Ichorous –
Sound Installations.

Ichorus, the ethereal fluid that supposedly flowed in the veins of the Gods changed meaning in more modern history to a watery discharge that issues from a wound. In comparison, many springs around the world have turned into waterless open sores while water is as precious as the 'blood of the gods'. Fountains have been part of human culture for thousands of years. Apart from aesthetic beauty and cultural and historical significance, they are environmentally essential as they contribute to the local ecosystem. Among other things, fountains add moisture to dry climates, improving the local environment and also help the growth of flora and fauna. Moved by the remarkable environmental and cultural importance of the springs, we decided to address this issue by creating two sound installations around them.

In the center of Chania and more specifically in the square of Splantzia there is an old Turkish underground spring. For centuries it was at the heart of the social fabric, providing fresh water and a place of gathering. For reasons beyond this article and related to social and political issues the fountain has stopped flowing water for decades. In addition, the square of Splantzia has been at the center of the biggest gentrification in the old town of Chania in recent years. The sound of running water has been replaced by loud music, while the free assembly of residences is no longer possible due to the excessive commercialization of the surrounding area.

At the opposite end and about 15 kilometers away from Chania, on the Akrotiri peninsula, there is a site called Pervolitsa which offers the last active spring in an area covering several square kilometers. According to the oldest surviving historical records, it was also built by the Turks and served their water needs in the nearby coastal village of Marathi. Unlike the spring in Splantzia, Pervolitsa has remained untouched and far from any tourist development. It is a place of tranquility, with beautiful nature and running water.

Visiting these two places, the similarities as well as the differences are evident while the connection is inescapable. Viewing this connection is at the core of our project. To make this happen we decided to create two different sound installations – one at each source. The installations, although completely different in their presentation, borrow several elements from each other. For example, the violin recordings heard in Pervolitsa have been recorded in the underground spring of Splantzia. Also architectural parameters such as the number of steps in the underground spring of Splantzia (26) have been used as a basis in the compositional algorithm of the piece of music that is deconstructed through the installation in Pervolitsa. The result is the creation of two autonomous sound installations which challenge the public to participate in their creation and exploration. The full understanding of the project comes from visiting both of these areas.

Pervolitsa Spring –
Composition with Violin, Piano, Voice and Found Sounds for eight speakers.

Our goal was to promote acquaintance and exploration of the area by the participants. Our intention was not to mask the existing sounds of the area but to complement and enhance them, creating an immersive and contemplative audio experience while leaving large musical gaps. The carefully curated soundscape encourages visitors to listen carefully, rediscover the subtle nuances of the environment and create a deeper connection with the soundscape.

After researching the social and acoustic characteristics of the area, we decided to use 16 different sounds for this installation. These sounds will be randomly played by 8 small size speakers evenly distributed in the area. The public wanders around the area and gradually discovers the installation which is based on violin, piano, voice and sounds recorded from the area. Sounds other than the acoustic instruments have been recorded by actively playing with them in the area. A typical example is the sound of a rusted metal door found in the entrance for the chapel of Panagia. We used it as a musical instrument and then over-recorded the acoustic instruments to tonally match the acoustic characteristics of the door. Some of the recorded sounds have also been stretched in time giving a surreal aesthetic to the installation, challenging the listener to question what is real and what is not.

All the sounds were placed on 16 tracks of a Digital Audio Workstation (Logic Audio) to create a 52 minute piece of music with all the sounds originally selected. The structure of the piece is based on 13 autonomous patterns of 4 minutes (52/4=13) for each 16 sounds. This composition in Logic Audio is from our side the ideal interpretation of the final result. As the patterns from the speakers will play randomly though, the chance of hearing this track as it is during the installation is very small (about 1.5%). However, it serve us as a reference to check the relationships of the sounds included in the work and for the overall aesthetic of the music presented through the installation. It is a by-product of the final result which will be presented in a different context. The final installation is essentially the deconstruction of this piece of music.

The 16 tracks totaling 52 minutes have been divided into 4 minute musical patterns to finally get 13 patterns for each track. Therefore, we created (52/4*16) 208 different music patterns spread around the 8 speakers. Dividing by 208/16 we end up with 26 patterns (as many as the steps of the underground spring in Splantzia) which are played randomly by each speaker.

Our initial idea was to use a wireless playback system for each speaker. We soon discovered that it was out of our budget to purchase wireless transmitters and receivers for each individual speaker in order to connect them to Ableton Live or Pure Data. So we decided to keep a simple system and base the installation on standalone speakers with SD cards. On each card we loaded the audio files in a different order. If on speaker A the first track was e.g. the violin, then on the second speaker would be the piano and so on. Therefore, each speaker, in addition to different musical patterns, also has a completely different order in which they are reproduced. Some of these patterns are completely void of sounds while others include independent musical phrases. It was important to find a balance for the audience between listening to the installation and respecting the soundscape of the area, not filling the installation with continuous sounds and leaving room for the acoustic environment to breathe.

Splantzia Spring –

A self-generated feedback sound installation.

In Splantzia we decided to restore the water features of the spring through sound. We used the programming environment of Pure Data to create an autonomous algorithmic instrument - (patch), however also open to external sound input. At its core is a noise oscillator that is passed through a band-pass filter to simulate water droplets. The noise output is passed through a pitch controller based on specific musical scales, to end up before the output in a reverb environment. Audience interaction was linked by implementing an FFT analysis on the microphone input. We made eight different groups of frequency ranges (eg 100hz – 300hz, 300hz – 500hz etc.) and connected each group with different musical scales (eg Group A=Lydian, Group B=Mixolydian etc.). We then compared the live microphone input to these frequency ranges, relating the live input to the selection of different musical scales.

The **sigmund~** object in Pure Data that was used for the connection above also outputs loudness values of a live input. So we made a small patch that scales the volume of the microphone input with the playback speed of the patch. We also recorded the incoming audio to an array, which is then sent to a granular tone shifter that produces random tonal values after being triggered by the attack of the input signal. The live signal then goes to a sampler that works similar to the Rec Play function of an analog audio tape recorder and is added to the filtered noise before everything is in the final stereo output.

Finally, we created a vocal automated sound reproduction system based on the voice of the artist Sofia Sarri. Triggering occurs from Pure Data's **threshold~** object by the intensity of the input signal. There are 20 pre-recorded phrases for random play. We also implemented some final features, such as a simple timer to open and close the microphone input and communication with OSC to trigger the entire code from a light sensor from a mobile phone. We used the Sensor2OSC Android app to make the phone act as a light sensor and send OSC data to Pure Data.

The installation is based on two wireless speakers and two wireless microphones placed underground close to the source. Depending on the output volume, various interesting audio events can be created through feedback. The output feeds itself through the mic input, going through all the programming conditions, sometimes turning into complete noise but also soon returning to watery bliss. The more you push the patch from an external input, the stronger (and noisier) it responds. In the quiet, the playback of the work will follow in the same calm way.