



University of HUDDERSFIELD

University of Huddersfield Repository

Halliday, Steven

Klangsteine: exploring the sound stones of Hannes Fessmann

Original Citation

Halliday, Steven (2017) Klangsteine: exploring the sound stones of Hannes Fessmann. Masters thesis, University of Huddersfield.

This version is available at <http://eprints.hud.ac.uk/id/eprint/34507/>

The University Repository is a digital collection of the research output of the University, available on Open Access. Copyright and Moral Rights for the items on this site are retained by the individual author and/or other copyright owners. Users may access full items free of charge; copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational or not-for-profit purposes without prior permission or charge, provided:

- The authors, title and full bibliographic details is credited in any copy;
- A hyperlink and/or URL is included for the original metadata page; and
- The content is not changed in any way.

For more information, including our policy and submission procedure, please contact the Repository Team at: E.mailbox@hud.ac.uk.

<http://eprints.hud.ac.uk/>

Klangsteine

exploring the sound stones of Hannes Fessmann

A thesis submitted by Steven Halliday to the University of
Huddersfield for the MA in Music by Research 2016/17

Abstract:

The main objective of this research is to fully explore the sonic properties of the Fessmann sound stones and create my own unique stone and virtual instrument.

Image Source: Wolfgang Steche

Acknowledgements

I would like to express my gratitude to Hannes Fessmann, Monty Adkins, Jana Dowling, Jo and Chris Taylor, Damon Waldock, Wolfgang Steche and Neil Hudson for their help and support throughout this project.

Klangsteine

exploring the sound stones of Hannes Fessmann

From Caveman to Fessmann.

Introduction:

Some of the oldest stories of mankind are painted and written on stone, be it the prehistoric rock art of the indigenous people of Australia, Africa, and the Americas or the numerous engravings on the ancient tablets of Egypt and Mesopotamia, stone has always carried the history of the human race.

The History of Stone Instruments:

"Stone has been used to make music for thousands of years. Some of the earliest playings of music involved the striking of rocks. Ringing rocks have been discovered on various sites across the world, often in close proximity to rock paintings". Rebecca Hildyard. (2010). Ruskin Rocks. Retrieved 15 August, 2017, from <https://www.leeds.ac.uk/ruskinrocks/history%20of%20musical%20stones.htm>

The earliest forms of tuned percussion are to be found in South East Asia, Vietnam, and China. One of the oldest surviving lithophones was discovered in Vietnam in 1949 by Georges Condominas (1921-2011) and is said to be over four thousand years old.

Vietnamese lithophone found by Georges Condominas; Image Source: Mike Adcock

"Remains of other ancient stone instruments come from Chinese archaeological digs, notably from the tomb of Zenghouyi which contained several well-preserved examples. Stone chimes are mentioned in sources as early as the Zhou dynasty (1046-256 BCE) and are commonly found in an obtuse L shape. Sets of 16 stones were also used in Confucian ritual orchestras and survive today in Korean groups called p"y6n"gy6ng". Virginia Gorlinski. (2012). Stone Chimes. Retrieved 15 August, 2017, from <https://www.britannica.com/art/stone-chimes>

Korean p"yOn"gyOng; Image Source: Foelerrmayr Collection

The Klangsteine story:

In the 1970s German sculptor Elmar Daucher (1932-1989) produced a number of remarkable stone sculptures made from granite, marble, and basalt which produced some interesting sounds. Made originally to be played percussively, the sculptures were created for public spaces and had been originally influenced by the harmonic research of Hans Kayser, who, in 1920's suggested that the principles of harmonious structure in nature were essentially the same as the fundamentals of harmonics.

"One day after a rain shower, Daucher walked through his outdoor studio, wiping the rain off a sculpture discovered that he could make the stone "sing" just by running his hand over it and causing it to vibrate . Hearing this "spherical" sound seemed to touch his basic instincts " Eric Dorfman *Intangible Natural Heritage* p102, Routledge, 2012 ISBN 978-0-41-588492-1

Elmar Daucher continued his research into sound and stone throughout the 1980's making a number of pieces. These works proved popular in his native Germany and were at the center of the exhibitions "Klangskulpturen"85" (Wiirzburg), "SteinKlangStein" (Ulm 1986) and "Klangsteine - Steinklange" (Munich 1989).

Elmar Daucher Sound Stone: Image Source: www.sym-positon-oggelshau.sen.de

In 1989, German pianist and composer Prof. Klaus Fessmann composed a new musical work based on the book, *Höhhlensprache* "the cave language cycle" by the German language artist Werner Diirrrson.

"For a long time caves exerted great fascination for me . Spatial seclusion, darkness, place of retreat, enclosure, all of these were synonyms for a place that had something to do with me". Klaus Fessmann *Retrospektive* p12, Emanomedia gmbh, 2015 ISBN 978-3-03-836008-7

Whilst working on this project, Klaus "became familiar with the sculptural stone works of Elmar Daucher, Arthur Schneiter, and others". Irena Nemecek. (2007). Art Productions. Retrieved 20 August 2017, from <http://www.art-productions.com/chamber-music/klaus-fessmann-klangsteine/?lang=en>

He began to explore the sonic possibilities of stone, researching their various sounds and qualities. In 1992, alongside his eldest son Hannes, he took a trip to the Swiss Alps and began collecting stone for his first prototype instruments. Klaus and Hannes have built over 150 sound stones over the past 27 years and have elevated Elmar Daucher's simplistic, hit and rub sculptures to astonishing new levels of beauty, craftsmanship and sonic capability. The Fessmann sound stones are not just beautifully sculpted objects, they are also fully formed musical instruments.

"In 1997, Klaus founded the Ensemble KLANGSTEIN with Manfred Knie! and Friedemann Dahn, the group consists of eight sound stones, an e-cello and some specially developed percussion made of water and stone, the ensemble has performed concerts all over the World". Irena Nemecek. (2007). Art Productions. Retrieved 20 August 2017, from <http://www.art-productions.com/chamber-music/klaus-fessmann-klangsteine/?lang=en>

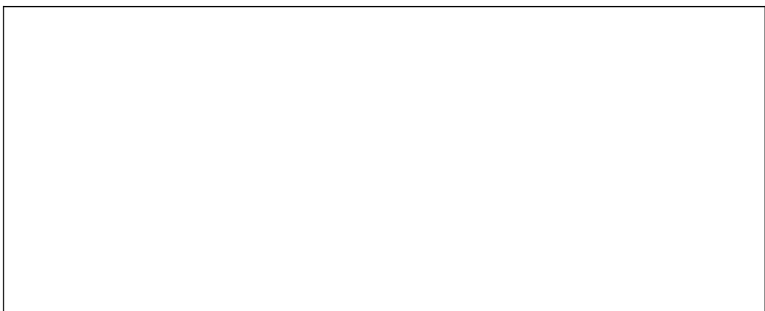
Klaus Fessmann's most recent stone music project is the Ensemble Laetare, focusing on Andrea Fessmann Letzing contralto voice, the Celtic harp of Georg Baum and his sound stones.

Hannes Fessmann's main focus continues to be on the research, design, and creation of the stones. He continues to develop the process and regularly holds workshops, performances, and exhibitions. He is currently collaborating with a number of artists, composers and writers and has recently exhibited his work at the Yorkshire Sculpture Park, Wakefield, UK

Alongside the musical qualities of the sound stones, research has been conducted into their therapeutic effects. Since spring 2009, interested individuals have been trained in sound stone therapy at the Aerpah Clinic in Esslingen-Kennenburg under the supervision of Dr. Martin Runge and Prof Klaus Fessmann. This areas of research includes Alzheimer memory treatment, micro circulation, increased white blood cells, muscle relaxation, depression, mindfulness.



Sound Stone Therapy at the Aerpah Clime : Video Source: www.youtube.com/user/DerWB2



A brief history about Stone and Sound: Video Source: www.youtube.com/user/stoneandsound



Interview with Hannes Fessmann - 27/10/2017: Video By Steven Halliday

[Download PDFtranscript](#)

Klangsteine

exploring the sound stones of Hannes Fessmann

Halliday/Fessmann

Project stone: Oct to Dec 2016.

As a composer and producer, I draw my inspiration from many different styles of music. For this project, I had two very specific frames of reference, György Ligeti's 1966 choir piece *Lux Aeterna* and Fernando Corona's (Murcof) *Oort*, taken from his 2007 album, *Cosmos*.

These two pieces of music have had a huge impact on me throughout the years and I always find myself going back to them, trying to understand what it is that is so beguiling, mysterious and ultimately wonderful about them both.

György Ligeti: *Lux Aeterna*

Murcof: *Oort*

When I first discovered the sound stones of Hannes Fessmann on his Youtube channel back in 2014, his film "A brief history about Sound and Stone" really grabbed my attention in much the same way *Lux Aeterna* and *Oort* had. I was absolutely captivated by the strange microtonal sounds coming from these mysterious black, stone objects, they seemed to embody the sonic mystery of *Lux Aeterna* and *Oort*. I wondered if this was the instrument with which I could finally approach making some music inspired by those two pieces.

It wasn't until Easter 2016 that I got the opportunity to speak to Hannes about the possibility of working with him. He graciously agreed and we discussed the various ways of conducting the research. We finally settled on the concept of making my very own "project stone" which would allow me the opportunity to fully document the whole process from start to finish. I arrived in Nürtingen, South Germany in October 2016 and we started work designing the halliday/fessmann project stone.

First and foremost the project stone had to have the right sound qualities, to this end we spent a lot of time in Hannes's studio playing and listening to his stones trying to isolate the kind of sounds I wanted to use. I was particularly interested in the low-end frequencies of the mid sized rectangular shapes. After a few different designs and many late night discussions, we decided upon a sloping rectangle shape with very thin lamellas. (see above) The idea behind using very thin Lamellas was to try and stimulate the maximum amount of sound and vibrations whilst keeping the stone to a smaller, more manageable size. When working with sound stones this aspect of the process must never be underestimated, the logistics of transporting a sound stone are problematic. A stone can weigh

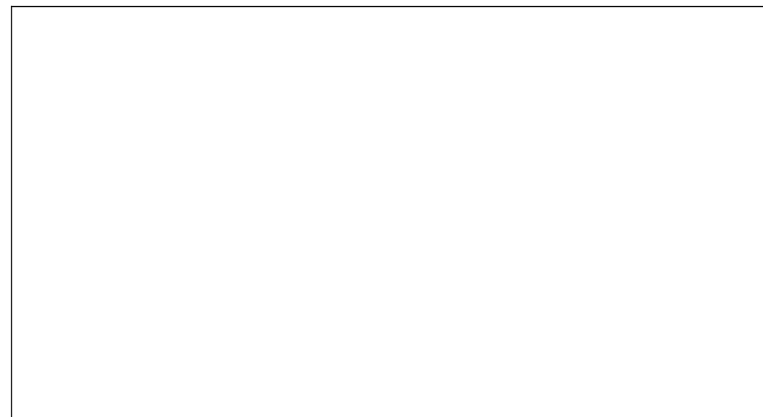
anything from so to 200kg, yet they still remain incredibly fragile. I consider this to be one of the major factors preventing the research of these instruments further afield.

Hannes Fessmann's truck: transporting the raw stone : image source: Steven Halliday

In order to make our project stone, we had to first transport a full-sized block of Gabbro to a Stone Mason's in Tiibingen, South Germany. The block had been cut, prepared and shipped from a quarry in Tamil Nadu, South East Indian. Gabbro is the favored stone for making these instruments mainly due to its tightly compounded holocrystalline mass. Gabbro forms when molten magma is trapped beneath the Earth's surface and slowly cools, much of the Earth's oceanic crust is also made of this rock.

Full size Gabbro block: image source: Steven Halliday

We arrived at the Stone Mason's early in the morning and set about cutting the full sized block in half, these two pieces **will** eventually become two separate sound stones. Cutting in the lamellas is a very lengthy process taking up to an hour for each one. This is all done using large diameter, laser guided, water lubricated, circular saws. These machines are incredibly powerful and mainly used for large scale commercial projects. The process cannot begin until the stone block has been fixed to the cutting bed and measurements have been taken. These measurements are inputted into the machine's computer along with the size and depth of the required cuts. The whole process took around 15 hours, spread over two days.



The stone cutting process: video by Steven Halliday

The next phase of the process is to polish the stone and develop the sounds of the lamellas. It is at this point that you find out exactly what notes your stone can play. Up until now, there was no way of knowing what exact notes we were going to get. Research into developing scale specific stones has begun but at this point it is still very much trial and error. Hannes uses his extensive experience to create specific tonal qualities but the exact tones are difficult to pre-define.

Polishing the stone is an essential part of the whole process, by removing all the sharp edges, this allows the player to smoothly run their wet fingertips (and palms) over the top and sides of the stone. It is this "stick and slide" action that produces the vibrations inside the stone which, in turn, produces the sound. All the polishing is painstakingly done by hand, using a selection of angle grinders, sanding blocks and papers.

Developing the sounds of the lamellas is a very delicate process that evolves over time. Similar to other instruments, the sound stone has to be "played in" over a number of months. Each lamella is played and rested, played and rested, until you eventually get a more uniformed sound. This process can only be undertaken by a sound stone practitioner who has worked

on a large number of stones.

Halliday/Fessmann project stone : image source: Steven Halliday

Klangsteine

exploring the sound stones of Hannes Fessmann

Initial Sound Tests

Exploratory compositions; Jan to Feb 2017.

By the end of November 2016, we had researched, designed and successfully cut the project stone. It was going to take a further two months before we could get into the studio and make some professional recordings. The stone had still to be polished and the lamellas needed to be developed and fully played in. This gave me the opportunity to make some initial recordings of the stone to explore its sonic potential. I decided to compose a short suite of pieces exploring various compositional styles in order to assess the versatility of a virtual stone sound instrument.

Steven Halliday

Test 1

1H1I. SOUNDCLLOUD

[Share](#)

[Cookie policy](#)

[Read more here:](#)

Steven Halliday

Test 2

11111. SOUNDCLLOUD

[Share](#)

[Cookie policy](#)

[Read more here:](#)

Steven Halliday

Test 3

.11111. SOUNDCLLOUD

[Share](#)

[Cookie policy](#)

[Read more here:](#)

Steven Halliday

Test 4

11111. SOUNDCLLOUD

[Share](#)

[Cookie policy](#)

[Read more here:](#)

Steven Halliday

Test 5

1H1I. SOUNDCLLOUD

[Share](#)

[Cookie policy](#)

[Read more here:](#)

Steven [Halliday](#)

Test 6

1H1I. SOUNDCLLOUD

[Share](#)

[Cookie policy](#)

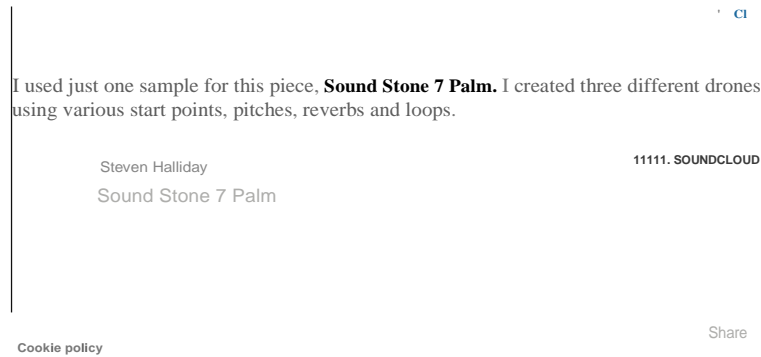
[Read more here:](#)

Klangsteine

exploring the sound stones of Hannes Fessmann

Test 1: Is an experiment in the style of Norwegian Producer, Geir Jenssen (Biosphere) referencing his 2016 concept album Departed Glories. He sets obscure Eastern European and Russian folk music to austere drones and intricate sound designs. For this test, I am using the "palm playing samples" which contain a lot of different tones and frequencies within the same sample. This will work really well for creating some interesting drones and textures.

I did some research on old Ukrainian folk song and found a live recording on YouTube which had a "Departed Glories" feel and used it for the vocal elements .



I used just one sample for this piece, **Sound Stone 7 Palm**. I created three different drones using various start points, pitches, reverbs and loops.

Steven Halliday 11111. SOUNDCLLOUD

Sound Stone 7 Palm

[Cookie policy](#) [Share](#)

Drone 1: (Sound Stone 7 Palm) had pretty even timing with a smooth over tone which I knew would work well for the bass drone. I started by pitching this sample down from Ds to Ao, added the Waves H Reverb to smooth out the mid frequencies and made a EQ reduction at 500Hz.

Drone 1: Processed with Effects.



Steven Halliday #11. SOUNDCLLOUD

Drone 1 [Share](#)

[Cookie policy](#)

Drone 2: I moved through the sample until I found two continuous smooth modulations and set the pitch at F2, this would give me my middle frequencies. I added the Waves H Reverb on the insert with a slightly wetter signal than the first drone and reduced the EQ at 1K.

Drone 2: Processed with Effects.



Steven Halliday #11. SOUNDCLLOUD

Drone 2 [Share](#)

[Cookie policy](#)

Drone 3: gave me my high frequencies pitching in at F3 using a much more fractured modulation. The H Reverb was once again applied, this time using a very dry signal and no EQ.

Drone 3: Processed with Effects.



Steven Halliday #11. SOUNDCLLOUD

Drone 3 [Share](#)

[Cookie policy](#)

To programme and mix the track, I bounced down the audio of each drone with the effects on, this gave me the ability to have more control over the fades. I kept the programming very simple just working with large loops and no audio edits.

Conclusions: I am really surprised at the versatility of just one sound stone sample, using the samples at different pitches creates completely different sounds even when the effects are very similar. I particularly liked the sound of "drone 2" and the way it complimented the haunting qualities of the vocals. For a future project, I would like to research some unusual vocal styles and use the sound stone samples as the backdrop.

Steven Halliday

,1111 • SOUNOCLOUD

Test 1

Share

[Cookie policy](#)

Klangsteine

exploring the sound stones of Hannes Fessmann

Test 2: is inspired by the Deaf Centre's 2011 album track Hunted Twice. I chose to make this piece because, stylistically it is very close to where I want to be sonically with this music project, deep interesting drones, delicate minimalist piano and intricate sound designs.

Hunted Twice features a cello and heavily distorted guitars, I plan to recreate these elements using the sound stone palm samples.

Drone 1: was created using **Sound Stone 13 palm** originally pitched at G3 and transposed down to C, E and C1 respectively, this will create the main drone for the piece.

Steven Halliday
Sound Stone 13 Palm. Raw

11111 • SOUNDCLOUD
Share

[Cookie policy](#)

I had to reduced some of the bottom end between 0 and 100Hz and boosted it at around 150Hz. This signal was sent to a group channel with the Waves H Reverb on the insert.

Sound Stone 13 palm: Processed with Effects.

Steven Halliday
Sound Stone 13 Palm. Processed

1111. SOUNDCLOUD

[Cookie policy](#)

Share

Drone 2: is **Sound Stone 9 palm** pitched down from D#5 to Cs and looped in Kontakt.

Steven Halliday
Sound Stone 9 Palm. Original

11111 • SOUNDCLOUD
Share

[Cookie policy](#)

I wanted to capture the sound of the stone been rubbed for this drone so I added some automation on the Waves H EQ, moving the frequency up and down at 2k to give it some extra movement. This signal was also sent to the group channel.

Sound Stone 9 palm: Processed with Effects.

Steven Halliday
Sound Stone 9 Palm.Processed

11111 • SOUNDCLOUD
Share

[Cookie policy](#)

Drone 3: was pitched down from A#2 to C1 using **Sound Stone 1 palm**, this sample had a lovely hiss which was going to be great for giving the track some ambience.

Steven Halliday
Sound Stone 1 Palm. Raw

11111 • SOUNDCLOUD
Share

[Cookie policy](#)

Auto pan was added to this sample to give it some movement and all the bottom end was EQ'd out and sent to the group channel.

Sound Stone 1 palm: Processed with Effects.

Steven Halliday

,1111•SOUNDCLOUD

Sound Stone 1 Palm. Processed

Share

[Cookie policy](#)

The three drones took care of the main body of the track and all that was needed was a over blown flute at E3 to give it a softer texture. The drones were mixed down onto separate audio tracks so I could control the volumes and automation. I finally added the piano motif which I had earlier programmed.

Conclusions: I was delighted to have captured the "Deaf Centre" sound whilst using a completely different sound source. Creating a cord from the three samples worked really well and is something I am definitely going to continue examining , The piano sat really nicely with the Sound Stone Drones which gives me a lot of confidence moving forward. The only negative is that I struggled to get control of the bottom end and found it a bit messy in places. I am going to explore how to get a tighter bottom end.

Steven [Halliday](#)

11111. SOUNDCLOUD

Test 2

Share

[Cookie policy](#)

Klangsteine

exploring the sound stones of Hannes Fessmann

Test 3: is similar to Klara Lewis's 2016 sound art piece, View. The Swedish sound sculptress combines found sounds, field recordings and electronic textures to create complex sound sculptures. Using the feel of this track is a perfect way to use all the sounds and techniques I have discovered so far. I intend to mix this track to a high standard to see what potential issues may lay ahead in regards to mixing and mastering tracks with the sound stone samples.

The Main Tone: is **Sound Stone Sample 10 (palm)** pitched down, now playing G2 and C3 for the low part and G2, E3, A3 for the high.

Steven Halliday

11111 • SOUNDCLOUD

Sound Stone Sample 10 Palm

[Cookie policy](#)

[Share](#)

I had to use a lot of effects to get this sound to where I wanted it be. On the insert I added the Reverence Reverb to give it lots of space , the frequency EQ to reduce everything between 1k and 4k (which I have had to do for most of the lead sounds) and the Cubase EQ to make a reduction between 50k and 100k. I added the Saphira Stereo master bus to add some warmth and harmonics and finished off with the Waves Si imager to give it a wide stereo field.

Sound Stone Sample 10: Processed with Effects .

Steven Halliday

11111 • SOUNDCLOUD

Sound Stone Sample 10 Palm. Processed

[Share](#)

[Cookie policy](#)

The bass: was created using **Sound Stone Sample tip 13** pitched down to C2 and looped in the Cubase sampler. I made a very small EQ increase at 60Hz.

Steven Halliday

11111 • SOUNDCLOUD

Sound Stone Sample Tip 13

[Share](#)

[Cookie policy](#)

Sound Stone Sample tip 13: Processed with Effects .

Steveo Halliday

11111 • SOUNDCLOUD

Sound Stone Sample 10 Palm. Processed

[Share](#)

[Cookie policy](#)

FX's 1: is **Sound Stone s (tip)** pitched down to c2 with a big reverb and auto pan.

Steven Halliday

11111 • SOUNDCLOUD

Sound Stone 5 (tip) Raw And Processed

[Share](#)

[Cookie policy](#)

FX's 2: is Sound Stone S (palm) pitched up and looped at CS, panned far right with no effects .

Steven Halliday

 SOUNDCLOUD

Sound Stone 5 (palm) Raw And Processed

Share

[Cookie policy](#)

FX's 3: was Sound Stone 9 (palm) imported into Padshop and manipulated, auto panned and eq'd.

Steven Halliday

 SOUNDCLOUD

Sound Stone 9 (palm) Raw And Processed


Share

[Cookie policy](#)

Layout/Programming: I looped all the parts and added a reverse delay Hi Hat and a distorted Tom to drive the whole track forward. The loops were manipulated in a "live jam" like fashion, fading them in and out over three minutes.

Conclusions: Over the course of this experiments I have discovered some great techniques for controlling and manipulating the samples. It is definitely possible to create good basses, unique leads and interesting drones using just the sound stone.

Steven Halliday

 SOUNDCLOUD

Test 3

Share

[Cookie policy](#)

Klangsteine

exploring the sound stones of Hannes Fessmann

Test 4: In the early 2000's German composer Carsten Nicolai (Alva Noto) released a number of hugely influential electronic records. His early recordings concentrated on using just sine waves and sound design. In the spirit of these recordings I tested out my sound stones samples to see if I could get close to the early Alva Noto sound .

Sound Stone Tip 1 (melodyne) was the closest sample I had to a pure tone (sine wave) . This is the only sample I am going to use for this piece, I thought it was important to pitch corrected this sample in order to keep everything in tune, I used the Celemony melodyne plugin to do this.

Steven Halliday

11111 • SOUNDCLOUD

Main Sine Wave: Sound Stone Tip 1 (melodyne) was originally pitched at D5, this was far too high for my main sound so it had to be pitched down to G4. I wanted to keep this sound as clean as possible only effecting a slower attack and adding a little reverb. I used $\frac{3}{4}$ timing at 60 bpm to mimic the early Alva Noto recordings .

Steven Halliday

11111 • SOUNDCLOUD

Sound Stone Tip 1 (melodyne) Processed With FX's

Share

Cook ie po li cy

The Bass/Kick: was re-pitched to G1 and programed in a 4/4 house music style, I didn't effect it's sound other than EQ-ing out everything above 300hz .

Steven Halliday

11111 • SOUNDCLOUD

Bass/ Kick

Share

Cook ie po li cy

Blip Noise: is a short note pitched up to G5 with a stereo delay on the insert with a small send going to a delay and reverb.

Steven Halliday

11111 • SOUNDCLOUD

Blip/ Noise

Share

Cook ie po li cy

All the rest: of the sounds were variations on a longer stab noise pitched at G4 heavily processed using a mixture of GRMTools, Hysteresis, Fracture and Waves Enigma. These

passes were then mixed down and edited, some were cut really short to give them a

Steven [Halliday](#)

All The Rest

1111. [SOUNDCLOUD](#)

[Share](#)

[Cookie policy](#)

Conclusions: Unfortunately due to my time constraints, I couldn't spend a lot of time experimenting with the stone sample perfectly replicate the Alva Noto tone. I do think I was pretty successful in broadly capturing his sound. I was very happy with the simplicity of the bass/kick and also the blip noise, these really reminded me of the early Murcof recordings . I take away from this test, once again, how much you can do with very little. I could imagine a very interesting live performance with a stone player and some live sampling and manipulation.

Steven Halliday

Test 4

11111. [SOUNDCLOUD](#)

[Share](#)

[Cookie policy](#)

Klangsteine

exploring the sound stones of Hannes Fessmann

Test 5: is an experiment in getting a clean and full bass sound from the sound stone samples. In the first two tests the bottom end had been a bit uncontrollable mainly due to using long samples pitched down to make the drones. For this piece I am keeping the process really simple and just using a Piano and sound stone sample for the bass.

Bass: I used **Sound Stone 11 tip (melodyne)** in the Cubase sampler and re-pitched the notes down to play A1, E2, A1, and E1. I looked for a segment of the sample that was pretty smooth and slightly rolled off to stop any clicking.

Steven Halliday

.1111 • SOUNDCLOUD

Sound Stone 11 Tip (melodyne)

[Cookie policy](#)

[Share](#)

I added two EQ's on the insert, Cubase's Frequency and the Waves H-EQ to remove everything over 500Hz. This left me with a nice clean bass sound .

I wanted the bass to be tight with punchy, I used the EMO Ds gate and compressor to compress the bass line similar to how you would a kick drum. This pulled it all together and left me with a really strong, present, bass sound.

Steven Halliday

.1111 • SOUNDCLOUD

Bass

[Share](#)

[Cookie policy](#)

Conclusion: I am very pleased with the bass sound I made, it is possible to get a clean punchy bass sound from the stone samples. I believe the difficulties with earlier experiments were due to using the palm samples, they don't really lend themselves to creating a clean sound. It is now becoming very apparent what can and cannot be done with the tip and palm samples and this **will** be a major consideration when I am writing compositions for the stone.

Steven Halliday

1H11. SOUNDCLOUD

Test 5

[Share](#)

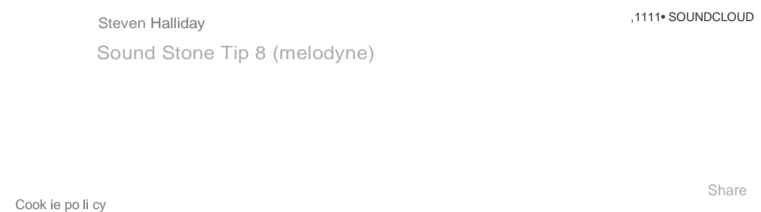
[Cookie policy](#)

Klangsteine

exploring the sound stones of Hannes Fessmann

Test 6: my intention for this track is to discover how versatile the sound stones samples can be when using them for sound design. Stylistically I'm going to make a Mark Pritchard/Odd Futures style broken beat track, concentrating on a Dub Step style lead line, a fractured beat pattern with addition sub bass, strings and noise effects .

The Lead Line: was created using **sound stone tip 8 (melodyne)** which has been pitched corrected and imported into Kontakt.



In order to create a lead line that had some presence and movement, I moved through the sample until I found a strong peak with some modulations. I pitched the sound down 10ne octave to give it more body in the 100 to 300 Hz range .

Next: I applied the effects:

In Kontakt: saturation , stereo image, distortion, flanger , phaser and chorus.

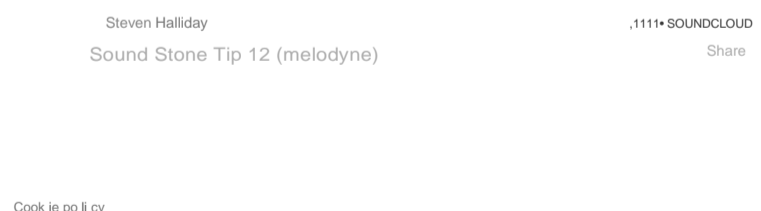
In Cubase: EQ (to boost the mid-range between 500 to 3k) chopper (for the gated type effect) morph filter (to give it some top end fizz) and sent it all to the Waves R Verb (plate 1) for some reverb.

I found Kontakt a little limiting and a bit clunky in regards to the actual sound designing and opted to use Cubase's insert effects as well.

The Lead Line: Processed with Effects.



The String Sound: is sound stone tip 12 (melodyne) pitched one octave higher and looped.



Effects added:

In Kontakt: tape saturation , flanger , reverb, and phaser.

In Cubase: extreme panning.

Once again this sample wasn't tempo matched so its modulations had some really interesting movement when the extreme panning was added.

String Sound: Processed with Effects.

[Cookie policy](#)

The Bass: is sound stone tip 1 (melodyne) pitched down three octaves in the Cubase sampler. I wrote in a short midi note to emulate a *808 style* sub kick used on Rap productions. I loosened the attack of the sample to avoid any pops or clicks.

Effects added:

In Cubase: quadra fuzz (to dirty it up) compressor (to add punch) and EQ (boosted at 60 Hz to give it more bass).

The Bass: Processed with Effects.

Steven Halliday
Bass

,1111• SOUNDCLOUD
Share

[Cookie policy](#)

Blip 1: I used the sound stone tip 1 (melodyne) sample again, it has a sine wave like tone and is very versatile. My idea was to create two blip noises that would play off each other.

Effects added:

In Kontakt: saturation, compressor, lo-fi.

In Cubase: mod delay and send effect to the Waves R Verb.

Blip 1: Processed with Effects.

Steven Halliday
Blip 1

,1111• SOUNDCLOUD
Share

[Cookie policy](#)

Blip 2: used sound stone tip 4 (melodyne) spread across the keys and played at F4 instead of its note original D4.

Effects added:

In Kontakt: tape distortion, guitar cab distortion and a phaser.

In Cubase: chopper, quadra fuzz, delay and send effect to Waves R Verb.

Blip 2: Processed with Effects.

Steven Halliday
Blip 2

,1111• SOUNDCLOUD
Share

[Cookie policy](#)

Conclusions: On the whole the sound stone samples proved themselves to be quite versatile and allowed me to get a good range of elements. I particularly liked the way the lead line moved around within itself and the vibrancy of the string. I had to work very hard on the effects chain to get things to where I wanted them to be and in many ways this negated the actual sound source. You could definitely use the stone samples to design a sound pack of unusual dub step, drum and bass and hip hop sounds.

Steven Halliday
Test 6

,1111• SOUNDCLOUD
Share

[Cookie policy](#)

Klangsteine

exploring the sound stones of Hannes Fessmann

Recording Process

Recording Studio: March 2017.

Over January and February 2017, I carried out some initial sound tests with my rough recordings whilst waiting for the project stone to be finished. This gave me an opportunity to think about my compositional process and also research the virtual version. In order to create a virtual sampled stone, I first had to capture every nuance of the instrument's sound using a number of different microphones positions. These audio samples were then mapped and key grouped into the Native Instruments Kontakt player. This was a very time-consuming process and special attention was needed to capture a really detailed recording. Logistically, it made sense to make the recording in Germany as transportation of the stone is difficult. I hired a soundproof studio at the State College of Music, Trossingen, for two days which included a Pro Tools engineer. It was very useful having someone in the gallery tracking the takes whilst I sat in the studio with Hannes.

Sound Stone Recording: image source: Steven Halliday

This was going to be the first time I have ever recorded a sound stone in a studio and unfortunately, there is no available literature on the process. My main question is, what microphones should I use? I have access to condensers, ribbons, dynamics, stereo, multi-patterned and even contact mics. All of these have their own strengths and weaknesses and all work well in different situations. Small diaphragm, dynamic microphones are great for capturing the high end of acoustic guitars whilst multi patterned cardioids produce a really detailed stereo field.

I conducted some frequency analysis of my rough recordings (figure 1) and the results showed that my project stone has an increased amount of mid and lower mid. This would suggest that these frequencies are predominantly "the sound" of my stone. Ribbon microphones **will** work really well with these frequencies because they emphasise the warm low-mids whilst gently rolling off the top end. This **will** be important because harsh top end frequencies have been cited when recording other friction idiophones like the Glass Harp and Glass Armonica.

Figure 1: Frequency analysis of the studio recordings

After some trial and error, I decided on three Shure, KSM 353's surrounding the stone. (figure 2) This gave me a really detailed recording and isolated the left, right, and center (mono) channels. I also had one KSM 353 reversed to capture the sound of the room (fig 1) and a mounted AKG, C411 contact mic inside the wooden resonator box, this was great for capturing all the low-end rumble. In all the previous sound stone recordings I have heard they have been a wash with reverb, whether this was real room ambience or post production effects, it's sound has always felt a bit too reverby and distant to me. For this recording, I wanted to capture the stone as clean and close as possible, this will later allow me to preserve more of the details and manipulate the amount of reverb afterwards.

Figure 2: Microphone set up from above

Klangsteine

exploring the sound stones of Hannes Fessmann

Virtual Stone

Kontakt/Granite: April to June 2017.

My music making practice has a back ground in sampling and digital technology. By making a virtual sound stone, this enabled me to utilise and manipulate its sounds without being tied to the physical object. As previously stated, the logistics of playing and recording a sound stone are difficult. I have had some previous experience in making Kontakt sampled instruments, in the past I have made a toy piano and a four stringed zither. This was a much more complicated process as the sound of the stone evolves on many different levels. From the initial finger rubbing to the eventual sonic vibrations, it passes through numerous physical bodies including the player, the wooden resonator box, the stone lamellas and the rooms itself. This is one of the central tenets of Hannes Fessmann's sound stone theory, that the physical space in which the stone inhabits also becomes an important part of the auditory experience.

"The oscillating body of matter propagates sound differently depending on its location and the attachment to the room. The spatial relation of human and resonating bodies determines the quality of the experience." Hannes Fessmann: 2017

The Kontakt Stone: In terms of creating a usable sampled stone, the most important part of the whole process was to get a good, clean, close, recording. Once this has been captured the samples could then be treated and effected. Firstly, I had to decide on a universal tempo and set this as a metronome for Hannes to play along too. In my initial sound tests I had experimented with a variety of different tempi. After some experimentation we decided on a tempo of 85bpm. In order to get the expression I needed to achieve the realism of a performance, each lamella had to be recorded in isolation. I meticulously captured Hannes playing each lamella over the duration of three takes, using his fingertips and palms along the top and sides of the stone.

Steven Halliday

Studio session: Hannes playing

1H11. SOUNDCLOUD

Share

[Cookie policy](#)

Studio session: Hannes playing lamella 1: Take 1

It took over eight hours to set up, sound check and record all thirteen lamellas. Once this process was completed, I transferred the recordings into Cubase.

Trossingen recording session in Cubase

Before I could build the sampled stone in Kontakt, I had to first, balance and **mix** the five separate microphones in order to make one master track.

Microphone One: had been placed directly above the project stone at around sixty inches. It captured a very clean and clear recording and didn't need too much work. Unfortunately, using ribbon mics in a soundproof room will always create extra noise and hiss. This can be easily removed in post-production and doesn't pose a significant problem. I made some frequency reductions between 10k and 20k to remove the hiss and made another slight reduction at **sk**. At 500 Hz I reduced the mid range, Microphone one (facing): frequency reductions leaving everything else flat.

[Steven Halliday](#)

11111. SOUND CLOUD

Microphone One (Facing) Dry ...

Share

[Cookie policy](#)

Microphone One (facing): dry and with eq

Microphone Two: was the AKG, C411 contact mic, which had been fixed to the inside of the wooden resonator box. I was only interested in the low end frequencies of this mic and made frequency reductions at 500Hz, cutting out everything above.

[Steven Halliday](#)

11111. SOUND CLOUD

Microphone Tw...

[Cookie policy](#)

Microphone Two (contact): dry and with eq

Microphone Two (contact): frequency reductions

Microphones Three & Four: were placed to the left and right of the stone. These captured all the nuances and finer details that I had felt were missing in other sound stone recordings.

This was a very detailed recording but exhibited some large frequency peaks between 2k and 10k. These peaks had to be reduced, their comparative volumes balanced and finally, panned left and right.

Microphone Three (left) : frequency reductions

Microphone Four (right): frequency reductions

[Steven Halliday](#)

11111. SOUND CLOUD

Microphones Three And Four (...

Share

[Cookie policy](#)

Microphones three & Four (left & right): dry with eq

Microphone five: I had used a small sound - proof studio because I wanted to capture a really clean, close sound. Unfortunately, the down side to this kind of room is a lack of reverb and reflections. I placed this mic in the opposite direction to the project stone which captured a slightly different sound to the others. This was really useful when it came to balancing all the Other recordings together.

Microphone Five (room) : frequency reductions

[Steven Halliday](#)

11111. SOUND CLOUD

Microphone Five (Room) dry w...

Share

[Cookie policy](#)

Microphone Five (room): with and without eq

Once the master track was compiled, I mixed down all the takes and chose a number of loops from each lamella to import into Kontakt. From these samples I created eleven key groups which gave me a four octave range from C1 to Cs. In the wave editor I activated the grid and looped all the samples adjusting the **start points**. (This process can be referenced in much

further detail in the Kontakt 5 user manual). Jan Morgenstern, Adam

Hanley. Kontakt 5. <https://www.native-instruments.com/fileadmin/>

ni_media/downloads/manuals/KONTAKT_s_6_8_Manual_English.pdf **Key groups and wave editor in Kontakt**

The effects chain was created in Cubase as I find Kontakt's internal effects unnecessarily complex. I started with the Steinberg "reverence" reverb plugin, using a large church reflection to create a really smooth, warm sound. I set the **mix** at sixty percent which enabled me to keep all the details of the stone playing whilst adding some large room reflections.

[Steven Halliday](#)

11111. SOUND CLOUD

Kontakt Stone: dry and with reverb...

Share

[Cookie policy](#)

Kontakt stone : with and without reverb

I added a limiter on the master bus with a high threshold to dip the loudest notes and widened the stereo field with the Waves Si, stereo enhancer plugin.

Steinberg Limiter

Waves St

Playing the Kontakt stone was not as intuitive as I had hoped. It felt more like an exercise in triggering samples than playing an instrument that used samples. Playing the lamellas on top of each other produced some really interesting textures which had shades of György Ligeti's *Atmospheres* and *Lux Aeterna*, but lacked the magic of a real sound stone performance. It was at this point I realised the sound I was actually trying to find was within the transitions between the notes; the sound you get when one lamella unfolds into the next. My rigid loops within kontakt were not going to allow me to create such an effect. I had to go away and reconsider my whole approach towards a virtual

[Steven Halliday](#)

1HII. SOUNDCLOUD

Kontakt: Sound Stone:
Composition...

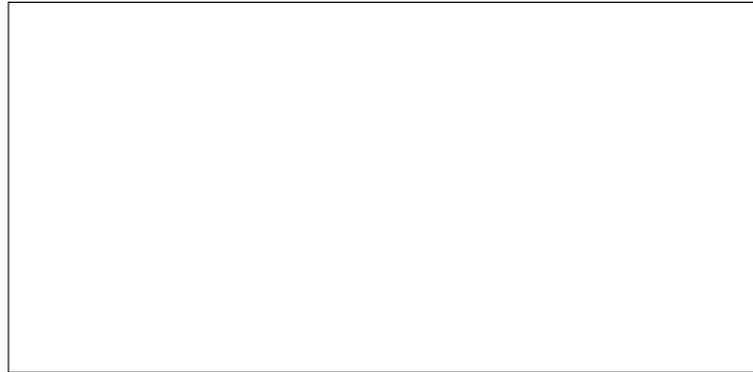
Share

[Cookie policy](#)

8

Kontakt Sound Stone: composition

After a lot of research, playing and editing my samples, I came to the conclusion that I needed a programme that would allow me to move through a long sample, changing its loop points in real time. This would allow me to use a sound stone recording and extend the transitions between the lamellas. I was aware of GRM's *Freeze* plugin, which lets you freeze a fragment of a sound, scrub through it and make loops of different sizes and pitches, all in real time. The only problem with this plug-in is the size of the samples you can use effectively. Whilst it is good for small samples it does not work very well for sound files over five seconds because the plug-ins buffer can only load very small amounts of audio. However, this was a great starting point to find something similar that could manipulate larger pieces of audio. I read a number of music production blogs searching out articles and discussions on new sampling software. After a few days, I came across a forum on KVR discussing a granular sampler called *Granite*, made by New Sonic Arts.



"Granite is a granular sampler particularly capable at generating evolving, organic textures, atmospheres and soundscapes. Granite offers a vast range of transformation possibilities and can generate a wide range of sounds and extensively processed loops. Featuring a compact and intuitive interface and an engaging workflow including innovative Motion Recorders recorders and Cycle Modulators, Granite can operate as a free-running sound generator, or as a playable MIDI instrument. Virtually all parameters can be controlled via MIDI CC and host automation". www.kvraudio.com

A Lengthy Introduction to New Sonic Art's Granite Synth: Video Source: [www.youtube.com/user /Dan Reynolds Audio](https://www.youtube.com/user/DanReynoldsAudio)

I downloaded the demo version of *Granite* and imported my sound stone recordings. Within seconds, I was looping and manipulating the transitions between the lamellas, creating huge swirling, atmospheric soundscapes in "real time". This was an absolute revelation, not only did this plugin allow me to extend and manipulate my recordings, it also gave me the ability to play octave variations using a midi keyboard. Over the next two months I experimented with a number of different effects and parameters, samples and recordings, until I had finally worked out my best practice. For playing live with the *Granite* plugin, I start with a selection of live recordings edited together to include all the transitions with five seconds of audio either side. This allows me to create loop-points just before and after the transitions and slowly move through them using my modulation wheel to control the starting points of each. One of the huge benefits for using Granite as a performance tool is its ability to play multiple MIDI notes simultaneously whilst looping a section This gives you the ability to add notes and frequencies that don't exist within a real sound stone performance.

Steven Halliday

||| SOUNCLOUD

Granite: Sound Stone: Composition

Share

Klangsteine

exploring the sound stones of Hannes Fessmann

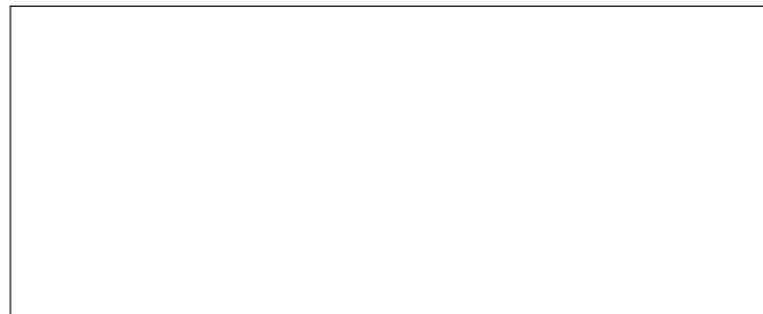
Workshop

Yorkshire Sculpture Park: July 2017.

An important part of my project was to create some awareness of Klangsteine within the UK. Apart from a brief visit by Klaus Fessmann back in the nineties, this instrument has remained largely unknown. With the help of the Yorkshire Sculpture Park, Huddersfield University (Resemhcc Fund), Yorkshire Evening Post, Loving Leeds Blog and many others. I managed to reach over 300,00 people through an event I held at the Yorkshire Sculpture Parks 40th-anniversary celebration event 'a weekend of wonderful things'. Both myself and Hannes were invited to exhibit our project stone, conduct a number of workshops and perform live in the YSP Chapel.

Event flyer for the YSP workshop

The event was a huge success and welcomed over 500 people into the chapel throughout the day. The morning session had been set aside for a private ticketed (free) workshop with the afternoon functioning in a less formal fashion. This allowed people to just drop in and experience the stones. We were both on hand to answer any questions and also give advice on playing techniques. Towards the end of the day, we gave a thirty minute performance which included a solo by Hannes, a solo from myself (using the virtual sound stone) and finally a collaborative piece on both stone and laptop.



Hannes Fessmann solo at the YSP: video by Steven Halliday



Steven Halliday solo at the YSP: video by Steven Halliday

[Steven Halliday](#)

Steven Halliday and Hannes Fes...

,1111+ SOUNDCLOUD

Share

[Cookie policy](#)

3

[Steven Halliday/ Hannes Fessmann collaboration at the YSP](#)

The music was received well and we had a number of interview requests which included BBC Radio Leeds, Yorkshire Evening Post, and the Metro daily. Unfortunately, due to Hannes's schedule, it was only possible to do a feature in the Yorkshire Evening Post.

Klangsteine

exploring the sound stones of Hannes Fessmann

Compositions

July to September 2017.

Composition One:

[Steven Halliday](#)

11111. SOUND CLOUD

Kontakt: Sound Stone : Composi...

Share

[Cookie policy](#)

8

Kontakt: Sound Stone: Composition (5.38)

Composition One was written with my Kontakt sound stone. The main focus of this piece was to explore texture. I did this by creating a number different loops and layering them together. I was inspired by György Ligeti's Lux Aeterna. This is one of many mid-period works by Ligeti that explores micropolyphony to create slowly shifting textures. Ligeti's polyphonic technique in Lux Aeterna creates a "flow in which the harmonies do not change suddenly, but merge into one another; one clearly discernible interval combination is gradually blurred, and from this cloudiness, it is possible to discern a new interval combination taking shape." Paul Griffiths Modern Music and After p.243, OUP, 2010 ISBN 978-0-19-974050-5

Composition Two:

Steven Halliday

11111. SOUND CLOUD

Granite: Sound Stone: Composition

[Cookie policy](#)

Share

Granite: Sound Stone: Composition (8.08)

Having discovered how to utilise the sound of the transitions between the lamellas, I set about extending these pieces of audio to create a collage of different sounds and frequencies. By adjusting the amount of reverb and overdrive, I was able to manipulate the transitions to create a cohesive whole.

Composition Three:

[Steven Halliday](#)

11111. SOUND CLOUD

Live Sound Stone Recording : Ph...

Share

[Cookie policy](#)

Live Sound Stone Recording: Phipps Hall (3.58)

This recording was made at Huddersfield University's Phipps Hall. I had conducted a number of rehearsals prior to this recording to investigate some new ideas and playing techniques. Normally a sound stone performance would just unfold without too much planning. I wanted to explore the possibilities of having some predefined parameters in place before you started.

Composition Four:

[Steven Halliday](#)

11111. SOUND CLOUD

Steven Halliday : Live performance...

Share

[Cookie policy](#)

Steven Halliday: Live performance at the YSP (6.06)

As part of the Yorkshire Sculpture Park performance, I played a solo on my virtual (granite) sound stone. I had spent a lot of time preparing the acoustics of the chapel to ensure the whole space would come into vibration. The actual performance was split into three parts. I starting with the mid-range frequencies slowly moving my way through the sample, using the sustain pedal to hold the notes. With every pass I added a further octave until I had a wall of sound that brought the whole whole chapel into vibration.

Composition Five:

[Cookie policy](#)

3

This was the first time myself and Hannes had played together. During the rehearsal process, we decided the best course of action would be for Hannes to follow my lead and play along to the virtual (granite) sound stone. I was very conscious not to play any notes that the real sound stone could not replicate and concentrated mainly on the low-end frequencies.

Composition Six:

[Steven Halliday](#)

Steven M Halliday : Hears Wishing

1HII. SOUNDCLOUD

Share

[Cookie policy](#)

2

Hears Wishing: Virtual Sound Stone Composition (8.15)

This piece of music represents the end of this academic research and forms the starting point for my new project. Created with my virtual (granite) sound stone, I utilised the skills and techniques I had discovered for manipulating the sound stone samples. I took a stone sample and layered it with a female vocal, consistently re-tuning the voice to match the note variations of the sound stone. To do this I used the waves *sound shifter* plugin manipulating the pitch changes in real time. I compiled the two takes together and imported them into granite and played it as a live performance. Conceptually this piece represents the spaces in between the sounds and is inspired by the Wishing Hole at the Aya Sofya Cathedral in Istanbul.

Klangsteine

exploring the sound stones of Hannes Fessmann

Overview *and future:*

Working with a large stone instrument is incredibly challenging, everything I have ever considered fundamental about music making has been questioned during this project. It is still not possible to tune a stone to a specific scale and this made the compositional process complicated. Without fully realising it at the time, this was probably one of the reasons I was so drawn to it. From the first time I saw Hannes's film 'A brief history about sound and stone', I had been captivated by these strange microtonal stone sculptures. For a long time, I had wanted to write music inspired by György Ligeti's *Lux Aeterna* and Fernando Corona's *Oort* but had lacked the knowledge and skills to do so. Working with Hannes and his stones allowed me to explore the world of microtonal music and conduct my own research.

When I started this project over twelve months ago, my only experience of working with sound stones was a weekend in late July 2016, when I visited Hannes at his Stuttgart studio. One year on and I have successfully designed and built my own stone, researched and created a virtual version, written a number of musical compositions, using both real and virtual stones. I have introduced the instrument into the UK by holding an event at the Yorkshire Sculpture Park's 40th- anniversary weekend. The press and promotions for this event combined with the Yorkshire Evening Post's 'real rock music' article reached over 300,000 people. I have also managed to secure the permanent loan of two sound stones to Huddersfield University for the continued research and development of the instrument.

To have designed and built my own stone gave me a wonderful opportunity to see the whole process from start to finish. It was a steep learning curve with a lot of challenges. This experience has definitely enriched my musical practice and given me a number of new areas to research. Discoveries like Harry Partch and Hugh Davies have left me with a real spirit of adventure. My virtual sound stone will continue to be developed and will give me the opportunity to write and record some new music. After a recent research trip to the Lake District, I have been in discussions with Hannes about the possibility of building a sound stone here in the UK.

Klangsteine

exploring the sound stones of Hannes Fessmann

Bibliography

Bibliography:

Fessmann, K. Retrospektive. 2016. Emanomedia gmbh
Fessmann, K. Soundstones. 2008. Siidwest/Random House
Steinitz, R. Gyorgy Ligeti. Music and Imagination. 2003. Faber & Faber
Toop, R Gyorgy Ligeti. (20th Century Composers). 1999. Phaidon Press
Griffiths, P. Modern Music and After. 2010. Oxford University Press
Partch, H. Genesis Of A Music (Second Edition). 1979. Da Capo Press
Helmholtz, H. On the Sensations of Tone. 2013. Dover Publications
Licht, A Sound Art. Beyond Music, Between Categories. 2007. Rizzoli International
Fagg, C. Rock Music. 1997. Pitt Rivers Museum, University of Oxford
Tarbuck, E. Earth: An Introduction to Physical Geology (11th Edition). 2013. Pearson
Dorfman, E. Intangible Natural Heritage. 2012. Routledge

Discography:

Ensemble KLANGSTEIN. 2003. Aqua [CD] Klangsteine Records
Klaus and Hannes Fessmann. 2010. Duo on the rocks [CD] Klangsteine Records
Friedemann Dahn and Klaus fegmann. 2014. Aura [CD] Wayout Records
Ensemble Laetare. 2010. Laetare [CD] Klangsteine Records
Ligeti, Gyorgy. 1967. Aventures - Nouvelles Aventures -Atmospheres - Volumina [LP]
WERGO Schallplatten GmbH
Ligeti, Gyorgy. 1968. Two Poems For Chorus/ Lux Aeterna / Succsim / Matka [LP] Deutsche
Grammophon
Ligeti, Gyorgy. 1969. Requiem/ Lontano / Continuum [LP] WERGO Schallplatten GmbH
Murcof. 2007. Cosmos. [CD] Leaf Records
Murcof. 2014. Lost in time [LP] Casino Luxembourg
Biosphere. 2016. Departed Glories [CD] Smalltown Supersound
Def Centre. 2011. Owl Splinters [CD] Type
Tonus Peregrinus. 2005. Sacred Music from Notre-Dame Cathedral [CD] Naxos
Holst Singers. 2013. The John Tavener Collection [CD] Decca

Websites:

[http:// klangsteine .com/](http://klangsteine.com/)
[http:// www.art-productions.com/chamber-music/ klaus-fessmann-klangsteine/?lang=en](http://www.art-productions.com/chamber-music/klaus-fessmann-klangsteine/?lang=en)
[http:// www.svaram .orgL](http://www.svaram.orgL)
[http:// www.theresonancecenter.com/products/soundstone/](http://www.theresonancecenter.com/products/soundstone/)
[https://www.leeds.ac.uk/ruskinrocks/histo r:y%20of%20musial%20stones.htm](https://www.leeds.ac.uk/ruskinrocks/history%20of%20musical%20stones.htm)
<https://www.britannica.com/art/stone-chimes>
[http:// www.gyOrgy- ligeti.com/](http://www.gyOrgy-ligeti.com/)
<https://murcofmusic.bandcamp.com/>

Klangsteine

e x p l o r i n g t h e s o u n d s t o n e s o f H a n n e s F e s s m a n n

CONTACT

If you would like any further information about this project, access to a UK sound stone, contact details for myself or Hannes Fessmann . Please feel free to drop me a line.