Looking Back to SIGGRAPH's Beginnings

Carl Machover
Machover Associates Corp.

Regular readers of this column know that SIG-GRAPH will be celebrating its 25th conference anniversary in July of 1998. The SIGGRAPH organization is older than that, and will be celebrating its 30th anniversary in 1999. It is my good fortune to know Sam Matsa of IBM, who was the founder of SIGGRAPH. Sam and I both live in Westchester County in the New York area, and I arranged a lunch with him in October 1997. We had a delightful chat about the origins of SIGGRAPH, and some of the early computer graphics history. The column this issue is a transcript of our discussion.

Sam can be reached at: Sam Matsa, IBM; email: *samm@vnet.IBM.com*; tel: +1-914-766-4709; fax: +1-914-765-7537.

Carl [C]: What can you tell me about the founding of SIGGRAPH?

Sam [S]: When SIGGRAPH was founded, graphics was in its infancy. Computer graphics started in connection with engineering design and related work. An early project in the field was a collaborative effort between IBM and General Motors: the GEM project. There were no graphics products in those years. So, IBM built a prototype system consisting of three units: a graphics display, a scanner and a microfilm printer. This system never became a product. Using the GEM experience, IBM eventually developed and marketed the IBM 2250 graphics display unit.

It took more than 15 years for graphics to grow from what is being depicted in computer graphics, *Utility/Production/Art*, a book edited by Fred Gruenberger and published by Thomson Book Co. in 1967, to what is covered in the *Fundamentals of Interactive Computer Graphics* by J.D. Foley and Andries van Dam published by Addison-Wesley in 1982. Another 15 years elapsed from 1982 to the present time, and we are

currently celebrating the 25th anniversary of SIGGRAPH with the advances in real time nonphotorealistic rendering and sketching at Brown University and elsewhere.

C: Is GEM what they called the Alpine project?

S: No, GEM was pre-Alpine. It was the predecessor of Alpine. It was called GEM for General Motors Graphics Expression Machine, or Graphic Engineering Machine. I am not sure what the "E" stands for. It was a joint project of IBM and General Motors to develop a prototype system for design engineers. GEM was my introduction to graphics.

C: What is the timeframe on that compared to Sketchpad?

S: Sketchpad was a parallel development by a group that originated at MIT. However, Sketchpad was not related to GEM. I had contacts with Sketchpad because of my MIT background. At the time, the SIGs did not yet exist in ACM. They were SICs -- Special Interest Committees. So, we started SICGRAPH. That then grew and developed and became SIGGRAPH. The SIGs became more formal entities. When SICGRAPH was first formed, we developed a seminar on computer graphics that Andy van Dam and I took "on tour" all over the United States and then to Europe (England, France and Germany).

C: Do you have any documentation on that?

S: I may have some, or Andy might. I recently cleaned up my basement and much was "lost" in the process, but there still may be stuff there. My background in graphics started with the APT project at MIT with Doug Ross. Then in 1957 I joined IBM where, in cooperation with United Aircraft, we developed AUTOPROMT, a three-dimensional APT derivative. It was a big project, which started my 40-year IBM career.

C: Does the name Bill Mann mean anything to you?

S: Yes, I think that he was at UAC at the time. This is not just going to be on SIGGRAPH; you'll get a history of Sam Matsa as well! I was a graduate student at MIT and a group from IBM came to review our projects as part of the Industrial Sponsored Research Program. Before I knew it, I got a call from Dr. Lou Robinson who was an IBM executive for many years. He said, "Why don't you come down to New York? You told me your parents are in New York and you never see them." So, I went to New York, met with Lou and then he asked me: "While you're working on this project at MIT, who is doing your programming?" I said, "Dr. Robinson, who's doing my programming? I'm a graduate student. Obviously, I'm doing my programming!" So, he said, "If you'll come to IBM, you can direct the project -- you can do all the creative work and other people will do the programming." He made me, a young student from MIT, an offer I couldn't refuse. I started working for IBM and we formed this joint project with United Aircraft. Walter Ramshaw was at that time their Director of Computing, and Roy Nutt the project leader of the UAC AUTOPROMT team.

C: At that time, I worked for Norden Laboratories that is part of United Aircraft....

S: This project was at Pratt & Whitney. Roy left United Aircraft soon after that, in the early '60s some time, and went out West and formed CSC. So, it's a long story, but the reason it's pertinent to our discussion is because graphics was a part of it. When you develop and cut with a milling machine a three-dimensional part, how do you describe it? How do you project it? How do you show it to people? So, we started getting milling machines to cut shapes from styrofoam before attempting to cut models from metal. I still have (or used to have)

some of those styrofoam models that we cut – ellipsoids and all kinds of crazy geometric shapes. This was in the '60s.

So, through that project which involved the requirement of depicting how you would display what you build, I was introduced to three-dimensional graphics. I then got involved in the GEM project with GM, as I mentioned earlier. Back in the '70s, a decade later, we had a big Geospace plotter for drawing our computer output.

The Geospace plotter was used for many graphics projects. One of them is discussed in a book entitled *Textile Graphics/Computer Aided* by Janice Lourie and published by Fairchild Publications in 1973. Janice is in Vermont enjoying the good life of nature. At that time she was living right near the United Nations in an apartment in Manhattan on 1st Avenue and 44th Street. But, because of Janice's involvement with textile design, IBM eventually donated that Geospace plotter to the Fashion Institute of Technology in New York City. At the 1968 spring joint conference sponsored by AFIPS in Atlantic City, Janice Lourie described and demonstrated textile graphics, an innovation enabling the textile designer to display an artist's sketch on a television-like device linked to a computer and utilizing the screen of this device as a drawing board. A pen that writes with light replaces the conventional paint and graph paper.

C: Tell me about getting SIGGRAPH started, ACM's reaction, etc.

S: Initially, Andy van Dam and I approached ACM. I was, in those days, very active in ACM. I was on the ACM Board and I was starting several activities. In the '60s, ACM was not the organization that it became later. But, we started professional development seminars. At that time, ACM did not have such an activity so I convinced them to hire someone in headquarters to coordinate and organize the seminars. Not just the one for graphics, but the ones we were giving in those days on time sharing systems, and all kinds of avant-garde topics for the '60s. This resulted in giving a series of seminars in smaller cities around the country. Andy van Dam and I put together the one on computer graphics.

C: Who paid the cost of these?

S: A registration fee was charged and that paid for part of it. The ACM subsidized the rest. IBM had nothing to do with it. IBM was supporting ACM as a professional society, but not the activity itself. It was an ACM professional development seminar.

C: Did you have any involvement at that time with AFIPS ?

S: Some. I was personally involved with AFIPS, but they were not involved with graphics or any of the seminars. My involvement with AFIPS and ACM culminated in the ACM annual conference in 1970. We dubbed it "The Computer Year" with the support of the then New York city Mayor John Lindsay. I still have a big plaque (poster size) that he declared 1970 as being The Computer Year, because the ACM70 conference was being held in New York city. There was a big computer graphics activity, show and demo.

C: Do you think we could get a copy of that poster? We are building a time tunnel and it might be interesting to have that poster in the tunnel.

S: I will try and find what I have. The person at ACM who coordinated this was Jim Adams. He retired about two years ago and he's out on the West Coast. I don't know what still exists from those years. The seminars kind of started developing an audience and that's how we then decided to formalize an entity and have it become SIGGRAPH.

C: How many people typically attended a seminar?

S: About 40 to 50 people. The seminars were well attended and very interactive. People were interested in the field and we provided background and information that was not vendor oriented. Andy was going through all of the hardware equipment that existed in graphics, and I was talking about the various programs that people had developed at the time.

Eventually, ACM agreed and chartered the first group that was the SICGRAPH. I was the founding Chairman of SICGRAPH in 1963-64 and Andy van Dam was a key element in starting SICGRAPH and putting together the original SICGRAPH newsletters.

C: When did that evolve into SIGGRAPH?

S: I can't give you a year. I may be able to find it in my records, and if so I will share it.

C: What did you have to do to get SIGGRAPH started?

S: I had to convince the ACM board that graphics was an important activity and that there was enough of an audience -- enough people interested in graphics -- to set it up as a committee. Like anything else, it was partially political. I was on the Board, so I had some influence as to what committees would approve. However, the first reaction was not positive.

C: Did you have to get a certain number of signatures?

S: I don't think it was the number of signatures. It was more that we had to convince them to provide the support required from ACM headquarters. There were a very nominal amount of signatures -- something like 50. It was more a question of the support that they would provide in publishing the documents that we needed for the seminars and providing the membership lists and publishing and publicity and everything else related to this activity.

C: You told me a story about going to the New York Academy of Sciences?

S: When I first went to propose anything that had a relationship with computers, I will never forget the question that one of the Board members asked me. He said "Are you really serious? Do you want to start a section of the NY Academy of the Sciences on using a desk calculator?" And it was not just one person. The whole attitude in those days was that computers and computer graphics were not legitimate scientific, academic endeavors. We're talking about the early '60s.

Carl Machover is President of Machover Associates Corporation, a consultancy providing services to computer graphics users, suppliers and investors. He has been interested and involved in the field of CG for many years, written numerous articles and conducted a number of seminars. Machover is Editor of the *CAD/CAM Handbook* (McGraw Hill, 1996) and serves on the editorial board of several publications.

Carl Machover
President
Machover Associates Corp.
152A Longview Avenue
White Plains, NY 10605
Tel: +1-914-949-3777
Fax: +1-914-949-3851
Email: *machover@siggraph.org*

Robert L. Schiffman

October 27, 1923 - August 10, 1997

The computer graphics community recently lost one of its true pioneers when Dr. Bob Schiffman passed away on August 10, 1997. Dr. Schiffman was born in New York City in 1923, and led a distinguished career receiving his B.C.E., M.S. and Ph.D.s, working as a civil engineer, joining the faculties at Lehigh University, Rensselaer Polytechnic Institute and University of Illinois at Chicago Circle and holding appointments at Columbia University, Massachusetts Institute of Technology and Northwestern University. Later, he joined the University of Colorado at Boulder as Associate Director for Research at the CU Computing Centre. He then went on to become Professor of Civil Engineering until his retirement in 1994.

His contributions span many areas, from soil mechanics to geotechnical engineering and computer graphics. He solved a variety of fundamental boundary value problems from one to three-dimensions in the linear theory, elucidated important theoretical and practical implications of the finite-strain theory in the context of soft soil engineering, did fundamental research in the method of stress functions, worked on the Soil Engineering Problem Oriented Language (SEPOL) at MIT (presaging the role of interactive graphics in contemporary engineering) and chaired the first SIGGRAPH convention in 1974 at the University of Colorado. His consistent achievement and high standards will continue to be an inspiration to the engineering and computing communities.

SIGGRAPH offers its condolences to Dr. Schiffman's son James, daughter Winifred and three grandchildren. .

(*Editor's note:* This article consists of edited tributes from Dr. Hon-Yim Ko and Carl Machover.)