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Computer Graphics Art in Japan

In the past few years, computer graphic images have been emerging swiftly into the daily life of the Japanese through the TV screen or in the graphic pages of miscellaneous journals. Especially in commercial spots or introductions of TV programs, very characteristic images of CG have been inspiring peoples eyes and influencing their aesthetic senses.

It is of course an international trend, and nothing is related to traditional image technology. But in the process of expressing the shape and color, the rhythm of the moving images, traditional sense of beauty or even the individual artistic character has been gradually appearing. Though it is still in the infant stage, it is time CG became a mature and authorized art form. If we look back on the past 20 years in the history of computer graphics, most Japanese activity has been influenced by America. But now, for 2 or 3 years, Japanese CG techniques have been growing rapidly and beginning to show unique character in the world. Recently many Japanese CG arts have been nominated for Grand Prizes at many media art festivals in the world, and have been singled out for their charming characters.

LOOKING BACK AT HISTORY

It was during the last half of the 1960s that the first trials in creating art by computer in Japan began. Horoshi Kawano, a teacher at Tokyo Metropolitan College of Airplane Technology, made Mondrian style paintings by using computer and became famous. The CTG (Computer Technique Group) organized by eight students such as Haruki Tsutsiya and Masao Komura created the metamorphosed images of J.F. Kennedy by using XY plotter. They made many other images full of humor and parody like the image of a Coca-Cola bottle transforming into the shape of Africa. Their works were introduced into the Cybernetic Serendipity Exhibition at ICA in London in 1968.

Gaku Yamada and Yoshio Tsukio, both architecture students at that time, made the first computer animation film "The Art of the Fugue", a sort of homage to J. S. Bach, by shooting the CRT monitor with a 16-mm camera. It was the 3D moving image of cubes drawn by wireframe technique.

There were some other pioneers of CG art in Japan, such as Eiichi Izuhara, who made the simulation of branching trees. Izuhara was a tutor for Yoichiro Kawaguchi in the middle of the 1970s and had influenced him, especially by suggesting to him the way of simulating growing objects like shells.

But these Japanese artists had to wait for another few years to use the computer at full strength as their tool in creating art. More advanced computer technology and matured software and algorithm for simulation of every type of visual presentation like shading, ray-tracing, texture mapping, modelling the landscape with Fractal geometry, and moving effect of various objects were yet to come. In fact it was only for the past 5 or 6 years that Japanese artists have become involved deeply in the CG field. Because of Expo 85, computer graphic industries in Japan rushed into film presentation for the pavilions, and visited the U. S. searching for new image technology. Thus, the second boom of computer graphics has come in Japan by the introduction of the newest technology and various up-to-date algorithms like ray tracing or texture mapping, etc.

CG IMAGES IN EXPO 85

Expo 85 helped Japan in catching up with CG technology quickly by spreading the economic power of industries. Many works resulted from connecting the most advanced CG technology and large format film technology such as Imax systems. Extraordinary works were made for

some pavilions in collaboration with American computer graphic artists like Nelson Max or other famous artists.

In fact, not all films made for various pavilions at Expo 85 were good, and some were based on a poor concept. But at the same time, there were some excellent works which will be remembered in the history of computer graphics. CG film "Universe" made for the Fujitsu pavilion in collaboration with Nelson Max was one of these. It was the grand spectacular scene viewing the birth of the universe to the birth of a human being. It was made with computer graphic stereoscopic images. Especially the dynamic scene showing the process of formation of the chromosome from chains of DNA was most dramatic and highly appreciated for its artistic and educational effect. After Expo 85, the general business condition of computer graphic industry has been rather slow, but familiarity of the CG images to the public has been increasing. Within the past year, a hectic boom in family computer games (so called Famicom) has been attracting the minds of so many children in Japan that it has become a sort of social phenomenon. On the other hand, these computer games and hobbies have been helping to make CG images more familiar to the various groups of the population. Such a social and psychological climate is also supporting the experimental involvement of young artists in computer graphics and other media art.

CG ARTISTS IN JAPAN

From such a background, there are several artists in this CG field with growing potential.

Mr. Yoichiro Kawaguchi, for example, has been presenting his ambitious works for SIGGRAPH since 1982 and has been accepted enthusiastically for his strong artistic character. He is in a privileged position as a teacher in a private technical college, and with his unique approach in creating the algorithm for his works, he has been establishing his own style. He does not give the shape to the object intently like many other artists, but instead, creates the algorithm for generating the form of living things as they obey the natural law of growth. He calls his algorithm GROWTH. If he follows this algorithm, the various forms of the living object grow just by selecting the parameters of branching or the angles. By controlling the parameters, he can create his favorite creatures in his imaginary world. His methodology was inspired by his tutor, Eiichi Izuhara and D'arcy Thompson's "On Growth and Form", he explains. But his strong color effect must have been influenced by the subtropical landscape of Tanegashima island where he was born and raised.

Masaki Fujihata, who had presented his directed work of "Mandala 83" at SIGGRAPH 83 is also one of the up-coming artists in Japan .

This work showed the meditative mindscape by transforming the symbolic image of Buddhist cosmology by changing the transparency and color of the balls through the unique ray-tracing technique. At SIGGRAPH 84, he presented "Miroku" which seemed in marked contrast to Mandala 83 and conveys a feeling of comical expression of sexual images. It had aroused some controversial response from Western audiences, but it is based on his oriental attitude towards such sexual symbols. In fact he is trying to approach the psychological and metaphorical meaning of shape and form. It is a sort of anthropological survey for the iconography of taboo images.

PRODUCTION ACTIVITY

On the other hand, Japanese CG productions are under the severe restraint of the clients of TV companies or the publishers. Despite such pressure, they remain active and try to make more artistic and experimental works. This is the reason why one of the productions, JCGL, received the grand prize in the publicity category at the Monte Carlo CG contest this year. Some productions are trying to make experimental works in their spare time. For example, Toyo Links has made an experimental CG work "Biosenser" presented at SIGGRAPH 84. It

was directed by Takashi Fukumoto and received a grand prize in the fiction category at the Monte Carlo contest in 1985. Recently they have created a new research section mainly devoted to the experiment of new texture, color, and movement algorithm within the framework of investigating the company. They are for more delicate and freer expression of CG effects by spending their precious time and energy.

ACTIVITY OF LINKS SYSTEM

Strongly supporting the Japanese computer graphics movement both technologically and spiritually is the power of the Links system of Osaka University. This system was developed by Prof. Koichi Ohmura of Osaka University by linking many small personal computers in parallel to overcome supercomputers like Cray-1 or Vax systems. It was the challenge against common sense using giant computers to create better CG art works using only small personal computers. But in fact, by linking so many small computers in parallel, they could save time and cost drastically. Besides, Ohmura had developed the new algorithm of Metaball, making the object images easily and smoothly. Now Yoichiro Kawaguchi and producers like Toyo Links have been using this Links system. It was used also for making images of some parts of "Universe" for Fujitsu Pavillon at EXPO 85.

FOR THE EDUCATION OF CHILDREN

Television has been the influential power giving expression to computer graphics to audiences. NHK started using CG images for its titles and programs for children. Especially in the programs for child education, they have been creating a series short CG animations. For example, Mr. Toyoko Hirata, a director of children's programs, had made a short CG animation entitled "Circle, Triangle, Square", which showed the playful and humorous behavior of these three characters. They also made the animation of games between language and image which inspired the imagination of children. The commercial producers like Toyo Links or JCGL or Osaka University have collaborated with NHK, too.

OTHER ACTIVITIES

Besides such computer graphic specialists, there are amateur movements using personal computers. Because of the cost of such small computers, many young people started using computers for creating their own computer graphics and sometimes trying to enter contests. Their images are sometimes 2-dimensional, but their quality is becoming better. There are some other artists using CG technology for textile designs or ceramics design.

Such applications of computer graphics are spreading to a wider area including other media art like performances using video images or music. Many artists are working in these fields. They are influencing the old categories of art and will be changing the traditional sense of beauty in Japan in the future.

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