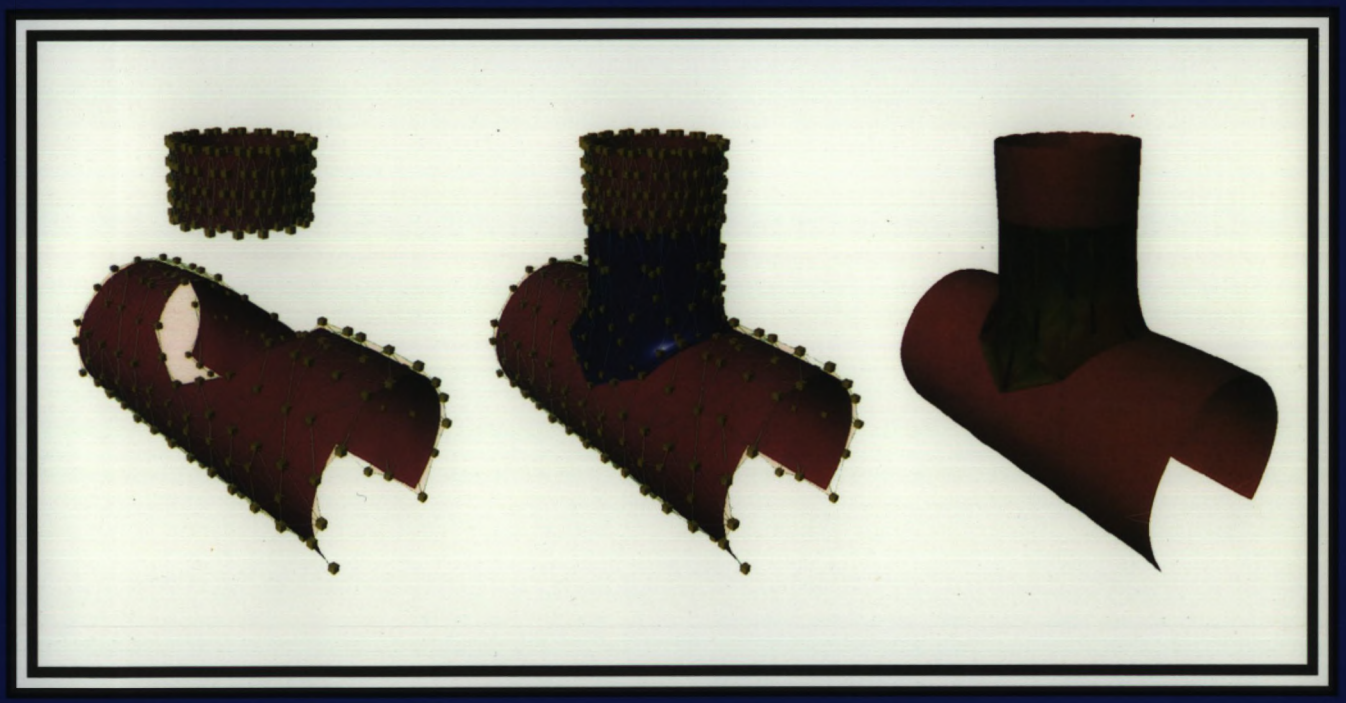
Proceedings Graphics Interface '96



22-24 May 1996
Toronto, Ontario

Canadian Human-Computer
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ISSN 0713-5424
ISBN 0-9695338-5-3

Graphics Interface is sponsored by:
The Canadian Human-Computer Communications Society (CHCCS)

Membership information for CHCCS is available from:

Canadian Information Processing Society (CIPS)
#106, 430 King Street West
Toronto, Ontario
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Published by the Canadian Human-Computer Communications Society
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Proceedings

Graphics Interface '95

Wayne A Davis & Richard Bartels, Editors

Toronto, Ontario
22-24 May 1996

Message from the Program Chair

1996 marks the twenty-second meeting of Graphics Interface. This year, as in many years past, we work in conjunction with Vision Interface and Artificial Intelligence. Thus, Toronto in 1996 will host approximately ninety talks representing the state of the art in three important areas of computer research.

Graphics Interface received 72 manuscript submissions from all over the world, of which 29 were accepted for presentation. No conference of GI's excellence can endure without a pool of high-quality submissions. For this I thank all authors for their submissions. Whether accepted or not, you have contributed to the success of this year's conference. Without you, no such conference can survive.

Each submitted paper was reviewed by two committee members and additionally by two external referees. This year, on a trial basis, all refereeing was fully blind. The authorship was not known during the refereeing process either by the external reviewers or the committee members. This made serving on the committee an unusual experience, and I want to thank each member personally for coming through with flying colors: John Buchanan, Sabine Coquillart, Eugene Fiume, Bernd Froehlich, Andrew Glassner, Rick Kazman, Scott MacKenzie, Marilyn Mantei, Bruce Naylor, Hans-Peter Seidel, Kenneth Sloan, Demetri Terzopoulos, Marceli Wein, and Brian Wyvill. Thanks also to the 108 external referees who contributed their efforts to this cause.

The conference will be greatly blessed this year by three invited speakers whose contributions to computer graphics, its theory and its practice, have raised the profession significantly over the years: Bill Reeves, Jim Foley, and Nestor Burtnyk. Nestor Burtnyk was one of the pioneers in computer animation, an industry that Bill Reeves now represents with such presence. Computer techniques come onto desktops with interfaces designed to assist the user. The best assistance follows precepts of interaction laid down by Jim Foley.

Adele Newton merits mention and appreciation for her efforts on our behalf, both with the invited speakers and with the video show. Adele has secured financial assistance from Side Effects to defray some of the speakers' expenses. She has also organized a video collection that showcases the best in computer animation, particularly its Canadian connection, over the course of its development.

Let me close by praising Anne Jenson, the person who kept the reviewing process totally on the mark and on time. Her organizational skills completely hid the fact that I was born administratively challenged. Without her assistance there would have been chaos. I will be eternally grateful.

Richard Bartels
Program Chairman
University of Waterloo

Message from the President

It is with great pleasure that I welcome attendees to Toronto and Graphics Interface '96. This is the twenty second in a series of graphics conferences started in 1969 in Ottawa and held across Canada in various years. It is the longest running graphics conference in the world and continues to provide a significant contribution to the field of computer graphics and interactive techniques. The Canadian Human-Computer Communications Society is pleased to be able to sponsor such a conference and is indebted to all those who have contributed time and effort into making this conference the success that it is.

Again following the pattern established in previous conferences, Graphics Interface is being held in conjunction with Artificial Intelligence and Vision Interface. Holding these conferences jointly has helped to promote the interchange of ideas and to raise the profile of each conference. It is the fervent desire of CHCCS to continue this association.

It is important to recognize the efforts of all those who have helped to organize this conference.

In particular, the program requires a competent program chair, a program committee dedicated to selecting the most appropriate papers and a large number of talented reviewers to read and assess each submission. I would therefore like to express our gratitude to Richard Bartels and those who participated in the reviewing and critiquing of the submitted papers.

I should also thank all those who submitted papers. Preparing a paper for submission is a lot of work and effort. Unfortunately, not every paper can be accepted; however, every submission is important and appreciated. Thank you for your assistance and a job well done.

I would also like to thank Michiel van de Panne and James Stewart for their assistance with the local arrangements. Organizing the audio/visual facilities and the volunteers to run them is a vital function in a technical conference such as this, and their efforts are valued and indispensable.

Lastly, I would like to express my sincere appreciation to Judith Abbott for her capable handling of the on-site registration, and to the CIPS staff for their assistance.

Wayne A Davis
Editor GI '96 Proceedings &
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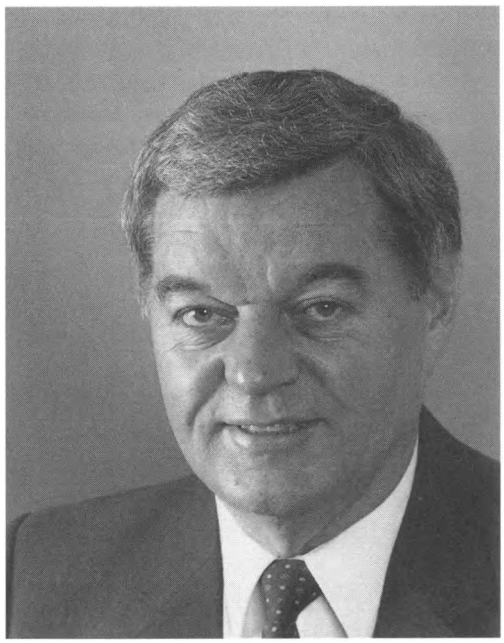
The 1996 CHCCS Achievement Award

Nestor Burtnyk
National Research Council

Nestor Burtnyk joined the Radio and Electrical Engineering Division of NRC in 1950 following graduation from University of Manitoba with a BSc in Electrical Engineering. His initial work involved the development of high-frequency radio direction-finding equipment and synthetic wide aperture antennas and related studies in ionospheric propagation.

In the late 1960s, Mr. Burtnyk started work in 3D computer graphics as part of a team project on man-machine interaction. The main area of application was computer animation, with emphasis on developing a facility where a professional animator could communicate with the system to produce his creative work without any knowledge of computer programming. In 1970 he developed the "key-frame animation" technique and encouraged its use by animators from the National Film Board, the Canadian Broadcasting Corporation and the British Broadcasting Corporation to produce serious footage. The film "Hunger", produced in collaboration with NFB, won a prize at Cannes in 1973 and an Academy Award nomination in 1974. During those early 1970s, Mr. Burtnyk was one of the original members who participated in the formation and organization of a series of Man-Machine Communication Conferences, the precursor to the Graphics Interface Conferences.



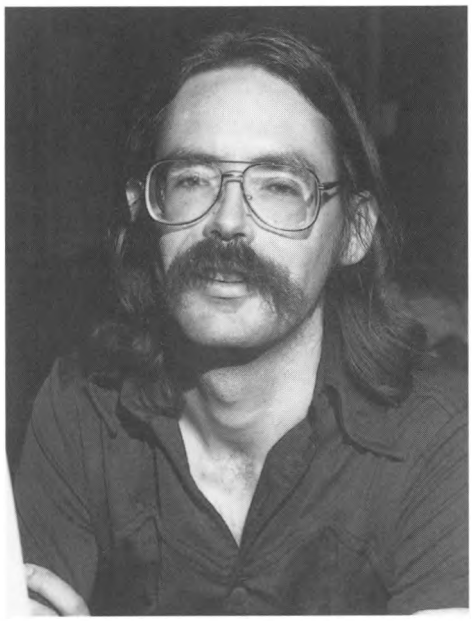
In 1975 Mr. Burtnyk became Head of the Computer Graphics Section, continuing his involvment in computer graphics technology. In 1980 he became Manager of a newly formed Computer Technology Research Program where he initiated activities in intelligent robotics. He assumed the position of Head of the Computing Technology Section in 1982 which emphasized sensory processing and real-time computing for robotics. During the period 1983-1991, Mr. Burtnyk was the Canadian representative for the International Cooperative Programme on Advanced Robotics (IARP).

In 1990 Mr. Burtnyk returned to full-time research in the new Autonomous Systems Lab of the newly formed Institute for Information Technology. This recent work involved techniques for supervisory control of telerobots based on range sensing and 3D vision. Mr. Burtnyk retired from active research at NRC in 1995.

In Memory

Michael A J Sweeney, 1951-1995

Michael Sweeney was born on the 7th of April 1951. He grew up in Hamilton, Ontario and attended the Universities of British Columbia, McMaster, and Waterloo. He contributed significantly to the computer rendering capabilities of several leading modeling and animation companies. He died on the 3rd of July 1995. Mike was a remarkable individual, and to ensure that his contributions do not go unnoticed, CHCCS has established the Michael Sweeney Student Award, which will be used to encourage student contributions to Graphics Interface.



In setting out to write this, I looked for a model from our field to follow and found none. Computer graphics is a young discipline, and it has not had much experience in honoring its departed groundbreakers. For those of us who knew Mike, we did not expect to be gaining that experience now. The email notice that came last summer, succinctly informing us that Mike had passed away in his sleep, was without warning or preparation. We were stunned. Mike had been marshaling the troops for several months, firing questions, networking, demanding, picking up contacts, all in a tornado of enthusiasm and energy in his new position at DHD in Montreal. The sudden silence was incomprehensible.

Mike worked to the fullest, with a talent that is all the more remarkable in view of his physical limitations. Mike's promising early studies in music, as a classical performer and a developing composer, and in microbiology, as an honors student at the University of British Columbia, were cut short in 1978 by an automobile accident that made it very difficult for him to speak and impaired his motor control. A blow that would have stopped many was, for Mike, overcome by switching to Computer Science. Mike graduated *summa cum laude* in 1982 from McMaster University with a BSc, and he received a MMath in 1984 from the University of Waterloo.

I served as Mike's master's thesis advisor. In reality, this required me to run like crazy to keep up with Mike's ideas and progress. I never quite managed the pace. Mike's project, thousands of lines of code that Mike had clearly in his head and could recall any portion of in an instant, achieved a milestone in rendering at the time. More significantly for Mike, it provided the groundwork of his future career. Working with four of the pioneering companies in computer modeling and animation—Omnibus, Alias, Abel, and SoftImage—Mike developed, or contributed significantly to, their rendering software. Mike set the tone for high quality image synthesis in commercial software. When you next look at a film attributed to one of these companies, remember that every pixel of every frame has been touched in some way by Mike.

More enduring in the memories of his friends than his intelligence and talent will probably be Mike's impish humor. Life was not to be taken seriously; the serious was to be ridiculed and impaled. And Mike's own condition was the least to be spared. David Donald, Mike's employer and friend at DHD, delivered a eulogy filled with anecdote and warmth. One story, I recall as pure Mike, had to do with his own treatment for the constant motor spasms that cut into his typing and slowed the progress of his conversation. Not liking the side effects of medication that had been prescribed, Mike would keep a low level of cheap white wine in his blood. As David related, the only effect this had was to allow Mike to keep his eyes open when the spasms occurred. Mike communicated many of his immediate reactions through his eyes, and closing them meant losing the thread of dialogue. As Mike came to realize that his friends at DHD were willing to wait through the gaps and did not mind, he sent David a message one day: "Dave, do you mind if I stop drinking? It'll take me a little longer to programme code, but I'll stop falling over when I walk." This illustrates Mike's remarkable sense of humor.

Mike is survived by his mother, Helen, his father, Arthur, and his sister, Margaret. He is survived, as well, by friends, colleagues, and acquaintances who have been touched by his presence and his passing.

Richard Bartels

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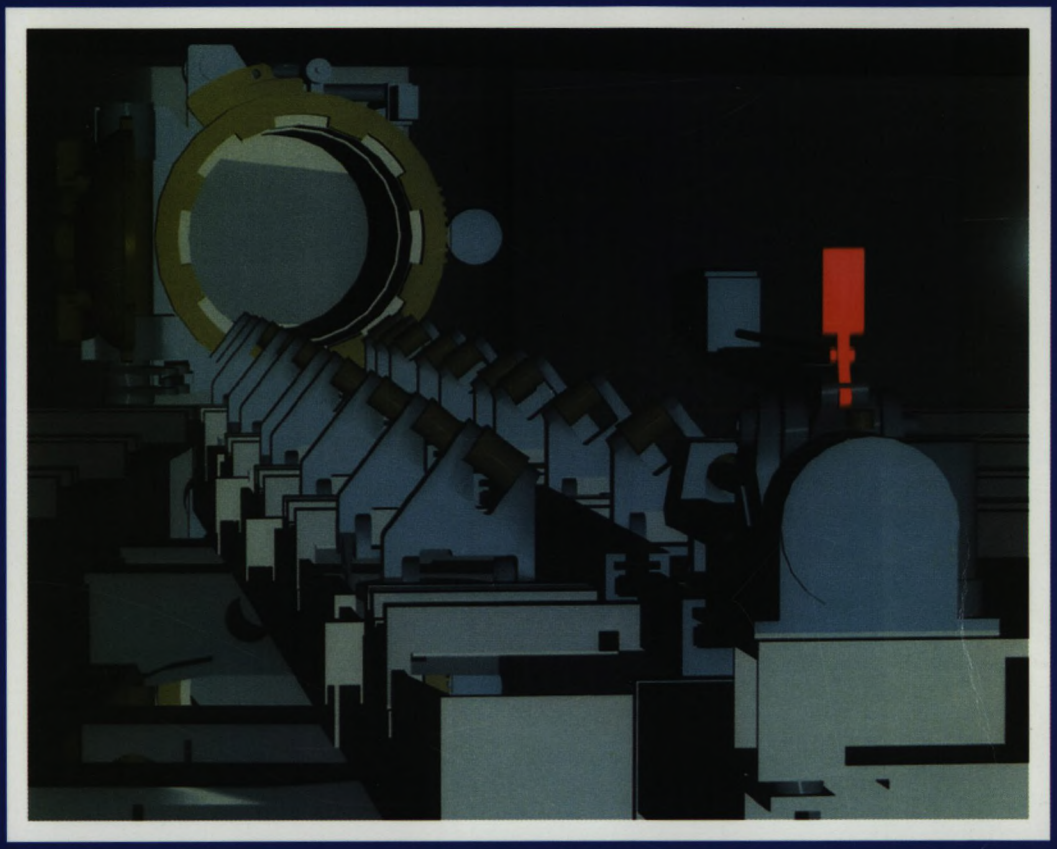

Printed in Canada
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ISSN 0713-5424
ISBN 0-9695338-5-3