

# Creativity and Technology Panel

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## 1. Introduction

Technology has been applied successfully as the instrument and media for artistic expression and experimentation as examples in photography, cinematography, and video installations can show. It is a continuous interplay in which the artist contributed to technological advances and the technologist with innovative research provided more possibilities for creative expression.

More recently Virtual Reality and Artificial Intelligence have become the tools of artists raising again a number of old issues and creating new challenges both in terms of creativity and of technology. Creativity from the research point of view is not very often a spontaneous act, in the way that it can be in art. However, the more complex the art installations and the technology used in art is, the more complex and elaborate the process of artistic creation becomes. The change in the creative process introduces new challenges for the artist and the technologist in terms of their roles, education and training and way of working.

In the following sections these challenges are discussed and exemplified by the use of Virtual Reality as an instrument in art installations, to aid the understanding of the complexity of the issues.

## 2. Artist vs. technologist

*"Renaissance team: one cannot be creative without mastering their tools"*

As the media used in art become more technologically advanced, it is often the case that art and creative expression require scientific research and further advances in technology. Boundaries between the role of technologist and artist are blurring because of the complexity of the technology used in art and of the influence of other disciplines such as psychology, human perception, aesthetics and art in scientific research.

As technologists and artists cross boundaries, they are faced with the complexities of the different disciplines and the knowledge required to successfully making use of them. They need to become "intermedia" persons that understand the issues and the language of art and vice versa. Whatever the discipline, one cannot be creative without first mastering the media used in their creative expression.

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One would ask if mastering both technology and art is a feasible task for a new "Renaissance" person. I would argue here that due to the complexity of both the technology and its use as an instrument in art, artists and technologists are facing a new challenge that of forming the "Renaissance team".

In other words our Renaissance "person" is an interdisciplinary team of experts in their own field, with good understanding of both the vocabulary and the artistic and scientific issues of other disciplines, like art, computer science, storytelling, cognitive psychology, human perception.

Even if the problem of communication between intermedia people with different thinking processes and creative expressions is resolved our "Renaissance team" has to resolve the problem of intellectual property. It is no longer enough for the artist to develop the concept and design, or for the technologist to make sure that the machine is working in the end art-installation. For the artist this means that it is once again necessary to master a media far more complex than other and for the technologist to understand the role of the machine as part of a whole; the installation.

A Renaissance team in which each member respects the expertise of the others, is sensitive to their expression and way of thinking, and properly acknowledge the importance and contribution of others in the outcome would be far more effective and successfully creative.

### **3. Innovation and Knowledge**

*"It is not a bug, it's a feature"*

Technologist notion of an innovative research output is that of precise, well researched methodology that will as a result produce well-defined tools, which would have a stable behaviour and guide the user in his/hers tasks.

The artist on the other hand would experiment with the existing experiences of the user, forcing him/her to restructure knowledge into new logical entities. Very often art would present environments where technology is used for its mistakes, or from a perspective that has never thought before in a technological field.

### **4. Interactivity**

*"Create a "Sophie's world" where Sophie can escape"*

Virtual Reality is using intuitive ways of interaction with the user. From stereoscopic viewing, to data gloves, hand tracking, gesture and language recognition, wearable hardware, a lot of innovative interaction devices and metaphors are sprawling from the scientific research. Art installations make use of some of these devices but also create new devices and metaphors for the interaction with the machine. Again technologists might look for interaction devices that are precise since the nature of the applications used require such precision, while the artist would happily trade precision for ease of interaction and a better interaction metaphor.

Whichever device is used for interactivity it is valid to say that interactivity in that sense is not utopic and it is advancing in big strides. However, if interactivity with the machine is not

utopic in the sense of the choice of devices (or non-devices) and interaction metaphors, it is definitely limited by the choice in responses.

The complexity of providing a non-deterministic interactive storyboard in Virtual Reality installations is evident to both technologists and artists working in this field. Interaction in this type of installations is not merely a choice between different predefined paths. It should be non-deterministic to allow for different experiencing of the installation depending on the user interacting.

On the technology side Artificial Intelligence techniques and research can be used for adapting and expanding the technology via learning from previous interaction with the users for example. However, a lot of interdisciplinary research for our Renaissance teams is still needed for successful interactive storytelling, and interactive installations using the new technology, so that experience is not limited by the Creator, but by the environment and the user.

## **5. Aesthetics and Artistic Expression**

*"Virtuality is limited by today's technology".*

Virtual Reality was used in its early phases as a means of simulating or imitating reality, failing to do so very convincingly. As the technology becomes more advanced this is becoming possible. However, researchers are still not satisfied with the resolution of display devices, the speed of the already very fast graphics hardware, the rendering speed of complex virtual worlds, or with the accuracy of interaction devices.

Artists on the other hand are challenging the technological view of simulating reality, by creating abstract virtual worlds, or even no world as such and allow the user to be creative within that environment. Researchers have also adapted this view and explored the full potential of this scientific field by changing reality and its parameters in "virtuality". For example change the time scale and size of real objects allows users to experience physical phenomena, which are impossible to observe in real life.

Even though, these are already steps towards a more flexible technology that can accommodate the aesthetics/artistic expression, overcoming the limitations imposed by the technology is still a challenge. Technology is imposing not only its own aesthetics but also its own cultural background (that of the technologist/creator). Therefore, adaptation of the technology to different cultures and different disciplines is still a one way process, where it is merely imposing its views rather than flexibly transforming for different users and uses.

It is essential from the side of the technologist to respond to the new challenges coming from the need for more flexible technology and for the artist to separate the difficulties presented due to the unfamiliarity with technology from the issues of restricting artistic expression due to technological aesthetics.

## **6. Summary**

The use of technology as an instrument for artistic expression is changing the role of the artist and technologist into an intermedia person. This person, a master of his/hers own discipline, is also capable of understanding the issues from other disciplines and feed that back into their own to gain different insights and perspectives.

Furthermore, due to the increasing complexity of both the media used for artist expression and the technology involved in it, it is not possible to repeat the success of a Renaissance person, it is rather a challenge of forming "Renaissance teams", capable of collaborating and learning from each other.

The creation of renaissance teams can be facilitated, by changing our education systems, our workplace and working ways. The university curricula are still following the specialisation approach that is no longer training our students for the challenges they would be phased with in their professional carriers, been that in art or science. Curricula from one discipline should incorporate a broader spectrum of issues or at least provide the student with an understanding of other disciplines needed in working with a "Renaissance team".

The workplace is also changing to incorporate different cultures and working ways as our technology triggers and supports a globalise view of our society and business. Changing our education and working culture to encourage, and provide support for intermedia persons to become successful members of a Renaissance team would thus benefit both the technological and artist communities.