

## The new frontiers of 3D art

### Descrizione

Digital Art was founded in 1959 by Ben Laposky and Manfred Frank, mathematicians and programmers. Their experimentation and their approach were purely mathematical, considering that none of them was an artist. The two researchers realised a binary code with the purpose of getting a well-defined and elaborated image, which could be distorted through the use of an oscillogram able to vary the wavelength of the light rays in the CRT (cathode-ray tube).

After the first experimentations followed by a period of relative stagnation, a systematic production was started already in the early Sixties, also thanks to the EAT (Experiment in Art and Technology) movement, that created a buzz and received support from various foreign companies that lead it to eventual land in Europe, specifically in Linz, Austria, in the year 1979.

Since then the enormous potential impact of pure technology upon artistic creativity became common awareness, and a yearly event was based just in Linz: the Art and Digital Media Festival, which eventually led to the creation of the Ars Electronica Linz Museum, a specialised centre hosting one of the world's most important archives of digital art, and covering the whole production from 1979 to the present.

Digital art opens new ways to the creative process and to its possible outcomes. The range of options is quite wide, from the simple distortion of existing images, (such as paintings or pictures), to more sophisticated elaborations in three dimensions. In such a respect, it's not at all unusual that among the protagonists of the birth and growth of digital art are many researchers and technicians who applied their knowledge and skill to the elaboration of new software, in order for creative artists to engage in the development of quite complex images and products. Programmers and engineers such as Charles Csuri, Frieder Nake, Georg Nees, Michael A. Noll and Vera Molnar are considered to be the pioneers of digital art.

A special role in the development of digital art was played by Myron Krueger between the end of the Sixties and the beginning of the Seventies, with the creation of the artificial environment. It coined the term "artificial reality" to describe the setting where no special glasses or other devices are used, but the individual is framed in a new environment consisting of images projected on the walls and interactive changes generated by the individual him/herself with movements and action. Since this implies

the aware reaction on the part of the individual, we can consider it a new kind of artistic installation.

In 1971 the first personal exhibition is held in a museum and focused upon the works by the artist Manfred Mohr, characterised by geometric shapes generated and developed through digital graphic programs. Hosted by the Musée d'Art Moderne da le Ville de Paris, the exhibition represents a sort of official entry of digital art in the conventionally established art world.

The diffusion of digital art was made possible by the combination of its technical and financial features: on one hand, the introduction of the cathode-ray tubes; on the other the decreasing costs of technological apparatus. In such a respect, a fundamental factor for the evolution and diffusion of digital art was the sequence of improvements affecting the performance of computers, leading to the presentation of the first personal computer by Xerox, and the production - in the Eighties - of computers specialised in graphic elaboration programs such as Amiga, Commodore and Apple.

Digital art is quite complex: it is not just photo editing or video recording. It can push creativity to its "ordinary" extremes just as in the experience of a sculptor with a block of chalk; it is the art of our time, incorporating the most advanced technology and exerting a deep and realistic impact; it has produced a substantial revolution in subjects and canons of painting, enhancing the intensive connections between the arts and communication, as Andy Warhol himself had previously done through the creation of an artistic style advertisement.

Despite its diffusion, there is still quite a lot of prejudices against digital art, based upon the evidence of an "excess" of technology in the artist's work. The idea of crafting a piece of art is in fact normally associated with the manual creation of an object; in such a respect digital art would be a sort of "second class" creative production, graphics but not art. Of course this is just the outcome of a narrow-minded and rigid interpretation of art, and it totally ignores the expansion of both creative opportunities and perceptive spheres it allows.

A specific and quite lucky application of digital art is cinema. This opens a wide market that with every probability will extract digital art from its present partial isolation.

Everything started with a 1852 invention, the stereoscope created by Charles Wheatstone and developed by Luis-Jules Duboscq, which allowed the movement to be reproduced in stereoscopic images. In the Twenties this application could already produce a succesful experiment in the première of "The Power of Love", projected at the Ambassador Theatre in Los Angeles (1922); the spectators had to wear the bizarre bi-coloured spectacles in order to decrypt the red and the cyan filters applied to the

images. The film was lost, since no copy seems to have survived. It would make the fortune of every collector.

“The Power of Love” was the starting point of a series of experimentations (both short and long black and white movies); in 1929 the Harvard student Edwin Land patented a sheet polariser which eventually became a commercial product: the “Polaroid J Sheet”, conceived in order to reduce the glare of light in cars’ headlights; Land understood the potential utility of his own invention also in other fields, and adapted it to the stereoscopic projection of movies. After World War Two 3D movie production intensively developed, and in 1952 the first colour 3D film was produced: “Bwana Devil”, written and directed by Arch Oboler.

Despite the success of such movies, there were many shortcomings threatening the further growth of such kind of creative products; among them the most relevant was the technical impossibility to shoot a film longer than one hour, since the maximum length allowed by the current technology was 1800 metres, corresponding to one-hour projection.

These technological constraints were actually released by an invention by the same Arch Oboler, who introduced the possibility to print a movie on the same film, overcoming then the need to use two synchronised projectors and producing a single panoramic image, although sensibly darker. In 1983 the first Italian 3D movie was produced: “The Shark 3”; it was distributed only in a few movie theatres.

It may sound surprising that such an innovative technology, developed in quite a long period, had only a limited success. But on one hand the pioneering years were characterised by still expensive technology and limited expressive options; afterwards, when an intensive development towards general access and friendly use of 3D movies could have been possible, the cinema world recorded a long decline and the movie theatres were progressively abandoned in favour of the expanding home entertainment.

Radically new opportunities have been recently introduced with the application of 3D technology to high-definition digital movies, as first did James Cameron in 2003 with the documentary “Ghosts of the Abyss”.

The production of “Avatar”, directed by Cameron himself, represents a further step towards a generalised success of digital cinema: it is based upon a more sophisticated tool, the “RealD”, a digital technology using a number of projectors co-ordinated by a computer and exploiting the circular polarised light system, with cameras HDTV of Fusion Camera System. “Avatar” had been conceived as a 3D movie already in 1996, also in view of the likely opportunities allowed by the extensive use of computerised graphics.

A further expansion of such techniques is the 4D option, which places the spectator at the centre of the work, be it a movie, an illustration or an art installation; apart from the three-dimensional involvement, individual spectators can now enjoy a more expanded physical setting, enriched by smells, natural effects such as rain or wind, material impact such as movements and vibrations. It is clear that the wider the range of technical opportunities, the larger the area left to the creative ability of the artist. In November, 2009 the Emily Carr University of Art and Design and the Kerner Studio announced the establishment of a stereoscopic 3D research studio, which will undertake local film production, experimental film and the establishment of certification and degree-level education of stereographers. Not surprisingly, Italy still looks at 3D movies with suspect, also investigating upon the possible health problems likely to be generated by this form of art.

### **References**

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### **Campi meta**