Generative devices & hybrid structures: Tanja Vujinović

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Information flow and the noise it creates while travelling through various media are the main topics of Tanja Vujinović's research. She is also interested in anthropomorphic transmitters and receivers, the possibilities of alternate transformation of audio impulses into visual, digital or motoric signals, and recording data flow and *info-dust*. She implements her studies through objects, video – installations, public installations, reactive environments and generative devices. She is especially interested in the constant experimental and research work process oriented towards data mapping and transfer, following oscillations and trajectories, as well as creating temporary real and virtual spaces filled with noise and play. "In my works I use generative digital techniques, data visualisation, data sonification, objects, and custom-made electronic components through which I explore and merge the noise obtained from data and the culture of playing."

Noise

The main themes, materials and structures in her works could be described as: noise and toys. It is assumed that noise, such as for instance "Brownian noise", or *random walk noise*, is one of the basic constructive elements appearing in nature. "I create digital and physical humanoid and animal-like objects directly or indirectly from noise, because I understand noise as a primal matter". As "Brownian motion" (*random movements*) is the basic originator of this noise, Tanja Vujinović creates her works as digital structures based on random movements. In her works such as *Oscilo 2* (2012) and *Oscilo 3* (2012), she uses generated digital techniques to create three dimensional computer objects, or toy-like creatures, that she transforms with the use of a random „Brownian noise algorithm", while at the same time generating noise based on their movement. Her research goes even deeper, for micro sound, white noise, *flicker noise*, as well as various spectral densities all represent basic structural elements in her work. The basic concept of this as well as some of her other works lies in the formation of a structure based on the principles of group formation in nature, at which she uses contemporary scientific theory and practice to create objects, video-installations or reactive environments.

Tanja Vujinović is interested in the relations between noise, signals and random movements that take place during data transfer. Through the exploration of the contemporary theory of information she applies the laws of data transmission, compression and storage, as well as noise generation. "Anything that was not intended as a part of the original message, encoded in the signal, everything that appears later, throughout the transmission or decoding process, is understood as noise", she stated. Tanja finds that any mistake in the data transfer (noise) is a poetic inspiration. Works such as *Pulpa* (2010), *Extagram/Oscilo* (2010), *Oscilon 1/2* (2011) etc., are based on generating a continuous flow of abstract data, noise and signals that influence the digital computer generated objects. They can function as a digital library of recycled frequencies, anthropomorphic shapes, mutating glitches, flux mappings, digital vibrations and

trajectories of test-signals and particles of toy sounds, as is the case in *Extagram/Oscilo*, or they can react with real space, visitors and sounds, as is the case in *Oscilon 1/2*.

Tanja Vujinović believes that radio waves play an essential role in the process of data transfer and the creation of generated digital 'organisms'. As an abstract and invisible storm, filled with multiple signals and noise between various transmitters and receivers, radio waves form an unnoticed part of our everyday surroundings. "It is an enigmatic space, full of invisible connections and communication between devices and people, a space usually hidden and invisible, however parts of it can be temporarily uncovered, thus revealing these phenomenal trajectories."

The culture of games – toys

Anthropomorphism is deeply rooted in our art and culture, for it is linked to prehistoric, supernatural beliefs, idols and various religions. Since prehistoric times man has endeavoured to surpass the unpredictable wonders of the world and adjust the world to his needs, create almighty beings that will help him in his battle against death and other misfortunes, beings that he anthropomorphically materialised in sculptures and paintings. The roots of these beliefs are still present in the characteristics, behavioural norms and the overall value system of contemporary society. Through the use of avatars (artificially created visual representations of the user's identity) or photographic montages computer interfaces have become a part of the everyday urban culture and communication. The world of toys and dolls, from cult historic objects, via early mechanical to electronic and digital toys, is deeply linked to and dependent on people's psychological needs, and is thus adjusted to this phenomenon with its materialised representations. Robotic pets, one of the most popular toys these days, are increasingly programmed so that they interact with humans, simulate feelings and react to human attention.

Tanja Vujinović explores the aspects of this untypical communication in numerous interactive, audio-video installations: *Supermono 2/3* (2008), *Supermono 2* (2009/10), *Blipstat* (2009), *Oscilorama* (2009), *Amjumix* (2008)… The aesthetically sophisticated, black, textile, monochromatic *beings* have a basic zoomorphic – anthropomorphic form, lack a clear physiognomy and have no facial lines, eyes or mouths. The artist expressed her thoughts: „I think they are perfect "objects-to-think-with" as Sherry Turkle would say, and ideal autonomous and partial objects as Slavoj Žižek would interpret the presence of the Lacanian small object, an object that is desired and feared at the same time". At first glance these *toys* are not created in the European tradition of dolls that we used to play with as children, but are irresistibly close to creatures from the far east, inhabitants of the deep seas and dark forests, microorganisms, imaginary visitors from space or computer generated characters from video games. The unique, highly aestheticised, toy-like objects – robots, are created from custom electronics, merged with custom-made software and a computer, which enables them to move, create sounds, visual displays and similar. These objects have different roles: one functions as a camera, the second as a display, the third produces sound, the fourth transmits a signal, the fifth emits processed sounds or video, the sixth reacts to the movement and contact with the public, as a „pet" ready to be petted.

In the work *Superohm* (2011) the artist created a playground for various textile toy-like objects, that are controlled by custom made electronics within them. The objects - *beings* are divided into a number of different groups. "Some leave light traces behind while moving vigorously; some allow us to influence the sound in the space through the built-in optical sensors, while others barely move." The audio–visual activities in the environment are recorded by a camera placed within a furry object (a toy on the ceiling) and are transferred into the exhibition space as a video projection on other objects. The video and sound ambience is influenced and created by the relationships between the toy creatures and the public or the interactions between the toys themselves. Besides the already present socialisation with the machine through the use of the internet, these works demand and enable socialisation with the machine, thus creating a new relationship between humans and machines in which they become partners who influence each other through their interactions (just as Sherry Turkle wrote).

Multiplication

Tanja Vujinović multiplies her electronic toys and almost always presents them as a group of similar objects. In her work *Study#13* (2010) the digitally created objects create an appropriate sound whenever they step into physical contact, after which they multiply, leave behind an identifiable visual trace, develop, oscillate and echo. „I am interested in the organizational principles of group behaviour in nature such as swarm behaviour or emergence, in which complex systems might arise out of multiple relatively simple interactions between elements within a group". Whether we are dealing with textile toy-like objects or virtual digital objects, the artist analyses natural structures with a developed capability of self-organisation and grouping, e.g. dunes, membrane formations, flocks of birds, animal herds and similar. Digital technologies are becoming increasingly important in the organisation of our lives, and have become an inseparable part of our everyday. They enable interaction and communication, they change our habits and to a certain extent also our characters. Through the use of innovative hybrid installations Tanja Vujinović attempts to explore the possibility of new forms of consciousness, new mutually mediated, self-organised and cybernetic forms that are indicated by the disappearance of the borders between the viewer and the viewed, the private and the public, the individual and the collective.

Interaction

Almost all works by Tanja Vujinović include an interactive dimension. The public is a part of the ambience; it influences the creation of audio and visual elements of the digitally generated beings, textile toy-like objects or entire installations. While walking down the street or moving through the gallery the public triggers the changes in the audio-visual signals, e.g. in the works *Oscilorama* (2009), *Supermono*, *Supermono 2/3*, *Oskop* etc.. In her new work *Bloberizator* (2012) the artist created a specific instrument that stops its usual murmur whenever a visitor activates the portrait producing mechanism. At that moment the instrument, on demand, blobberizes the viewer, similar to street photo booths which create a series of portrait photographs. After this the *Bloberizator* returns into its state of emitting a monotone sound. *Oscilogarden 1* functions on a similar principle, for it demands the presence of the public in order to step out of hibernation. Movements and gesticulations of the visitors trigger the creation of digital beings that appear and develop

on screen, on the principle "Ultrasonic ghosts in the machine", disappearing as soon as the close encounter between the man and machine is broken.

Tactility

Apart from its interactive, kinetic and robotic elements Tanja Vujinović's installations are also known for being close to haptic art, which is oriented towards the sense of touch. The mechanical (cold) interior of her toys is contrasted by the warm feeling created by the material (fur, plush) that covers them. This is a part of her research in haptic technology, connected to tactile interfaces and digital data processing of information that travels from the users to the robots and vice versa, a process in which the public is invited to participate and a part of which it is. The artist created a specific environment, an ambience in which the visitors can experience a created space through the simulation of the senses of sight, hearing and touch. In addition to the research in formal and structural elements, she is also interested in the phenomenon of experiencing artwork through a direct contact between the artwork and the public. „I am interested in the emotional, tactile, and physical experience of the work in its surrounding". She is also interested in the reactions of the public and the feedback on their experience. Within the frame of reactive environments art, technology and science become saturated with the feelings of people, thus leading to a positive projection of the future through the research of power, control, manipulation, as well as latent eroticism and emotionalism.

Device art – transformation of the toy/machine

The creation of the audio visual ambience which is directly oriented at different sensual experiences, is close to VR (virtual reality) and advanced technology. However, Tanja Vujinović's installations are not aimed at showing new scientific or technological discoveries, but towards interventions within closed technological systems. As a unique *open source*, she uses various electronic devices, from old mechanical (toys) to new technological devices, which she modifies and adjusts to fit her needs. Through a unique recycling process, the artist combines the broadly available devices and technologies (*Arduino* microcontrollers, the *Processing* operative – development platform, *Max/MSP/Jitter* software etc.) and applies DIY and DIWO (*Do It With Others)* practices to construct new devices. "I usually create my own custom-made software, most commonly with visual programming languages". In almost every description of her work you can find the collocations *custom-made electronics*, and *custom-made software*, with which she indicates the great potential of the machine and the broad possibilities of constructing new devices and software. „I love to explore the hidden functions of ordinary objects such as electronic toys, or merely employ their simple built-in functions for alternative purposes". The artist is known for her love of open source hardware and DIY philosophy, her experimental mind and the reuse of various elements in order to construct new structures. We are dealing with a characteristic practice of artists known as *makers*, whose basic concept of work is experimenting in multidisciplinary projects. "With the use of custom electronics, various materials and software applications I create playful experiences through dynamic works that employ toy-like objects, touch, sound, and visuals".

Over recent years such artistic activism has become increasingly present on the international art scene and is increasingly gaining institutionalised support. With her

noticeable participation at numerous international festivals and exhibitions Tanja Vujinović presents one of the leading artists in our region who is actively and consistently oriented towards combining science, technology and art through a unique and personal artistic expression. The artistic practice conceived in this way is based on a new platform, which radically differs from the conservative artistic and institutionalised systems. In 2006 she named this platform „Ultramono" and defined it as a global platform for media works, research and production projects. Together with Jan Kušej (producer) she has produced extremely complex works such as: *Oscilorama* (2009) or *Blipstat* (2009), both of which emerged from the artistic event and indicate the need to spread art through theoretical and practical knowledge as well as show its possibilities in other areas of social life. *Oscilorama* is an installation in a public and gallery space, comprised of a monumental toy-like balloon that floats outside the gallery, records the street and passers-by, and sends the signals to the computer that processes them and translates them into an audio-visual composition in the gallery space, by influencing the sounds the multiplied textile toys emit. *Blipstat* is an audio-video installation in which the meteorological and oceanographic data obtained from the Marine Biology Station Piran are transferred and processed into sound and video, which are combined with information obtained from the hydrophone placed in the aquariums with robot fish in the gallery space. Apart from the preciseness in their production, it is essential for both works that the process takes place in real time. The artist successfully uses visual programming which enables her to connect the various devices, use simultaneous data flow and processing, as well as create interactive situations.

While creating specific reactive environments, audio-visual or public installations, Tanja Vujinović makes best use of the possibilities offered by robotics, sound art, lumino – kinetic, haptic and internet art, live art, interactive installations, digital technology, device art, game art, bioart, desire art, as well as hybrid art – structures that use their possibilities and knowledge to simultaneously correspond with various media.

Noise and toys appear to be the two main focuses in her work. In most of her studies both elements appear simultaneously - however the central concept usually differs. The ambience that she creates can be real spatial installations comprised of interactive textile toys/objects and audio-visual stimuli in the physical space of the gallery or the street, or virtual spaces with digitally created three-dimensional objects, objects/toys or abstract elements, that depend on noise, data transfer and movements linked to a physical object. Regardless of whether the focus is on a real or virtual space, Tanja Vujinović decided to use installations as the most appropriate form for her work. She chose installations because they enable temporal intervention within the gallery, public space or generated digital dynamic space – an ambience intended for the public. She stated that: "Once they are set up to perform a certain task, they can function without my constant presence and they become a sort of automatic agent that performs certain poetic or more mundane tasks, depending on the idea behind the work". At this she does not wish to use the created ambiences to show new scientific discoveries or research natural phenomena, instead she wishes to use digital and electronic devices and software in order to create aesthetic platforms and enable artistically reactive socialisation, a playground (as she calls it) for the public. Through this Tanja Vujinović queries contemporary communication and data transfer, the relation between technology and art, as well as the relation between closed and open systems. The artistic and social questions that she addresses make her an engaged member of the contemporary media culture in which an important place is given

to the research of sound, noise, data transfer, interactions between elements and the creation of new mechanisms, software and environments.

*all quotes are taken from: "Short self-interview: Tanja Vujinovic" http://g.virbcdn.com/_f/files/91/FileItem-274727-ShortautoTanjaVujinovic.docx and http://ultramono.org/, 17.12.2012