

Computer graphics – Computer art

Editorial by Professor Kunii

It has been the goal of the Visual Computer journal to publish original articles in the following 3 categories of computer graphics, computer vision and visual data structures:

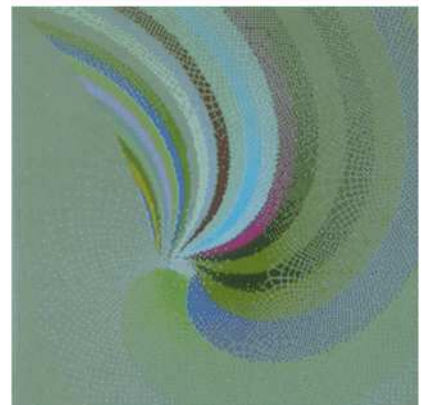
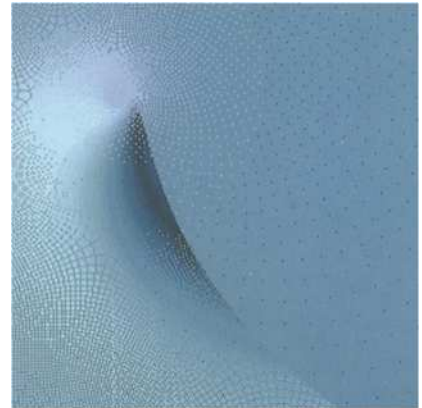
1. Research papers
2. industrial papers
3. visual arts

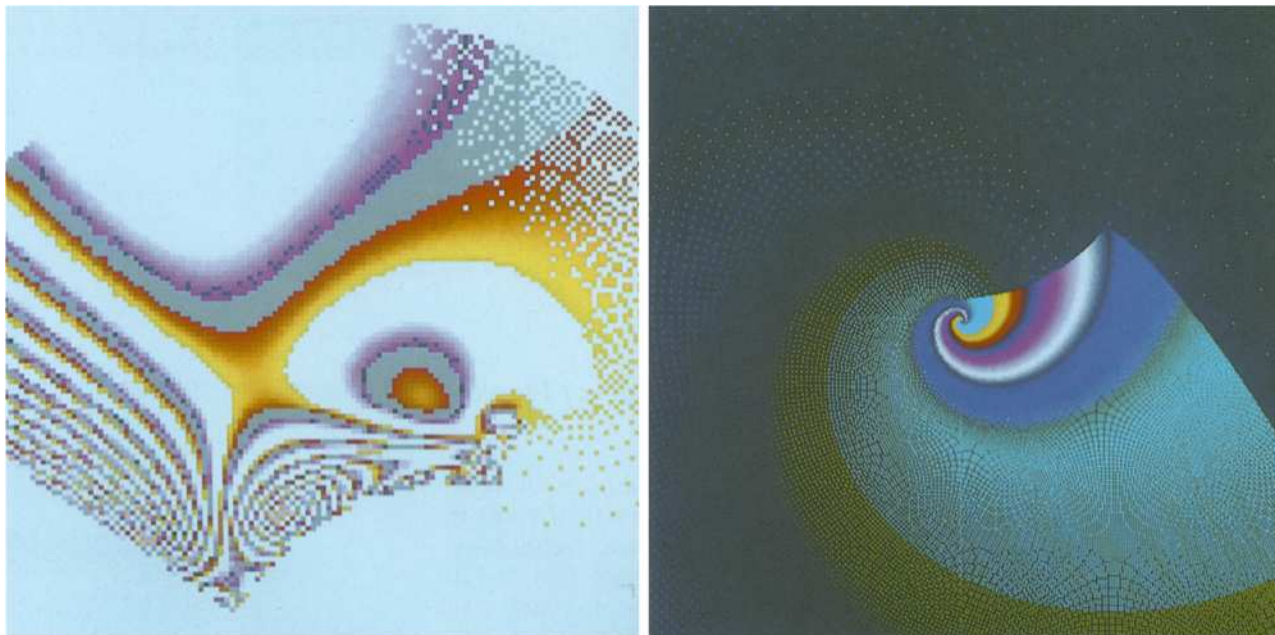
So far the journal has been almost exclusively dedicated to the articles in Category 1. It is my great pleasure that Professor Franke now has put up a striking issue dedicated to the articles in Category 3. You will enjoy this beautiful issue, and it is hoped that you are inclined to contribute your own fine art work to the journal.

Tosiyasu L. Kunii
Editor-in-Chief

Editorial by Professor Franke

The tools and methods of computer graphics have their roots in the fields of science, technology, and commerce; they had, originally, nothing to do with art. However, more than twenty-five years ago, at the very beginning, users of these tools noticed that they were also ideally suited to free graphical experiments. Three of those users, the Germans Frieder Nake and Georg Nees and the American A. Michael Noll, took independently, but at the same time – 1965 – the decisive step away from free graphical play to artistic activity, which is judged on esthetic criteria. They introduced the expression “Computer Art”, which led to heated discussion, still not resolved today. Theoretical disputes notwithstanding, more and more mathematicians and programmers, and later authentic artists too, found their way to this genre. They leaned, at first, towards constructivism, but, in step with the transition from mechanical plotter to visual display unit, they broke with particular styles; they not only produced a series of interesting pieces of work, but also laid the foundations for important methods used in the graphical-artistical application of the computer. In the main, however,





they formed an inner circle and were hardly noticed by the general public.

This situation has changed in the last few years, in particular because of the opening up of various possibilities for the application of free-form computer graphics in commercial areas, particularly in advertising and trick films. An esthetic point of view was pushed to the fore for the first time, and so unexpectedly the experiences of "computer artists" were suddenly of interest. A wider circle became aware of those highly fascinating works which had emerged "in secret", as it were.

Certainly, the emphasis of computer graphics lies even today on practical problems, and those who use computer systems for artistic purposes are dependent on devices and methods which were actually designed for something completely different. So-called "Paint Systems" have ap-

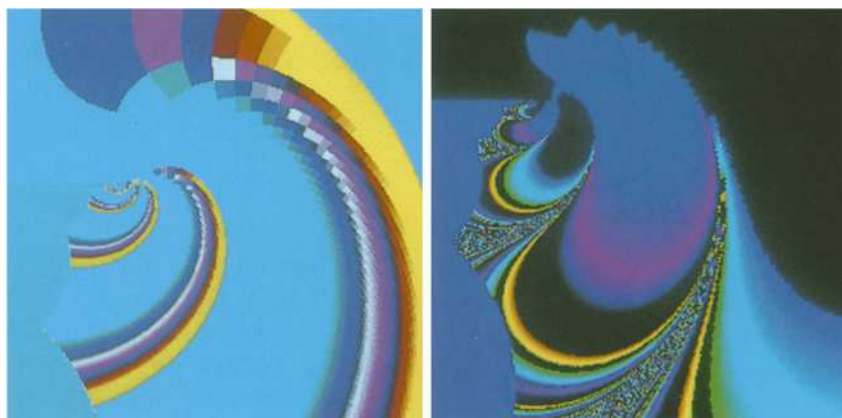
peared on the market only recently; these are usable by a person educated in the graphic arts who has no previous knowledge of computers. Certainly, the coupling of scientific and technical apparatus with unconventional methods and approaches has given a much-desired impetus to the task of artistic creation.

This issue of "The Visual Computer" gives an overview of the way things stand at present. Those mathematicians and computer scientists who made a name for themselves in computer art have been joined by trained artists who are interested in the new methods. It was therefore clear from the beginning that this issue should be devoted less to theoretical artistic discussion than to practical information. Emphasis lies mainly on the results of activities – the pictures, whose messages, especially within the framework of the topics covered, are

more extensive than any verbal description can be.

The series of contributions begins with a large-scale overall view by Frank Dietrich, independent consultant for computer graphics in Palo Alto, who analyzes the special position of computer graphics between pragmatic and artistic objectives. Peter Beyls, from the Artificial Intelligence Laboratory of the Free University of Brussels, covers in his article new aspects of man-machine interaction for artistic purposes. Then comes a contribution from Jürgen Brickmann, Institute for Physical Chemistry at the Technological University of Darmstadt; he has studied not only science but also art, and so is particularly well qualified for activities in the field of artistic computer graphics. Monique Nahas and Herve Huitric from the Department of Computer Science, Université de Paris VIII are pioneers of computer art

in France and present an overview of their work together. Nelson Max from the Lawrence Livermore Laboratory in California, specialist for photorealistic simulation of objects and landscapes, describes his widely known program "Carlas Island". The wife-and-husband team Colette and Charles Bangert – she is artist, he is engineer – report on their activities, and Y. Kawaguchi from Nippon Electronics College, Tokyo, presents a few of his fantastic motifs. Ruth Leavitt and Darcy Gerbarg from New York emphasize yet again how diverse the stylistic directions producible on computer graphics systems can be. The artist John Whitney Sr., who lives in Pacific Palisades near Los Angeles, teacher and mentor of a whole generation of computer animators, draws analogies between graphics and music, and the works of Edward Zajec, of the College for Visual and Performing Arts of Syracuse University, also focus on the connection between picture and sound. Robert Mallary, Department of Art of the University of Massachusetts in Amherst, describes some of the special properties of the "Supermedium" computer art. Robert Holzman, Dean of the college of Arts and Sciences of the West Coast University in Los Angeles and supervisor of the Computer Graphics Group of the Jet Propulsion Laboratory, goes into the graphical activities of his Institute, especially the work of his colleague, Jim Blinn. G.F. Kammerer-Luka, a member of the Computer Art Group of Belfort and lecturer at the University Institute of Technology, uses his



computer-artistic tools in town planning. On the basis of his pictorial results, Melvin L. Prueitt from the Los Alamos National Laboratory describes some general aspects of computer art, which is in a position of being able "to make the invisible, visible". With this unconventional, but just as remarkable theory, Harold Cohen, Visual Arts Department of the University of California, San Diego, shows new aspects of computer art. One of the most remarkable contributions is from Hiroshi Kawano of the Metropolitan University of Science and Technology, Tokyo, who presents in visionary form a proposal for a comprehensive model of artificial intelligence which also includes artistic activities. Although a full understanding of Kawano's lines of thought is difficult, not least because of his use of formal linguistic terminology, the article stimulates us to consider the perspectives for computer-supported creative and cognitive aspects in the future.

I am particularly happy to acknowledge the invaluable support

of Dr. Georg Nees, one of the three pioneers of computer art, who worked with me towards the preparation of this special issue of "The Visual Computer". Dr. Nees is now Professor of Applied Computer Science at the University of Erlangen and engaged in investigations in the field of graphical data processing and artificial intelligence. For years, he has had practically no time to devote to his own artistic activities, but he hopes that in the future he will again be able to spend more time on this area, which he finds as fascinating as ever. I extend to him my very best wishes for success in this. I would also like to thank the people at Springer-Verlag for their cooperation, not least because they made it possible for my wish for a generous number of illustrations to be fulfilled. But most of all, I would like to thank all authors, of both text and pictures, who have contributed to the realization of this issue.

Herbert W. Franke

All figures by Herbert W. Franke and Horst Helbig