Artist Talk (12. Oktober 2017)

Mr. Wilfried Eckstein (Director of the Goethe-Institut Hanoi):

What is artistic research for you?

Dr. Tim Otto Roth:

Artistic research as a term is quite recent fashionable term. But in the end art has always been a research discipline; you just need to look back to a long tradition since Leonardo da Vinci. Or look to baroque painting: The research here is to ask how to render space into a painting and how to working in a new way with light. So for me this is state of the art technology and art at the same times.

Of course not every artwork is necessarily research. It is more to describe, how the sciences and the arts can be related. They have a lot of things in common, but there are also some fundamental differences: First of all the scientists and the artists might ask different questions and they might apply different methodologies and materials. Focussing the questions: Science always needs to face potentially answerable questions, but art can confront the audience with questions you will never find an answer for. If a scientist poses a question, where is no answer for, he simply doesn't get a funding. That is different in the arts. The point is here, that it might be fruitful to ask questions without an answer, because this reveals our limits to scrutinize things. Consequently this is also one of the jobs of an artist to bring up such questions.

[With regards to the methods: science mainly uses text, flat graphics and pictures as means of expression. Here art has a much wider spectrum of media. And finally, the core of an artistic ambition is theoretical and antitheoretical at one and the same time: Art needs to reveal the theories, paradigms, patterns which underlie our perception of the world. But we can't remove this theoretical constitution, but just change theories.]

Mr. Eckstein:

Tim, you have current a residency at the Max Planck Institute of Molecular Cell Biology and Genetics, you made – for example – projects with the European Southern Observatory, ESA & NASA. You are connected with physics and astrophysics. Is there a conversation with scientists about the works you show in the exhibit in the Goethe Institut?

Dr. Roth:

I am interested in very old concepts art is dealing for centuries with: the concepts of a picture or colour. But today I do find the most breath-taking advances not in the arts but the sciences. Astrophysics is for instance the discipline having developed very sophisticated concepts in imaging and colour analysis.

Mr.Eckstein:

What is your relation to physics? Is it a play with physics? To you exploit physics?

Dr.Roth:

The reason why I do plea for a physics of art is even more radical: I do see the human constitution in general based on physics! First of all not in a scholar sense, but much more profane way. When children for instance are starting to understand pictures, they are learning a geometrical interpretation of flat surfaces as representations of space. Or when we listen to music: Then we distinguish intervals by differentiating specific ratios of tones.

So if I talk about physics, it's not physics in an academic sense. It's not about formulas and formalities. It's something more basic touching everybody's life. This is why I am pleading so vehemently for a physic of art, because it is simply missing in nearly all contemporary art. But there comes in even another aspect: In German we have the nice word 'physisch'. These means, it is touching your body. This physical experience is essential for the sound sculpture Deep Doppler. Here physics comes in to reconnect art works to the human body.

Mr. Eckstein:

When I listen to aura calculata I thought on Johann Sebastian Bach. Is it a peace of digital music? How did you create it?

Dr. Roth:

The comparison with Bach makes sense because he was a quite conceptual and algorithmical composer, applying very formal composition techniques. However, aura calculata doesn't sound like Bach for various reasons. First of all I'm working not with conventional scales. If you listen to the intervals you might be a little bit confused, because it sounds somehow different. It is not a conventional scale: It is not a traditional pentatonic Vietnamese scale or a western twelve tone scale you hear. The concert started with a very special scale developed by Bohlen and Pierce. This is a special tone system, which wants to get around the octave. You find the octave, which is based on the doubling of the frequency, in nearly every culture. But in the Bohlen-Pierce scale this established interval is “missing“, as the fundamental interval of their scale is based on the tripling of the frequency, speaking the ratio 3:1. Later in the piece I switch to a seventeen tone scale introduced by the Russian composer Ivan Wyschnegradsky in 1934. This is also the scale I am using for Deep Doppler. But even at Bach's time alternative scales not based on a 12 ton system were known. I am playing also with a scale developed by the Dutch mathematician and astronomer Christiaan Huygens and by the German mathematician Nicholas Mercator. The Baroque composer Georg Philipp Telemann for instance was thinking to work with the 53 tone scale by Mercator to widen the concept of harmonics.

Mr. Eckstein:

I will come back to the three works from the cycle spectral revision in the entrance. Can you briefly explain what we see there?

Dr.Roth:

To get an idea of the three spray painted colour works, we can make a transition from the audition to vision. There is one fundamental difference between listening to tones and looking to colours finally revealing how limited our colour vision is: When we do listen to tones we really can distinguish individual frequencies out of the whole spectrum. Whereas we have only three colour sensors. So from the perspective of human eye colour vision is very primitive.

Spectral revision deals with the fact that colour reveals a very different nature, if you disperse light into its individual colours by the means of a prism or a grating. The latter phenomenon you know from the rainbow colours in the surface of a CD or DVD. The concept is 200 years old and goes back to Joseph von Fraunhofer. He made observations of the sunlight with a highly sophisticated prism and discovered hundreds of thin lines in the rainbow spectrum. This reveals that a colour spectrum in most cases is not continuous. If you apply this spectroscopic technique to body colours, to paint, you get as a result curves you see in my colour works. These are intensity curves from the red to the blue part of the spectrum. So you see colour in a twofold way: as a physical visual impression and as a description as we would listen to the colours.

Mr. Eckstein:

I introduced you with romanticism. In the arts romanticism was often linked with Prometheus. The half god who brings the fire from the Olymp to the human beings. He became the metaphor for the creativity of the human. The artist was thought as a genius. What is creativity for you? What is the creator of art today.

Dr. Roth:

You might find the concept of a Prometheus in architecture challenging the gods with their sky scrapers. But you don't find this figures in the arts anymore.

I think the Jewish philosopher Vilém Flusser introduced a very nice concept of the modern subject in our days. In his late writings he speculated about the human being as an individual, how he relates to the world and what is the self-concept behind. First of all, he criticized the concept of a subject. Whereas his conception of a personality is much more to be a node in a network of relations. That brings to the point, how I contextualise my works. I am moving in

between a lot of contexts and I am connecting ideas anew. And the works here are some of the new connections I made.

Mr. Eckstein:

Can you say something about the very inspiring sculpture Deep Doppler. What is behind them?

Dr. Roth:

Deep Doppler is a downscaled version of an outdoor work called Heaven's carousel. The Heaven's carousel was a commission by Hubble Space telescope in 2014. It is a carousel construction with 36 illuminated loudspeakers mounted on 12 strings and turning above the heads of the visitors – at full speed with a diameter of 15 meters. The loudspeakers were just playing sine tones and the idea was to use the space as a synthesiser. As the sound waves are compressed or expanded when the circulating loudspeakers approach or depart the pitch of the played sine waves changes up or down depending on the relative velocity of the speaker. This so called Doppler Effect depends of the listener's position as the tones recompose locally to different sounds.

Deep Doppler is a kind of downsized indoor bass version of the Heaven's Carousel. It turns much slower, so the Doppler effect is not always that manifest, but also another effect comes into play: standing waves effected by the sound reflections of the walls. This effect is known by throwing two stones in a pond. Here the resulting waves might interfere in two different ways: Two peaks of the wave can create a much higher peak, or a peak meets a wave base resulting more or less in the wave's extinction.

Mr. Eckstein:

Can you say something about aura calculata?

Dr. Roth:

The activity and the pitch of the tones are the result of a simple self-organization rule: Each loudspeaker obeys the same rules on how to react to its neighbor's activity – the same principle driving the "wave" in a stadium. But aura calculata is more than switching tones on or off. As you can hear, the tones are continuously changing. Here I developed a special statistical analysis, translating the changing activities of the agents into changing pitches. Interestingly the activity profile changes with the number of units in the ring like topology. This is why "aura calculata" consist of 23 units producing a very robust spatio-temporal pattern, which is also reproduced as the 12 m long wall paper. Last but not least, I can change the neighbour rules leading to very different activity patterns. A change of rule is expressed by the change of the wave form.

The initial idea to think about self-organization was not a scientific driven motivation. The idea came up thinking about generative imaging concept: I was interested, if it would be possible to create a kind of auto-generative images, where images recreate themselves just by the interaction of their basic elements: the pixels. This was the birth of the pixel sex idea, a concept you call cellular automata in mathematics. At a certain point I moved from images to the spatial self-organization of sounds.

Mr. Eckstein:

I was a little bit puzzled by interpreting aura calculata as mathematical socialism. What is behind this term and what's the deeper meaning of it.

Dr. Roth:

Well aura calculata is a kind of formal test of a core principal of socialism: It is the concept of equality. Whereas in reality you can never establish equal conditions, you can do it in the formal environment of mathematics very well. And that happens in aura calculata. Every agent is 100% equal behaving according to the same rules how to react on the neighbour agent. But interestingly, if you look to the behaviour of the entire community of agents the result is not necessarily an activity in lockstep, where every member shows the same activity. In the end, you see that individual members freak out and do show a very different activity profile.