out around the space.¹⁵⁹

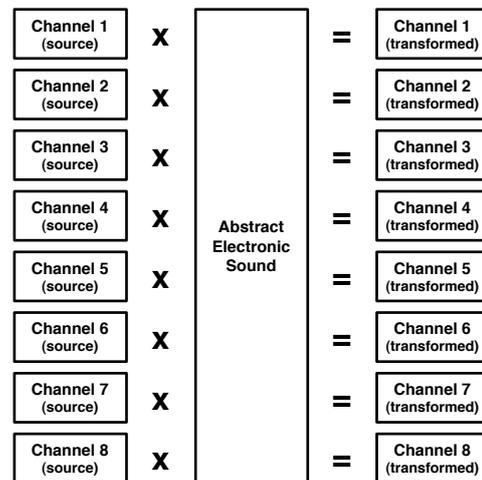


Figure 33. Multichannel Processing 1

Convolution techniques are explored in the creation of many of the abstract materials. Each channel of the source recording is convolved with a single impulse.¹⁶⁰ This process is completed offline with each individual channel from the eight channel source recording. The effect of this process is that the impulse spectrum is clearly evident in the output, and a form of distorted or smeared spatial imprint from the eight channel source recording can be heard

¹⁵⁶ Created using granular techniques.

¹⁵⁷ Another recurring theme in the multichannel fixed media works presented in the portfolio.

¹⁵⁸ A range of techniques are employed. One specific relevant technique is described by Natasha Barrett when discussing “the transformation of a church bell to a spatially vague pitched drone”. “The strongest link between the ‘bell’ and the drone is the spectrum. In addition... When considering this process as a continuous sound transformation, we can say that the spectrum is the pivot point between the perception of a sound as an object and the perception of a sound as a spatial resonance... the result of the process is a spatially vague drone, the addition of sound-objects in the foreground of the picture will clarify the spatial implication.” Barrett, (2002), pp. 320-32.

¹⁵⁹ “In the temporal context, by transforming the intrinsic properties of a sound one can change the extrinsic link from that of an object to that of the resonator or enclosure is essentially similar to the real-world relationship between a sound-object and the reverberant field.” Barrett (2002), pp. 320-321.

¹⁶⁰ Usually an electronic sound.

in the final multichannel transformed sound. A variety of electronic sounds are explored as the impulse for the convolution process, creating a palette of materials for the work.

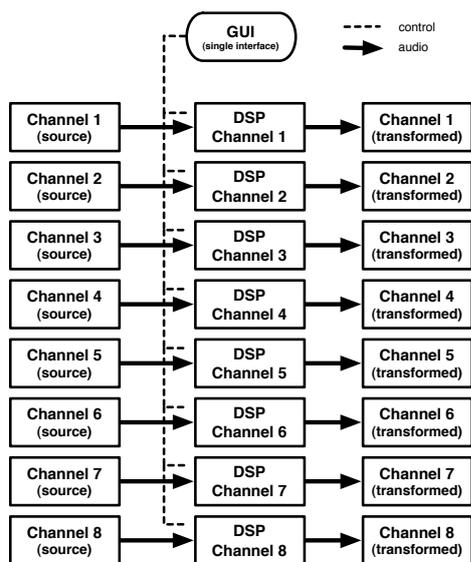


Figure 34. Multichannel Processing 2

Due to the more specialist requirements of working with 8 channel recordings, open-ended software packages were utilised for further transformations.¹⁶¹ Each transformation of the sound materials uses discrete channel processing in order to retain spatial characteristics of the recordings.¹⁶² Figure 34 represents the basic approach used for processing. The intention was to avoid any studio based amplitude panning tools to achieve the spatial placement and spatial modulations heard in the piece, and this spatial composition constraint was enforced during the realisation of the work.

Retention and extension of certain spatial qualities of the eight channel recordings through multichannel transformation techniques is considered to be a key exploratory theme.

Features



Figure 35. Sonogram I Mint Cascade

The piece moves between spatial resonances, cascading textures, source-cause signifiers, and abstracted representations of the 'real'. Distinct shifts in spectral density and timbre are evident in the structure of the work.¹⁶³

¹⁶¹ These include *SuperCollider*, *Max/MSP/Jitter*, *Reaktor* and *Bidule*.

¹⁶² Tools and techniques include: the PV (phase vocoder) uGens in *SuperCollider*, an eight channel granular patch developed in *Max/MSP*, an eight channel phase vocoder created using *IRCAM's Super VP* phase vocoder externals. *Bidule* is used for further spectral processing including spectral delay. *Reaktor* is used for additional granular tasks and an eight channel resonator system heard in the final section of the work.

¹⁶³ These are represented in Figure 35, a sonogram of the piece.

During the introduction of the piece the source materials are obscured and an abstract sound world is established. The first more direct signifier of the metallic resonances of the coin objects can be heard at 00:55. Further transformed suggestions of the source materials are introduced at 01:27. The closure of this motif at 01:47 results in the instigation of the next section of the piece. Materials reminiscent or suggestive of the coin objects are interwoven with other contrasting abstract materials at various proximities, to provide a sense of distance and depth. A resonant space¹⁶⁴ emerges in the piece at 02:30. This is a resonating scene in which further textural materials are introduced, with more focused suggestions of the source. A key structural transition occurs at 03:47, as more explicit uses of the coin materials initiate the next structural section. Here, resonant chimes emerge from the more spatial resonances. The first and only section in which the original source recordings are explicitly revealed occurs at 04:51. This shift in perspective is anticipated by a dominant abstracted coin spin heard at 04:48 which instigates the reveal of the 'real', and provides the only clear representation and uncoloured perspective of the spatial attributes of the original recordings. 'Real' object collisions begin initiating transformed materials at around 05:11, leading to a departure from the 'real' to a more abstract sound world at 05:16. Whilst there is a departure from the 'real', this next section explores perceptual links between the transformed materials and the 'real' previously revealed. Features of the materials heard in this section can be more clearly linked with the behaviours of the coins rolling and spinning. These spinning sound objects are terminated with further rolling and collision events, instigating a new spatial resonance at 05:55. The second reveal emerges as the spatial resonance subsides at 06:15. This is a transformed representation of the 'real', creating a shift in perceptual scale of the objects. As this section develops, the density of the coin related objects intensifies, creating a weighty and spatially detailed cascading effect. This gradually dissipates at around 07:40, leading to a reprise of the materials heard during the introduction of the work, but this time established source-cause relationships and associations provide a different perspective on the reprised materials. The reprise is short lived before the final significant structural shift, the emergence of a spatial resonance, the spectral significance of which becomes clear as fluttering resonant sounds begin to emerge. The piece closes with increasingly distant textural resonances receding into the distance.

¹⁶⁴ Or 'enclosure' as described by Barrett (2002).

Final Comments

Mint Cascade explores a very different approach to spatial composition than any of the other portfolio works presented. No great claims are made in favour of this approach, but from a personal perspective, my experience of working and developing the piece alongside other multichannel fixed media works highlighted the intrinsic spatial vibrance of the eight channel recorded materials, when in both raw and transformed states. Contrary to the other works presented, brief technical information is imparted to the audience in the programme note so that any perceived differences in spatial effect during its performance can be understood. This approach of capturing, transforming and extending intrinsic spatial features through multichannel recording and studio treatment is a technique that I intend to revisit in the composition of future fixed media works.