

Press release

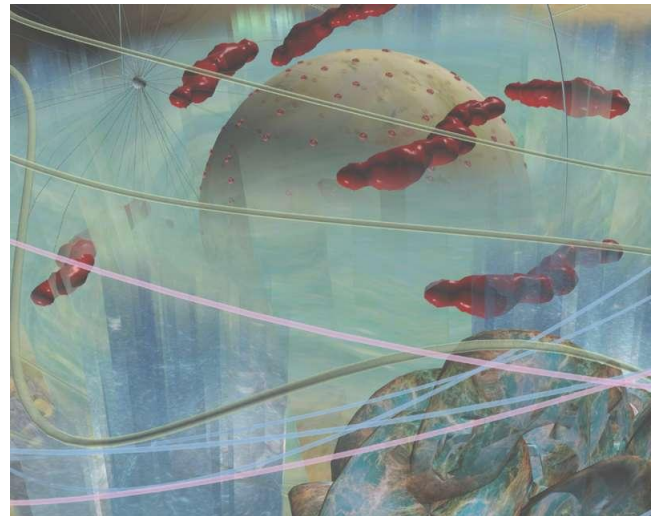
Artist Shows the Human Cell in Virtual Reality Project

In a rather untraditional collaboration between a Swedish artist and Aalborg University virtual reality is now being used in a way that combines art, advanced technology and scientific knowledge about human cells.

In the beginning of November the piece "Soft Factory" by Swedish artist Teresa Wennberg will be ready for showing in the virtual reality facilities of Aalborg University, Denmark. Wennberg is an artist working with computers and virtual reality (VR) as an artistic medium and recognized for her works "The Royal Demo", "The Parallel Dimension" and "Brainsongs – Welcome to My Brain". A couple of years ago she was invited by the Department of Architecture, Design & Media Technology at Aalborg University in Denmark to develop a new work for their ultra modern VR equipment. This time she will be showing a human cell in the piece "Soft Factory" created with scientific guidance from cell researchers at Karolinska Institute in Stockholm.

- With this project I want to visualize the nanoworld, in this case the human cell. There are hundreds of different types of cells. Some are independent organisms, like bacteria, others can only function as a part of a bigger organism, like for instance our body. Brain cells, skin cells, liver cells, blood cells, bone cells and so on. All have specific functions but look basically the same and have the same fundamental properties, says Teresa Wennberg about the basis of the art project.

- The cell is the smallest living constituent of our bodies, impossible to see with the naked eye. We can only see it through very strong microscopes. This virtual cell is enlarged about 30 million times so that it is like a big room that you can move around in. You enter through the cell membrane and can then move around inside the cell space and witness the incessant activity of its various organelles, slide on the cytoskeleton, lose yourself in the labyrinthic corridors of the endoplasmic reticulum. It is quite an experience, she says.



Virtual reality is probably the most advanced form of computer visualisation we have today. With the help of "back projections" on big screens, a virtual room is created with four walls, ceiling and floor – a so-called VR Cave where a 3D computer composition is projected from all sides. This means that "Soft Factory" is not a film but happening in "real time" which means that the computer continuously shows everything that the person inside the VR Cave sees. You enter the VR Cave with your stereo glasses which make you experience objects, forms and distance as if they were real and experience a very convincing feeling of actually "being there". The artist describes it as a great mental challenge for whoever is confronted with it.

Teresa Wennberg started out as a painter and a video artist but has been using computers as an artistic medium since 1983. In 1997 she was invited to create a virtual work for the VR Cave at the Royal Institute of Technology KTH in Stockholm. Since then she has developed three VR pieces which present different aspects of the human body and its functions and has received a lot of attention from all over the world.

- It's a challenge to captivate the public and let the visitor be literally immersed in a work of art. So VR is the ultimate art inasmuch as you create an entire "universe" for whoever enters. It is no longer a commodity hanging above the sofa, it is a total experience.



To be able to create the artistic journey into the human cell she contacted Karolinska Institutet in Stockholm because she wanted accurate information and because the ongoing research on cells at the Institute is some of the most advanced in the world.

- I want this project to be as truthful as possible. When I worked with "Brainsongs", it was more of a metaphor for the way our brain acts. This is different – I want to show what a cell looks like. But it could never be a "real" visualization, simply because nobody really knows exactly what the cell looks like in 3D. When we look inside a cell it is dead, because it is cut into very thin slices to be observed in an electronic microscope. We look at them mostly from above. So it is not real "visualization". Then, you might ask, is it "art" then? I would perhaps say "imagination" in this case, "an artist's imagination". Of course I have relied very much on the advice and information I have been getting from the professors at the Karolinska Institute in Sweden and from all the books and papers I have read and to all this information I have added my own imagination. Also, the choice of colours is for example totally subjective. I doubt that such small entities have any "colour" at all, says Teresa Wennberg.

She was invited to work in the Virtual Reality Cave at Aalborg University's VR Media Lab by Professor Erik Granum who at the time was the head of the Department of Media Technology. Working with people at Aalborg University where the focus on VR is more technical than artistic has been an interesting experience for both parts.

- A technician or an engineer would never do the same work as I do. I act and react very differently in my use of a computer for instance. I am not so much a math person as a visual person. I spend a great deal of time deciding the forms, colours and texture maps that I use in my worlds. I'm also very childish. What I can bring to them is perhaps a more open and free attitude plus a complete disrespect for how a computer is supposed to behave, and sometimes rather extravagant solutions to problems an engineer would just attack and solve with a formula or calculation. In short, I use the computer as an artistic tool, with disrespect and a lot of liberty. A technician must follow the rules. But the encounter is inspiring for both sides, says Wennberg.

As a technical assistant and 3D animator at Aalborg University's Department of Architecture, Design & Media Technology, Peter Skotte, has also experienced the differences and new inspiration in this special encounter. He teaches in the Medialogy and Art & Technology programme and has helped the artist's ideas come alive.

- It's been a challenge because there is a kind of cultural difference and that means that we have very different approaches, especially in the process from having an idea to putting it into practice which can be very complicated. But the differences have also been positive. I have made graphics I have never done before because Teresa as an artist has a different approach. It's more abstract than what I'm used to, so it need not be as accurate as in, say design simulations, where the proportions must be completely accurate. Here we work with something that no one has seen with the naked eye—so it is less strict—of course within the plans Teresa has had, says Peter Skotte.

Teresa Wennberg's piece "Soft Factory" will be shown in the VR Cave at Niels Jernes Vej 14, Aalborg University in Denmark, opening on the 9th of November at 4 PM in the University's 3D panorama cinema. Japanese composer/musician Naoki Tate has created a special soundscape to accompany the virtual experience.

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- VR4MAX – Software for Interactive 3D Visualization and Simulation: <http://www.vr4max.com/index.php?/Latest/SOFT-FACTORY-VR4MAX-in-ART.html>

Organizations involved:

- Karolinska Institute in Stockholm (Professors Anders Zetterstrom and Bjorn Obrink both specialists in the field of cell biology).
- Aalborg University – VR Media Lab and the Department of Architecture, Design & Media Technology
- Konstnärsnämnden/Swedish Arts Grants Committee, Sweden
- CSC, Royal Institute of Technology, Stockholm
- The National Defense College of Stockholm
- The Norrköping Visualization and Interaction Studio (NVIS) at the University of Linköping-Norrköping, Sweden
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