

Chapter 9

Nature Related Computerkunst

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ABSTRACT

It has been generally accepted in art history that nature ranks as master and ideal of the arts. Everybody knows examples of nature-related artworks created over centuries and decades in a conventional manner. Most of the contemporary readers witnessed the invention of the computer as a tool used in natural sciences, and later, in the arts as well. As a natural scientist and curator of art exhibitions, the author of this chapter was continually involved in this contemporary development which raised a fundamental question: Would the computer as a tool be a means to generate new representations of nature related art? This would demand results that ought to be different from conventional works of art as to the conceptional creation processes as well as the output. Some theoretical backgrounds and categorizing of such creations are discussed in this chapter and then illustrated by several examples from artists participating in a series of 'Computerkunst/Computer Art' exhibitions during the quarter of the last centuries (1986-2010). Though it might be too soon to judge computational art works concerning their importance in Art History, a closer investigation in the creational processes and social contexts seems helpful and worthwhile.

INTRODUCTION

'Natura est via in naturam'

- Thomas Aquinas

Nature related art will doubtlessly be estimated as old as art itself. In history there are countless examples of this understanding starting from the cave images of early mankind, witnessing Leon-

ardo da Vinci's scientific and artistic works, and art works still spreading in a broad diversity of representations in modern times. In overviewing this development, we have to state that all of those examples were 'handmade' products in form of sketches, drawings, paintings, models, sculptures, etc. All of them were made of real world materials, as paper, wood, metal and others. The invention of the computer in the last century as a result of the developments in science and technology, especially mathematics and applied physics turned out to cause a radical change. No longer graphic

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or pictorial creations had a life in the so called real world alone but could also exist parallel or even solely in a virtual state. Additionally this means that the replacement of accustomed production tools of art by computer, monitor, keyboard, and mouse must lead to a change of the mechanisms in the creative processes as such and its public and individual reception.

Any creation of artistic works demands ideas, experience, and means, though each of these aspects may weigh differently to carry them out. Concerning those fundamentals there can not be any difference between conventional and electronic art generation. So it was of growing interest and importance for me to observe the different approaches of scientists and artists towards the kind of electronic art works they presented to the public in a row of Computer Art exhibitions I curated over the years in Germany since 1986.

Use of the Computer for the Arts and the Author's Classification

Digital or computer art has grown multifaceted. Which basic tools and materials did scientists and artists use for the purpose of creating artistic works? Generally we can discern different 'inputs' and 'outputs' concerning computational art. With the evolution of software and growth of computational capacity it became easier and steadily more affordable for each user to handle commercial machines and peripheral gears. So I propose to define one category of computer art as creations achieved by using commercial painting and picture processing programs; in such cases there are no pre-existing samples, the artist only uses the given possibilities of 'free hand' drawing or painting, with different means of output. A subcategory can be recognized in works that use transformation and processing of existing samples, e.g. in form of digitized photographs, graphics or paintings as input. These procedures are based on the timely developed algorithms, the available software, and the peripheral gears concerning input and output

as well. In the following text I will refer to some examples presented on exhibitions.

A second and different category of computational art we can identify in the algorithmic procedures that scientists and artists develop themselves following their own intentions and purposes. A main partition of this category encompasses the group of the 'Algorists' who almost exclusively have been using plotters as graphical output gears. Another algorithm-based mathematical method is the performance of cellular automata for artistic and/or scientific generation of works.

We can discern the third category of electronic art works, clearly distinguishable from the above mentioned, which is generated as nature-related art. Applications emerge with growing intensity from the convergence of digital and scientific, especially biological investigations, and fuel the possible impetus for artistic consideration and examination.

Many art works can be attributed to one of the sketched categories, others will be perceived as mixtures of these and sometimes additional techniques. Because of the enormous span of these fields I have to confine myself and leave out here other branches of computer based art like video (and video-installation), AI, game art, net art and others.

ELECTRONIC ART: APPROACHING AND EXTENDING NATURE

There are many different ways to generate art that in a broad sense is based or related to nature and natural sciences. Since it is the spirit that unifies art and science, which originates in human being, and which communicates to human being (Alcopley, 1994), the representations of the human and all relations of his/her physical or spiritual background have been permanent constituents of art. So it is only consistent that a great deal of computer generated art works, beside biologic

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