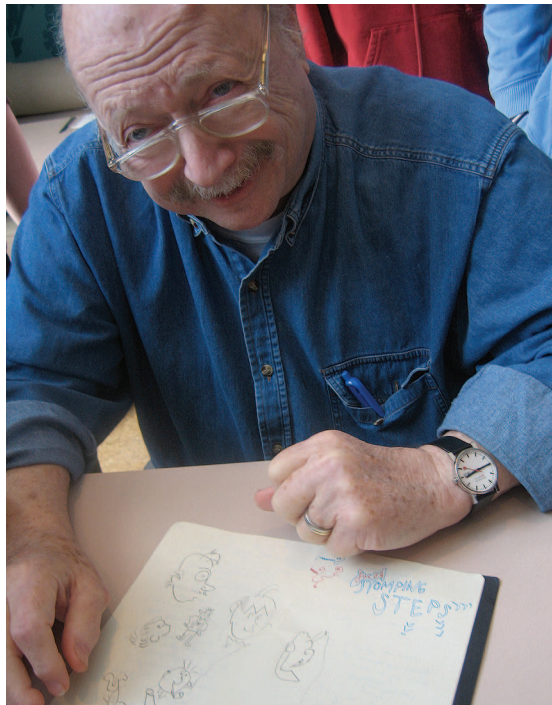




In Memoriam

Carl Machover, 1927–2012

Andy van Dam
Brown University



Carl Machover, computer graphics pioneer.

Carl Machover's professional legacy is the computer graphics community that he devoted his life helping to build and nurture. A CAD/CAM pioneer and computer graphics visionary, Carl knew as early as the 1960s what CG could mean in an era when most people still used punch cards. As a writer and artist/cartoonist, he understood the importance of illustrating scientific concepts with humorous or creative concrete examples. Others have provided extensive details on Carl's life and achievements.¹ So, following the example of his 1997 Eurographics Association Fellow citation,² in this tribute I focus on the characteristics of Carl as his community knew him.

The Person

The Eurographics citation succinctly described him as

A man of charm, wit, integrity and authority. His words carry weight; the weight that comes from a lifetime of experience and reflection. He has an eye for detail and illustration through the carefully selected example. He is also a man of vision and foresight. His lectures are always a careful balance of reflection on the past, experience of the present and vision for the future.²

To me, Carl was an exemplar mensch. He was modest and kind to a fault; had an irrepressible sense of humor; had a raucous, distinctive belly laugh; and, so far as I could see, was always cheerful and optimistic, independent of any circumstances. Another key aspect of his personality was the importance he attached to family and friends. His marriage to Wilma was a model of mutual love and devotion; watching the family over the decades in the family videos was a moving testimonial to the joys of family life.

The Builder

Like most engineers, Carl loved to build things. In his case, the definition of "things" included communities (which I describe later), document collections, and more traditional basement workshop objects.

From the beginning of his career in the 1960s at Norton Laboratories, he was involved with computer graphics hardware design. While at Information Displays, Inc. (IDI), he helped create the stand-alone CAD platform, IDIOM (IDI Input-Output Machine). IDIOM had its own operating system based on the Varian 620-I computer, a DEC PDP competitor.

The University of Minnesota's Charles Babbage Institute (www.cbi.umn.edu), houses the immense

collection of papers Carl accumulated. The institute describes the collection as “a rich source of information for researchers interested in ACM’s Siggraph, CAD/CAM, virtual reality, and other sub-fields of computer graphics.”³ The Babbage Institute has an oral-history interview (and transcript) with Carl that goes into depth on his experience with computer graphics throughout his lifetime.

His organizational talent, passion for computer graphics, and in-depth appreciation of computer graphics history converged in the coproduction of the 90-minute documentary *The Story of Computer Graphics* for ACM Siggraph’s 25th anniversary conference in 1998.^{4,5}

The Connector

His role as connector, in Malcom Gladwell’s “tipping point” sense, and respect for a wide range of people were in evidence from the beginning. The communities he nourished ranged from professional computer graphics groups such as ACM Siggraph, the National Computer Graphics Association, and the Eurographics Association to ASCI (Art and Science Collaborations, Inc.), whose memorial tribute described him as

a sought-after public speaker who tirelessly championed real-time, interactive graphics displays for computers, foreseeing today’s world of scientific data visualization, rich interfaces and computer-generated film animation.⁶

Michael Macedonia, in his report on the Machover Symposium, which celebrated Carl’s 70th birthday, put it well:

Carl Machover has played an essential role in the field of computer graphics as teacher, mentor, and businessman. His contributions extend back to the early days of the technology, when he was executive vice president of Information Displays in the 1960s. Since then he has nurtured a young industry and technology through tireless work and productive friendships.⁷

The Teacher and Mentor

Through professional tutorials on CAD/CAM and VR and his role as Adjunct Professor of Computer Graphics in Rensselaer Polytechnic Institute’s Department of Electrical, Computer, and Systems Engineering, Carl conveyed his enthusiasm and understanding to the next generation of computer graphics innovators. Through his approachability,

he mentored others in the community who asked for advice. As ACM President Alain Chesnais said, “He was a mentor for many key people at Siggraph. I often went to him for advice with the various startups I’ve been involved in. He would always make time to chat and suggest options.”⁸

The Dad

Carl’s son Tod is a composer and MIT professor who inherited his musical, artistic, and engineering talents from his parents. He fondly describes how his father used to take him into the basement workshop to get him to help with building projects, such as a remote-controlled airplane that took a couple of years to build and crashed on its

His role as connector, in Malcom Gladwell’s “tipping point” sense, and respect for a wide range of people were in evidence from the beginning.

first flight. Carl’s pianist daughter, Julie Machover Anderson, recalls the elegant doll house that he made, which included a working doorbell that played “There’s No Place Like Home.”

His daughter Linda Machover Samuels is a professional organizer, an author, and the creator of Oh So Organized (www.ohsoorganized.com), a service that guides clients to find the sweet spot between chaos and perfection. When she was in college, Carl would write to her from time to time but never signed his name. Instead, he drew caricatures of himself appropriate to the country he was in at the time. The family still cherishes those caricatures of Carl as a guy from Mexico, Italy, France, China, or beyond.

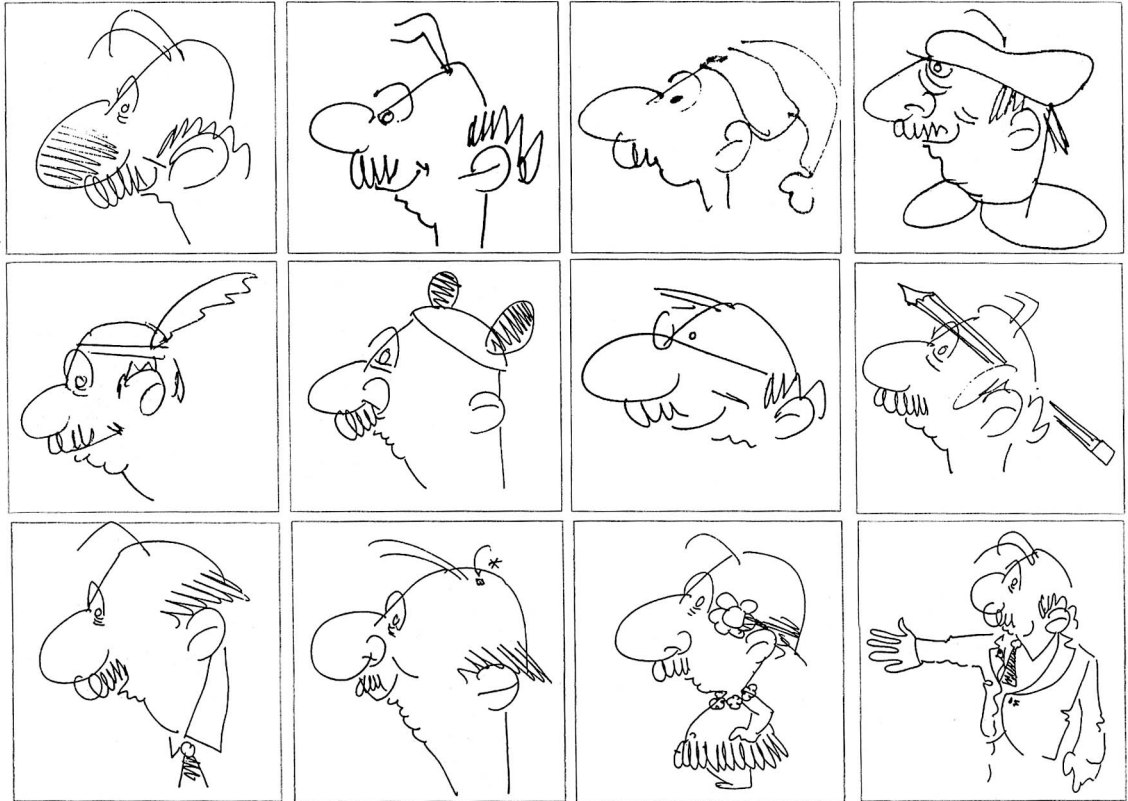
At the Machover Symposium, colleagues from near and far attended. Tod and Julie wrote and played a song for Carl, called “He’s Our Dad.” Linda brought the cherished Carl caricatures for all to enjoy. You can download the song from <http://carlsymposium.wordpress.com>. The site also has pictures and stories gathered from his friends to honor Carl’s work and life, including the famous caricatures.

The Communicator

While at Norton Laboratories, Carl wrote a primer on gyroscopes for the sales force that combined clear scientific writing with humorous hand-drawn cartoons, demonstrating both his ability to communicate with nontechnical people and his respect

Applications

Some of Carl's caricatures of himself.



for diverse groups of people. In later years, he authored the *C4 Handbook*, *The CAD/CAM Handbook*, and the *Computer Graphics Handbook*. He also wrote articles for ACM Siggraph ranging from "Automatic Drafting Systems: An Effective Person-Machine Interface" (*Proc. Siggraph 76*) to the Computer Graphics Pioneers column, starting in the February 1997 *Computer Graphics*. Carl was "Chief Old-Timer" for the Computer Graphics Pioneers.

From *CG&A's* birth in 1981, he supported the magazine as both an editorial board member and a regular contributor. His roles included new products and hardware editor, guest editor, and author. His articles' varied topics included computer graphics history (1994), a guide to sources of information about computer graphics (1983), the business of computer graphics (1991), and computer art (1995).

As individuals and as a community we mourn our loss of Carl, but we celebrate his rich life and are grateful for all he gave us. ❏

Acknowledgments

Grateful thanks to Rosemary M. Simpson for most helpful research and editorial help.

References

1. "Carl Machover, Computer Graphics Pioneer, Dies

at 84," ACM Siggraph, 2012; www.siggraph.org/newsfeed2009/carl-machover-computer-graphics-pioneer-dies-at-84.

2. "Carl Machover," Eurographics, 1997; www.eg.org/index.php/component/content/article/38/293-carl-machover.
3. S. Crowe, "Carl Machover Papers Available," blog, 4 Jan. 2011; http://blog.lib.umn.edu/cbi/2011/01/carl_machover_papers_available.html.
4. C. Machover, "The Story of Computer Graphics Premiers," *CG Pioneers*, vol. 33, no. 3, 1999; www.siggraph.org/publications/newsletter/v33n3/columns/machover.html.
5. "The Story of Computer Graphics," 7 July 1999; www.leonardnimoy.de/index.php?option=com_content&view=article&id=1064%3Athe-story-of-computer-graphics&catid=25%3Anarrator&Itemid=30.
6. "Carl Machover, Computer Graphics Pioneer," *ASCI E-Bulletin*, Mar. 2012; www.asci.org/artikel1215.html.
7. M.R. Macedonia, "Carl Machover Symposium," *IEEE Computer Graphics and Applications*, vol. 17, no. 4, 1997, p. 90.
8. "Computer Graphics Leader Carl Machover Dies at 84," ACM, 2012; www.acm.org/news/featured/machover.

Andy van Dam is Thomas J. Watson, Jr., University Professor of Technology and Education and Professor of Computer Science at Brown University. Contact him at avd@cs.brown.edu.