

# How Can SIGGRAPH be More Effective in Promoting Computer Graphics?

Organizer:

Nahum D. Gershon, The MITRE Corporation

Panelists:

Alain Chesnais, Alias Wavefront, Paris, France

Bob Ellis, Fountain Hills, AZ

Jose Encarnação, Fraunhofer Institute for Computer Graphics, Darmstadt, Germany

Donald P. Greenberg, Cornell University, Ithaca, NY

## Summary

In spite of its glorious past and present, computer graphics is not always appropriately recognized by funding agencies, academia, and industry. The panel members will discuss and debate how SIGGRAPH can or should foster a vigorous agenda for improving the stature of computer graphics research, development, and applications. SIGGRAPH has the potential to affect all walks of life, industry, and academia by actively addressing the right issues. We hope this panel will lead to a working group within the SIGGRAPH Public Policy Task Group to address these issues, formulate recommendations to SIGGRAPH, and carry out activities with the goal of promoting computer graphics.

## How Can SIGGRAPH be More Effective in Promoting Computer Graphics?

"If SIGGRAPH does not do it, either somebody will do it or computer graphics will lose importance and weight or recognition over time."  
Jose Luis Encarnação, acceptance speech of SIGGRAPH's Steven A. Coons Award, 1995

Computer graphics (CG) has a distinguished record of achievements over the past 30 years, and SIGGRAPH has played a large part in this success. Computer graphics is the enabling technology of important areas such as multimedia, visualization, and the Internet's World Wide Web. Application areas such as 3D medical imaging, entertainment (film and TV), education, information visualization, pharmaceutical research, weather modeling, automotive and computer industries, and science and engineering have benefited from computer graphics as well.

In spite of CG's impressive influence, the situation today is somewhat different. Computer graphics is not always as well recognized as it should be, and funding agencies do not have programs designated particularly for computer graphics. Few academic computer science departments perceive computer graphics to have basic research value. Few foster (or encourage) research careers in CG for their junior staff members. As a result, there are few graduate programs in computer graphics.

The panel and the audience will discuss the problems facing computer graphics as a discipline, suggest solutions, and explore areas where SIGGRAPH could take action. We hope the panel will inspire a group to work with the SIGGRAPH Public Policy Task Force on these issues to formulate recommendations to SIGGRAPH on how to improve the standing of computer graphics.

Central questions of this panel include:

- How can computer graphics get the proper recognition for its achievements and impact on society?
- How can we increase the level of funding given to computer graphics basic research and R&D?
- How can the academic stature of computer graphics be improved?
- How can we encourage careers in computer graphics?

The above issues raise more specific key issues related to SIGGRAPH. The panel and the audience will discuss these specific key issues for developing an increased effectiveness of CG which include:

- Should SIGGRAPH promote increasing the levels of funding and investments from government agencies and industry? If yes, how?

- How to increase the credibility and support in academia? Would an increased level of funding be sufficient?
- How can SIGGRAPH speak for its members? Options include (informal) lobbying, writing papers in leading magazines, sending representatives to other organizations (e.g., international), polling members and incorporating their recommendations, and providing education to the public, industry's program managers, and policy makers relative to public policy issues.
- SIGGRAPH is a scientific educational organization: Is it appropriate for an educational organization to take positions on social issues?
- Due to change in times: Should SIGGRAPH broaden its charter to go beyond an educational organization – an organization that promotes research and development in computer graphics, its application and implementation across industry, governments, and education? What are the limits on our activities (ACM policies, budget, volunteer time, etc.)?
- How to increase the international involvement of SIGGRAPH and support from international sources?

**Alain Chesnais**

## SIGGRAPH Needs to Define its Public Policy Strategy and its Role in Coming Years

SIGGRAPH as an organization needs to define its public policy strategy, taking the needs of its members into account. A large portion of our member base comes from academia, and SIGGRAPH could play a substantial role in raising the awareness of decision makers concerning their policy regarding computer graphics research and education.

Is this desirable? Could we do it in a manner that respects the various situations presented in the different countries that our members come from? Is academic research and education the only identifiable member community that would want SIGGRAPH to take active measures on their behalf? These are questions that we need to address as SIGGRAPH considers its role in coming years.

**Bob Ellis**

## What are Appropriate Public Policy Activities for SIGGRAPH?

At SIGGRAPH's 1994 Snowbird strategic planning meeting, attendees called for SIGGRAPH to take an increased role in public policy, and this was determined to be one of the seven focus areas for consideration in SIGGRAPH strategic planning. Suggested activities included increased involvement with the public, fostering a social conscience, taking leadership on legal issues, providing accessibility to the technologically disadvantaged, and playing an increased role in political and social issues.

Since that time, working meetings have been held at the annual conferences in 1994 and 1995, and an open meeting was held at the 1995 conference. These meetings have attracted an increasing number of interested participants with a diversity of backgrounds and interests. Key issues that have come from the meetings include the need to inform political policy makers and program managers about computer graphics, and the need to impact the funding for computer graphics research and education.

To many people, public policy activity means taking positions on issues and advocating those positions to members of government and the public. I personally believe that SIGGRAPH's public policy activities, as part of a scientific, educational society, should be limited to providing education on the implications of alternatives for others who do advocate policy positions. This activity serves our members who I believe joined SIGGRAPH primarily for technical reasons. Two projects were started before I became Chair of SIGGRAPH's Public Policy Task Force, and I support them fully: a report on the role of graphics in the Global Information Infrastructure, which has received funding from the SIGGRAPH Special Projects committee, and a white paper identifying significant computer graphics research topics, which has been formally endorsed by the SIGGRAPH Executive Committee.

**Jose Luis Encarnação**  
**Promote the Role of Computer Graphics as Enabling Technology and as Technical Professor**

ACM SIGGRAPH is extremely successful in being an association for publishing scientists' results, promoting in this way research in Computer Graphics and therefore also by setting trends. ACM SIGGRAPH has also been extremely successful in supporting educational activities in Computer Graphics.

Computer Graphics has evolved to a very high level of importance as a technical discipline and as a key enabling tool for a large spectrum of technologies and applications. I can see a new role for ACM SIGGRAPH in the area of building relationships and synergies between academia, R&D institutions, and industry for the reinforcement of applied and market-oriented research in Computer Graphics. I see another role in supporting the speeding-up of the technology transfer process from academic results into applications and products. An additional role should be to advise policy makers, industry leaders, and program managers at funding agencies on the strategic and technological importance of Computer Graphics. The objective here is to lobby for the entire field of Computer Graphics. For these purposes, ACM SIGGRAPH should assume a strong position of technological, scientific, and trend-setting leadership by extending its profile to also include the role of a professional association.

One way of ACM SIGGRAPH implementing these roles could be to establish a high-ranking forum with executives from policy and industry (suppliers and users) with the task of developing a series of "SIGGRAPH Strategic Workshops" on specific topics, which are important to promote the role of Computer Graphics as an accepted enabling technology and as a technical profession.

**Nahum Gershon**  
**Taking a More Active Role**

In his acceptance speech of SIGGRAPH's Steven A. Coons Award, 1995, Jose Encarnação, posed the rhetorical question "Is there is a more pro-active role for ACM SIGGRAPH to play?" The answer is yes. SIGGRAPH needs to take a role of a professional organization pursuing the interests of the computer graphics field, as well as the public interest. Governments and industry need to recognize the constructive contribution of CG to many areas and to society in general. Funding must increase, as well as the recognition of academic institutions. This could be achieved by rethinking the roles of SIGGRAPH and adjusting them to the times. We also need to strengthen the tie between academic and applied research crossing over international boundaries. An effective and assertive public policy agenda is the key for achieving the well deserved-support and recognition of computer graphics, and its contribution to society and technology.

**Don Greenberg**  
**"The Area is Perceived as Not Having Basic Research Values"**

One of my biggest concerns is that a number of the most basic research issues have not been addressed. The "what you see is what you get" (WYSIWYG) paradigm has existed for too long. Although this situation may be acceptable to the entertainment and gaming industries, it is not satisfactory for computer simulations, such as pilot training or architectural design, scientific visualizations, or the medical profession, to name a few.

Perhaps the cause of this might even be the success of SIGGRAPH; images that are created are so visually impressive and plausible that they are accepted as the real thing. But it is now time for change! The computer graphics field is maturing. SIGGRAPH is entering its 23rd year. Processing power is now available, and specialized hardware accelerators are now commonplace. But the same incremental algorithms, developed without a real scientific basis in the late 1960s and early 1970's, are still in use.

Such issues as computational complexity, perceptual thresholds, and metrics for evaluating user interfaces have not been given much attention. Even worse, the feedback loop, the hypothesis, testing, and experimental verification, so prevalent in most scientific disciplines, is almost ignored in computer graphics. With the exponential growth in processing power and bandwidth, we need to set a research agenda to achieve a better foundation for the next generation of computer graphics.

To achieve these goals, it will be necessary to have a multi-disciplinary approach. Computer graphics, at least the rendering portion, has fundamental research issues in the fields of optics, physics, geometry, color science, the software/hardware engineering fields, and a large number of scientific areas normally falling within the domain of computer science or electrical engineering. Maybe this is why the subject does not neatly fall within a computer science department or graduate field, but it is not a sufficient reason for the scarcity of graduate programs (note: this paragraph relates to the paucity of graduate computer graphics programs in the United States).

**Afterword**

ACM SIGGRAPH, as a society, has the "clout" to influence changes in universities, government, and funding agencies. How and when should this clout be used? Should SIGGRAPH, a professional, educational society try to influence public policy? For those who say, "SIGGRAPH should ...", who is SIGGRAPH? We hope the panel will inspire a group working with SIGGRAPH Public Policy Task Group on these issues to form recommendations to SIGGRAPH on how to improve the standing of computer graphics.

**References**

1. Ellis, Bob, "SIGGRAPH Public Policy," *Computer Graphics*, Vol. 30, No. 1, Feb. 1996, pp. 45-46.
2. Encarnação, Jose Luis, acceptance speech of SIGGRAPH's Steven A. Coons Award, *Proceedings of SIGGRAPH 95* (Los Angeles, CA, August 6-1, 1995). In *Computer Graphics Proceedings, Annual Conference Series, 1995*, ACM SIGGRAPH, pp. 7-9.