



How two brothers created one of the first "killer apps" more than 10 years ago.



# From Darkroom to Desktop—How Photoshop Came to Light

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Ten years ago this month, Adobe shipped Photoshop 1.0. "Has it really been that long?"

It has.

The story of one of the original "killer apps" begins in Ann Arbor, Michigan (USA) with a college professor named Glenn Knoll. Glenn was a photo enthusiast who maintained a darkroom in the family basement. He was also a technology aficionado intrigued by the emergence of the personal computer. His two sons, Thomas and John, inherited their father's inquisitive nature. And the vision for future greatness began with their exposure to Glenn's basement darkroom and with the Apple II Plus that he brought home for research projects.

"Photography was a hobby of mine in high school," explained Thomas in an interview for the [Michigan Engineer](#). "In dad's darkroom, I learned how to make black-and-white and color prints, how to balance color and contrast."

While Thomas learned about image manipulation in the basement darkroom, John was attracted to the odd-shaped box known as a personal computer that his dad had brought home. "The first real computer I ever actually sat down and used was in 1978. I was a 16-year-old high school student when my dad got an Apple II Plus with 64k of RAM," John recalls during an interview for his [AppleMasters](#) biography.

"Another memory that is really fixed in my mind" John adds, "was in 1984 when I picked up a copy of Time magazine that had a little article about the Macintosh, and I thought, wow, look at this thing!" A couple of months later Mr. Knoll had purchased one of the first Macs available on the open market.

Even though Thomas loved hands-on darkroom work, he too had a keen interest in computers and programming. In 1987 he purchased an Apple Macintosh Plus to help him with his Ph.D. work on the "processing of digital images." Much to his disappointment, the Mac couldn't display gray-scale levels in his images. To solve that problem, Thomas wrote a subroutine to simulate the gray-scale effect.

Thomas's work led to more subroutines and chunks of image

## Brief Photoshop Timeline

- 1987** Thomas Knoll begins writing graphics subroutines on a Mac Plus.
- 1987** Thomas teams up with his brother John and combines these subroutines into an app. called "Display."
- 1988** Refined version of Display becomes "ImagePro."
- 1989** BarneyScan licenses the application to bundle with their slide scanner. About 200 copies are shipped.
- 1989** Adobe strikes a deal to license what becomes known as Photoshop. They begin 10 months of product development.
- 1990** Photoshop 1.0 ships in February.
- 1990** Version 2.0, code name "Fast Eddy," ships in the fall.
- 1993** Version 2.5.1 is released. One of the first apps to run native on a PowerPC chip. Also first release of Windows version (April, 93).
- 1994** Version 3.0 ships with the "Layers" capability.
- 1996** Version 4.0 ships. Controversial key commands are changed.
- 1998** Version 5.0, which includes the "History"palette, ships.
- 1999** Version 5.5 ships: the first true "web ready" version of the app.



Photoshop toolbar from version 1.07



**Photoshop toolbar from version 2.51**



**Photoshop toolbar from version 5.5**

programming. These bits of computer magic caught John's attention during a visit he paid to Ann Arbor while on vacation from his job at Industrial Light and Magic (ILM) in Marin, California. "The work Thomas was doing had to do with how a computer could recognize a predefined object in a digitized picture," John recalls in an interview with Terrence Masson for the book, "[CG 101: A Computer Graphics Industry Reference](#)".

"Image processing is the fundamental basis of any of that kind of work, and Tom had written a bunch of image processing tools," John adds. "As Tom showed me his work, it struck me how similar it was to the image processing tools on the Pixar [image computer John had just seen a graphics demo on at ILM]."

"There were a bunch of command line driven shell tools much like the Unix C shell command line interface of the Pixar." Shortly there after, John and Thomas pulled these pieces of code together and Thomas built an amazing little application called "Display."



**John Knoll.**  
Photo by Jeff Schewe.

"I was delighted," John said, "but I started asking for more. What if Display could save images in other formats so I could print them in another program? I used Display to open a couple of sample images that I got from the ILM computer graphics department, but they looked too dark on my screen—suddenly I needed gamma correction tools too." John's requests distracted Thomas from his thesis work, but he too was intrigued by the possibilities of image editing on a personal computer.

This cycle of refinement continued over a period of months and led to an improved version of the application that became "ImagePro" in 1988. At this point John began suggesting to Thomas that they turn ImagePro into a commercial application.

"My fellowship money had run out and my wife was expecting our first child," Thomas explained during the Michigan Engineer interview. "I was feeling pressure to finish what I was doing and find a job."



**Thomas Knoll.**  
Photo by Jeff Schewe.

In early 1988, Thomas decided to give himself six more months to finish a beta version of ImagePro and let John shop it around Silicon Valley. Interestingly enough, many of the Silicon Valley companies that John approached were cool to the idea of their image manipulation program. SuperMac turned it down because they didn't understand how ImagePro could complement their already popular product, PixelPaint.

But one company, BarneyScan, did show some interest. They offered to bundle (on a short term basis) what was now called "Photoshop" with their slide scanner. A total of about 200 copies of Photoshop were shipped with their scanners, according to Jeff Schewe in his article, "Photoshop: a Decade of Image-Editing Excellence."

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**The original application icons designed by John Knoll.**

In September 1988, the Knoll brothers' luck changed. John presented a demo to Adobe's internal creative team, and they loved the product. A license agreement was struck soon after, and Photoshop 1.0 was shipped in February 1990 after 10 months of development.

Thomas has remained involved with the project all along. He never did have time to finish his thesis. John has continued his career at ILM, serving as visual effects supervisor on projects such as "Mission Impossible" (1996), "Star Trek: First Contact" (1996), and "Star Wars: Episode I - The Phantom Menace" (1999). Glenn Knoll is still working as a professor for the College of Engineering at the University of Michigan. But he now uses a Powerbook G3 at home. And the darkroom in the basement has since been replaced by, yes, you guessed it, Photoshop.

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Special thanks to Kim Scott for the terrific banner graphic, to Jeff Schewe for the sharp looking photos of the Knoll brothers, to Glenn Knoll for helping me get it right, and to Erin McCabe for pulling together the toolbar and old icon graphics.