Heterotopolis

a collaboration by
Marko Ciciliani (composition, live-electronics, light design)
&
Marcel Bühler (3D laser design)

for three musicians (performed by: **Bakin Zub), ambisonic live-electronics, lighting, three monochromatic laser beams, and an RGB laser**

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Images on the previous page: Fig. 1: Cave of Lascaux, Fig. 2: Street Art by Banksy

***Heterotopolis* – an Introduction:**
The cave is a symbolically charges site. It provided save dwellings during the earliest civilizations, formed the place for Platon's philosophical contemplations, and serves as the symbolic headquarter of subversive underground resistance. In all instances the cave is a so-called *heterotopic* location, a term coined by Michel Foucault to describe places

> *which are something like counter-sites, a kind of effectively enacted utopia in which all the other real sites that can be found within the culture, are simultaneously represented, contested, and inverted.*

In the project *Heterotopolis*, we –Marcel Bühler and Marko Ciciliani – are creating an aesthetic counter-site by embarking on an investigation and artistic cross synthesis of two specific underground cultures, that are historically separated by no less than 18.000 years:

- the **cave of Lascaux** in southwest France, displaying nearly 2.000 figures of the best preserved Paleolithic cave paintings, giving an example of the earliest forms of art;
  and
- the **subway tunnels of New York City**, which are not only moving millions of people per day, but in which a hidden underground culture has been created, providing shelter to an estimated 5.000 homeless people, and kilometers of gallery space for graffiti.

We are fascinated by these two subterranean cultures that have been created under circumstances that could hardly be more different. Nevertheless, despite their temporal distance, they both show some of the same elementary human needs, and these common traits are the source for our enthrallment for this project. Some of the common aspects between Lascaux and the NYC Underground Graffiti can be described as:

- the will of survival;
- need for the supply of food; and
- the strive for power;
- the artistic abstraction of the world above.

Fig. 3: Graffiti in the New York Underground, displaying food.


Fig. 4: Hunting scene from Lascaux.

It is not our interest to either imitate a primitive form of art or urban street culture. Rather we are intrigued by certain corresponding elements that can be found in both the NYC subway systems and Lascaux. These are the aspects that we want to distill and channel into a new work – a new *heterotopia* – in which laser graphics, light design, instrumental sounds and live generated electronics combine to form a coherent entity,

If we want to succeed with the creation of an artificial *heterotopia*, according to Foucault it has to be a site in which reality is at the same time "*represented*, *contested* and *inverted*". Hence, we aspire to create more

than just an eclectic play of intersecting images and associations, but an immersive event which connects to an authentic human experience. By simultaneously digging in the Paleolithic and urban caves, we are looking for the relationship that is established by a hidden counter-site and a life above ground – the secluded and the open, the private and the public, the intimate and the shared.

Technology and tactility

It is of special interest for us to use modern technology as a means to display motives that are derived from hand-made paintings on rough and erratic surfaces. We are approaching a haptic and "dirty" experience by using ephemeral and "clinically pure" media as lasers and digital synthesis. By doing this, we are inevitably placing ourselves at a distance from the original objects of interest and we believe that this remoteness and the contradiction, which is inherent in the reproduction of tactile and analog experiences by digital means, entails an exciting and fruitful opposition.

The primary tools to achieve this in the visual domain will be an RGB laser that will be used to create moving 3-D renderings of various objects and motives. In the musical domain various sorts of granular synthesizers will be used to create sonic textures that will range from smooth layers to rough and tactile layers. Metaphorically speaking, the granular synthesizers will be able to work as sonic spray cans of different colors and luminosities.

The arrangement of the performance space

The performance space will not have a centralized stage area but will consist of three small stages on either side of three of the walls of the space. Each small stage will be used by a single musician – Barbara Lüneburg at the violin/e-violin, Michael Blank at the acoustic baritone guitar/fretless bass and Marko Ciciliani at various electronics. A hemispheric ambisonic sound system will be used (a sound system capable of placing a sound at any point within a hemispheric field). The audience will be seated in a circular arrangement, most of them accommodated in the relatively large sweet spot of the sound system. In the middle of the space, the RGB laser will be positioned which will project at an angle of 90 degrees at a gaze screen, which is suspended above the audience, parallel with the floor.

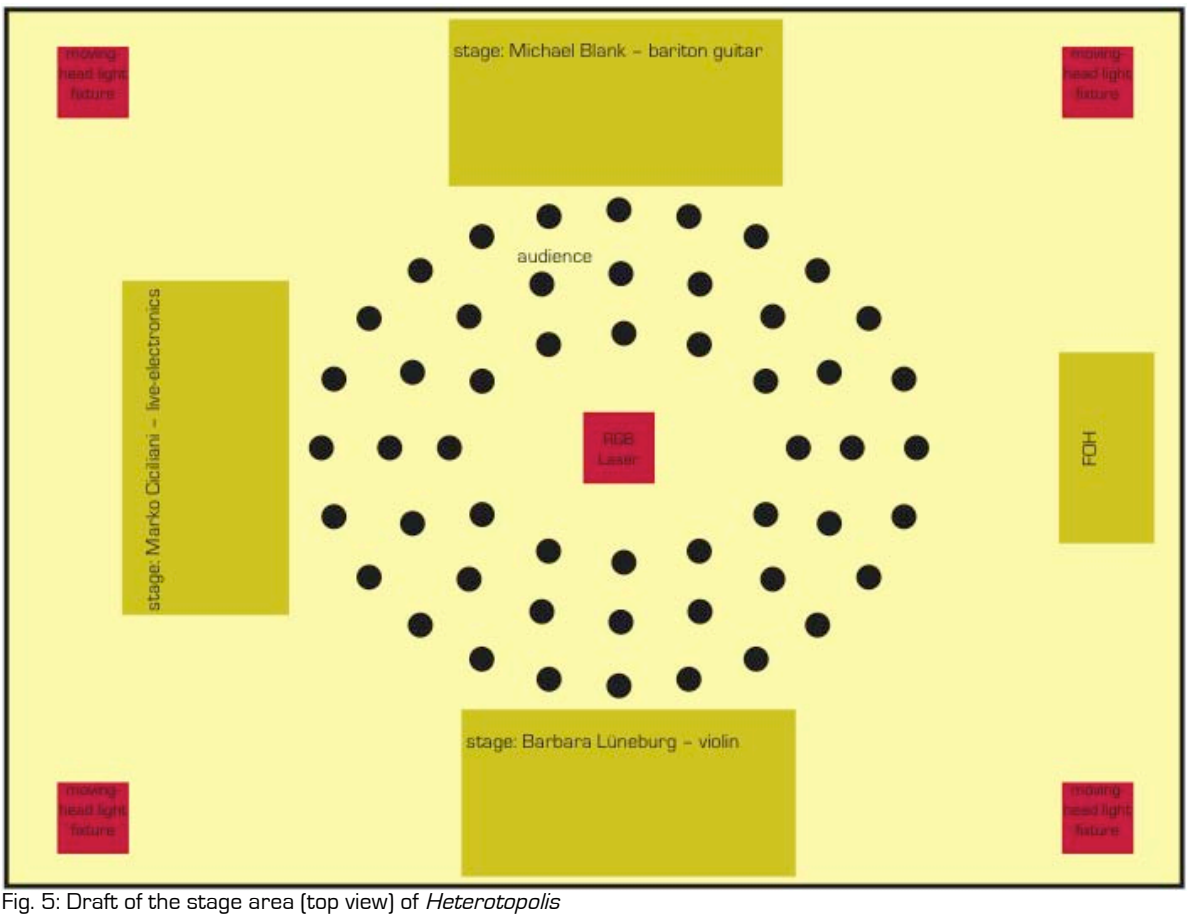


Fig. 5: Draft of the stage area (top view) of *Heterotopolis*

The visual design consists of the following three elements:

1. an RGB laser for 3D projections on a horizontally suspended gaze screen;
2. three monochromatic laser beamers for laser reflections;
3. four moving-head lamps, positioned in the corners of the space;

1. **the RGB laser**: this is the most elaborate element of the visuals. A laser projector capable of producing the three basic colors red, green and blue and all mixtures between them, is used in order to create 3D graphics. These three-dimensional graphics will be achieved by anaglyphic projections. Anaglyphic projections are a specific stereographic display, which enables the spatial experience of two-dimensional images, when viewed with corresponding glasses. This is the same technology that is used in 3D movies. It was developed in 1853 by Wilhelm Rollman and was at first primarily used in mathematical textbooks for the illustration of objects in the XYZ field.
   According to our knowledge, this principle has not, yet, been applied to lasers.

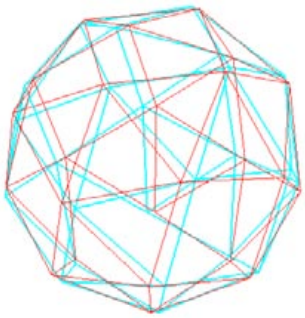
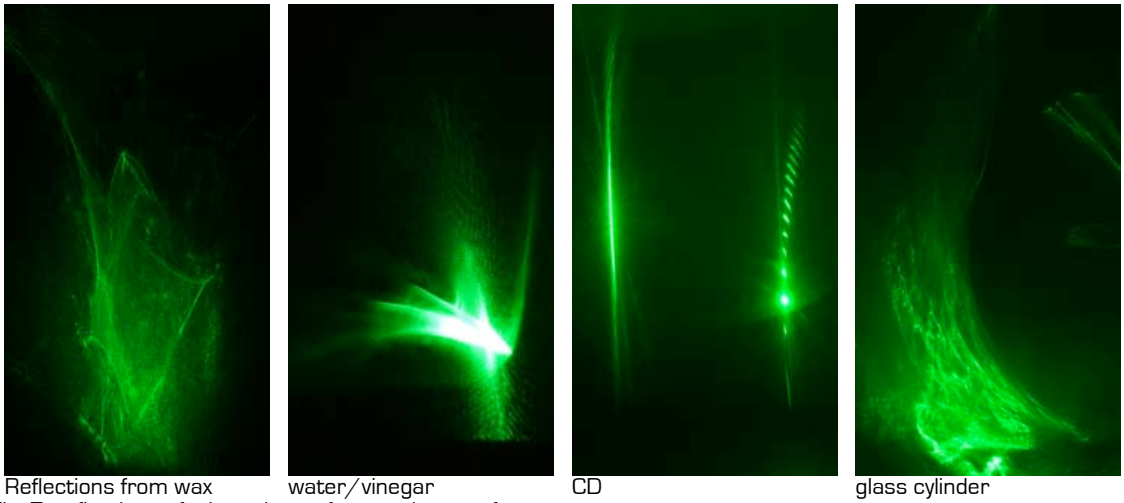


Fig.6: anaglyphic representation of a three dimensional geometric object.

The RGB laser will not be used throughout the piece but for specific scenes. As the circular arrangement of this project – as opposed to a traditional one with a unidirectional seating and a main stage area – we are choosing not to use a projection screen on any side of the wall. Instead a semi-transparent gaze screen will be suspended horizontally above the audience at a height of 3-4 meters. By projecting the image vertically, the circular arrangement will not be disturbed. Furthermore it creates a cave-like situation, which suits the subject of the work. As the screen is semi-transparent it will also not shield off sound coming from above – at least not to an extent which could not be compensated by sensitive filtering.

2. **three monochromatic laser beamers for laser reflections:** in addition to the RGB laser, three monochromatic green lasers will be used to create laser reflections that will be projected on the musicians themselves.
   The reflections are obtained by pointing a laser beam onto four different materials. The reflections that become visible are a large augmentation of the small surface of material hit by the laser beam. Our interest thereby lies in the visualisation of an irregular surface and the haptic quality of the material. The four materials used consist of a wax crayon, a glass cylinder, a liquid consisting of a water/vinegar mixture and a CD surface.



Reflections from wax | water/vinegar | CD | glass cylinder
Fig. 7: reflections of a laser beam from various surfaces

By projecting onto the musicians, they will become part of the visual design instead of remaining separated from it.

3. **four moving-head lamps, positioned in the corners of the space:** four RGB LED moving-head lamps will be placed in the four corners of the space. They will illuminate the musicians from various angles which creates a lively play of shadows. This will not only incorporate the musicians once again into the visual design, but also the audience.

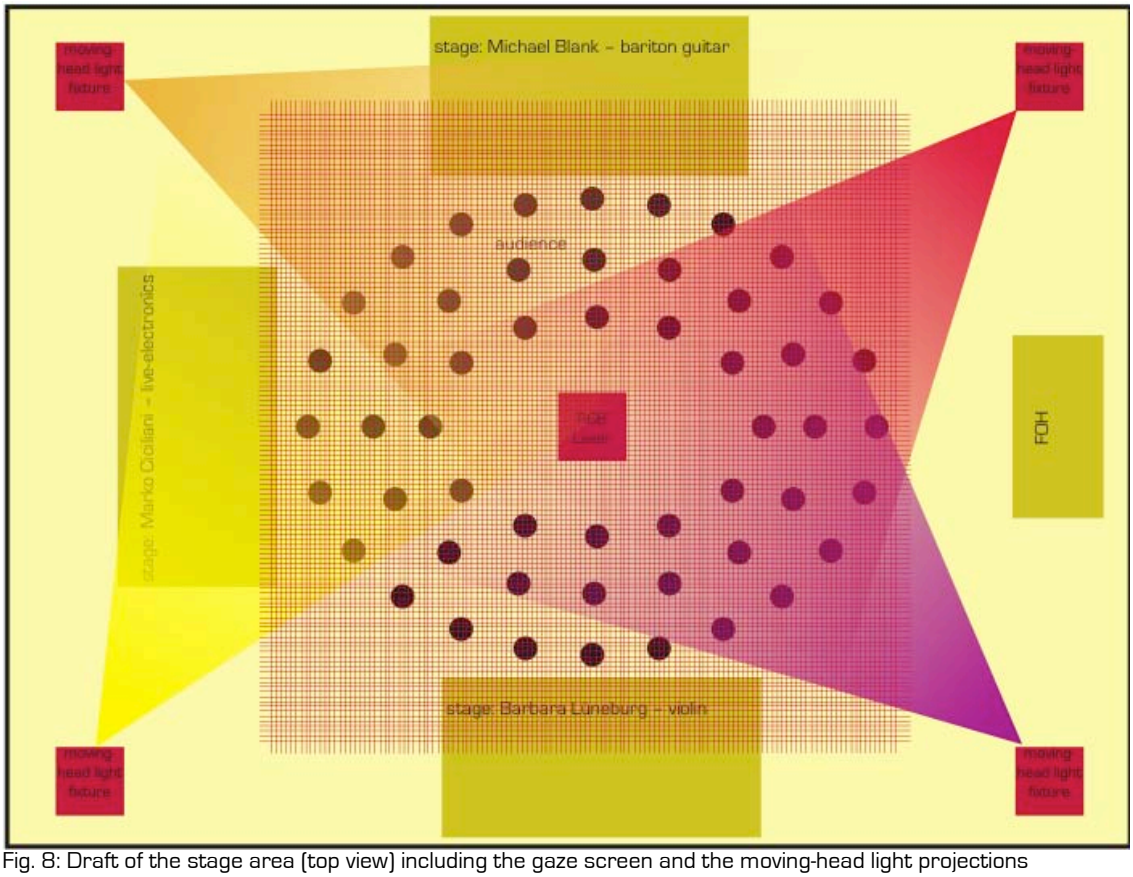


Fig. 8: Draft of the stage area (top view) including the gaze screen and the moving-head light projections

The musical composition

Two traditional instruments are used in the piece: violin and a baritone guitar, the latter being a regular acoustic guitar with a larger body and a tuning which is a fifth lower than with regular guitars. This combination is chosen because both instruments are equally at home in classical as well as in more vernacular musical styles. The instruments – and especially in this combination – are therefore not too tightly associated with a particular musical style. Furthermore they have certain aspects in common (both are wooden string instruments, one primarily bowed, the other one primarily plucked) but also complement each other (together they have a vast tonal range).

Alternatively, both instrumentalists use also an electric counterpart of their instrument: a 5-string electric violin and a 6-string electric fretless bass. With this combination, the basic relationship is the same as with the acoustic versions, but now transferred into a sonically more artificial sphere. Also, the total range of the instruments will be further extended.

Metaphorically, the acoustic instruments stand for the natural cave, where all the materials used were barely processed. The electric instruments on the other hand refer to the urban situation, where the environment has been created by industrial means.

The electronics will comprise an arrangement of different technologies:

1. an analog semi-modular synthesizer, digitally controlled by an OSC->CV converter;
2. physical modeling synthesis;
3. granular synthesis (wavelet, trainlet and glisson synthesis);
4. live processing of the instruments;

1. **an analog semi-modular synthesizer:** a Cwejman S1MK2 semi-modular synthesizer will be used. It will be operated by the performer but will also be digitally controlled by a 16 channel 12 bit OSC->CV converter. Furthermore the output of the synthesizer will be spatialized in the ambisonic field via a SuperCollider patch. The analog synthesizer will be used to produce slowly glissing sine tones, describing the circular motion sonically in its most simple form. This principle will be a *cantus-firmus* like element throughout the piece, which will reoccur at different points but also go through a number of transformations.

2. **physical modeling synthesis:** physical modeling will be used to create a link between the sonorities of the acoustic instruments and the electronics, while specially focusing on sounds with rougher haptic qualities. At this point it has not been decided, yet, which technology will be used. The most likely options are IRCAM's Modalys, Scanner by MaxForLive or Sculpture by Logic.

3. **granular synthesis:** a number of specifically designed ambisonic granular synthesizers are going to be used (written in SuperCollider). So far, experiments have been made with wavelet, trainlet and glisson synthesis. The reason for using granular synthesis is that it can create a link to the analog synthesizer (the wavelet synth can be reduced to the creation of sinusoidal grains and the glisson synth has the pitch bending element in common). Other than that, granular textures can seamlessly morph between smooth textures and textures with strong haptic aspects. Using granular synthesis in the ambisonic field also offers very interesting options to work creatively with the spatial distributions of sound.

4. **Live processing** is going to be applied on the violin and the baritone guitar. The processing will include various FFT based processing's that enable cross-synthesis of the two instruments, and some granulation based spatializations.

The music is going to be performed by the ensemble **Bakin Zub**.

The setting is:
Barbara Lüneburg – violin, electric 5-string violin
Michael Blank – baritone guitar, 6-string fretless bass
Marko Ciciliani – analog and digital electronics
Micha de Kanter – sound design

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