

## **ANDREW S. GLASSNER, Ph.D.**

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### **Fields of Expertise**

Computer Graphics: Rendering, modeling, signal processing, texturing, shading, shape grammars

Game Design: Creating and developing fun, participatory social games and entertainments

Interactive Storytelling: Participatory fiction, multiplayer games

Fiction: Novels, screenplays

Non-fiction: Computer graphics, interactive story technique

### **Education**

Ph.D., Computer Science, University of North Carolina at Chapel Hill, Chapel Hill, NC, July, 1988

M.S., Computer Science, University of North Carolina at Chapel Hill, Chapel Hill, NC, 1987

B.S., Computer Engineering, Case Western Reserve University, Cleveland, OH, 1984

### **Employment**

**President and Director of Education**, The Imaginary Institute, LLC

February 2013 – Present

**Novelist, Screenwriter-Director, Consultant**, Coyote Wind, LLC

May 2000 – Present

**Researcher**, Microsoft Corporation, Microsoft Research, Redmond, WA

July 1997 – May 2000

Research in 3D computer graphics and new media

**Writer-Director**, The Microsoft Network, Redmond, WA

October 1996 - July 1997

Created and developed *Dead Air*, an interactive web-based mystery show for The Microsoft Network.

Wrote and directed the pilot episode.

**Researcher**, Microsoft Corporation, Microsoft Research, Redmond, WA

December 1994 - October 1996

Research in 3D computer graphics and media theory

**Member of the Research Staff**, Xerox Corporation, Palo Alto Research Center (PARC), Palo Alto, CA

September 1988 - September 1994

Research in computer graphics

**Visiting Scientist**, Delft University of Technology, Delft, The Netherlands

May 1987 - December 1987

Organized and taught advanced computer graphics course. Research in multidimensional ray tracing.

**Research Assistant**

University of North Carolina at Chapel Hill, Chapel Hill, NC

September 1984 - May 1988

Research in computer graphics, assisted Dr. Frederick P. Brooks

**Summer Intern**, Xerox Palo Alto Research Center (PARC), Palo Alto, CA  
 Summer 1986  
 Investigated the structure and shape of leaves and built a leaf modeling system

**Consultant**, Bell Communications Research, Piscataway, NJ  
 December 1983  
 Designed and implemented a high-speed 2D rendering library for the *Blit* graphics terminal

**Summer Engineer**, Bell Communications Research, Piscataway, NJ  
 Summer 1984  
 Created and programmed graphics utilities for the *Blit* graphics terminal

**Consultant**, IBM T.J. Watson Research Laboratory, Yorktown Heights, NY  
 December 1983  
 Consulted for Benoit Mandelbrot on the simulation of physical processing with fractal models

**Summer Engineer**, IBM T.J. Watson Research Laboratory, Yorktown Heights, NY  
 Summer 1983  
 Designed and implemented a graphics library for the *Yoda* graphics board

**Software Engineer**  
 New York Institute of Technology (NYIT) Computer Graphics Laboratory  
 New York Institute of Technology (NYIT) Digital Sound Laboratory  
 Old Westbury, NY  
 September 1980 - August 1981  
 Designed and implemented one of the first interactive digital sound editing systems, a variety of sound synthesis algorithms, and a real-time image processing library. Modeled and animated 3D polygonal and quadric objects.

## Books (Non-Fiction)

“Processing for Visual Artists,” AK Peters, Natick, 2010  
 “Morphs, Mallards & Montages: Computer-aided Imagination”, AK Peters, Natick, 2004  
 “Interactive Storytelling: Techniques for 21<sup>st</sup> Century Fiction”, AK Peters, Natick, 2004  
 “Andrew Glassner’s Other Notebook: Further Recreations in Computer Graphics”, AK Peters, Natick, 2002  
 “Andrew Glassner’s Notebook: Recreational Computer Graphics”, Morgan-Kaufmann Publishers, San Francisco, 1999  
 “Principles of Digital Image Synthesis”, (two-volume textbook), Morgan-Kaufmann Publishers, San Francisco, 1995  
 “Graphics Gems” Series Creator and Series Editor, volumes I through V, Academic Press, Cambridge, 1990-1995  
 “Graphics Gems I”, Editor and Multiple Contributor, Academic Press, Cambridge, 1990  
 Japanese translation by Harcourt Brace Jovanovich, Japan.  
 Chinese translation by The National Institute for Compilation & Translation, China.  
 “3D Computer Graphics: A Handbook for Artists and Designers”, Design Press, New York, 1989  
 Japanese translation 1990 by ASCII Press, Japan  
 “An Introduction to Ray Tracing”, Editor and Contributor, Academic Press, London, 1989  
 “Computer Graphics User’s Guide”, Howard W. Sams & Co., Indianapolis, 1984  
 Japanese translation 1987 by ASCII Press, Japan

## Films and Scripts

“Making Memories,” Writer-Director, 3 minutes 16mm live action, Spring 2003  
 “1000 Cranes,” Script treatment, Digital Domain, 2000  
 “Flow Interface”, Writer-Director, 6 minutes, live action/stills, Microsoft 1998  
 “Red Green Blues”, Director, Composer, and Lyricist, August 1998  
 “Chicken Crossing”, Writer-Director and Producer, 3.5 minutes, animated 3D short

Siggraph '96 Electronic Theatre, Lucy Saenger Theatre, New Orleans, August 1996  
 Visual Fantasy 1997, Tokyo, February 1997  
 Computer Graphics Grand Prix '97, Tokyo, Japan, March 1997  
 British Broadcasting Corporation, January-December 1997  
 ACM 97 Screening Room, March 1997  
 Le Festival Du Dessin Anime et du Film D'animation, Brussels, April 1997  
 Fujita Vente Theatre, Japan, 1997-1998 program  
 10th Computer Animation Film Festival, Geneva, August 1997  
 "Space Dog", Writer (unproduced animated short)  
 "Shiela's Diner", Writer (unproduced animated short)  
 "Shackleton", Writer (unproduced feature)

## Primary Technical Publications

Glassner, A., "Reconciling Circular and Elliptical Arcs", *Journal of Graphics Tools*, 15(2), 2011  
 Glassner, A., "Interactive Storytelling: People, Stories, and Games," *Virtual Storytelling*, Olivier Balet, Gerard Subsol, Patrice Torguet, Eds., Springer-Verlag, LNCS 2197, 2001, pp. 51-60  
 Glassner, A., "A Shape Synthesizer," *IEEE Computer Graphics & Applications*, May-June 1997, 17(3), pp. 40-51  
 Glassner, A., Marimont, D., Fishkin, K., and Stone, M., "Device Directed Rendering", *ACM Transactions on Graphics*, 14(1), January 1995, pp. 58-76  
 Glassner, A., "Dynamic Stratification", *Proc. 4th Eurographics Workshop on Rendering*, Michael Cohen, Claude Puech and Francois Sillion, ed., Paris, June 1993, pp. 5-14  
 Glassner, A., "A Dataflow Architecture for Shape Synthesis" *Graphicon '92*, Keldysh Institute of Applied Mathematics, Moscow, Russia. September 1992  
 Glassner, A., "A Tutorial on Geometric Replacements", *IEEE Computer Graphics & Applications*, 12(1), January 1992  
 Glassner, A., "Growing Complex Shapes From Simple Forms (extended abstract)", *Proceedings Eurographics '91*, September 1991  
 Glassner, A., "Ray Tracing for Image Synthesis", *Academic Press Encyclopedia of Physical Science and Technology*, 1991 Yearbook, Academic Press, New York, pp. 485-492, December 1990  
 Glassner, A. "Geometric Substitutions", *Proc. Ausgraph '90*, September 1990  
 Glassner, A., "A 2D View Controller", *ACM Transactions on Graphics*, 9(1), January 1990  
 Glassner, A., "How to Derive a Spectrum From an RGB Triplet", *IEEE Computer Graphics & Applications*, 9(4), July 1989  
 Glassner, A., "Spacetime Ray Tracing for Animation", *IEEE Computer Graphics & Applications*, 8(2), March 1988  
 Glassner, A., "Supporting Animation in Rendering Systems", *Proceedings CHI+GI '87 Workshop on Rendering Algorithms and Systems*, Canadian Information Processing Society, Toronto, April 1987  
 Glassner, A., "Adaptive Precision in Texture Mapping", *Computer Graphics*, 20(4), *Siggraph '86*, August 1986  
 Glassner, A., and Fuchs, H., "Hardware Enhancements for Raster Graphics", *Proceedings NATO Advanced Study Institute on Fundamental Algorithms for Computer Graphics*, Fall 1985  
 Glassner, A., "Space Subdivision for Fast Ray Tracing", *IEEE Computer Graphics & Applications*, 4(10), October 1984 (reprinted in *Computer Graphics: Image Synthesis*, K. Joy, C. Grant, N. Max, L. Hatfield, Ed., IEEE Computer Society, 1988)  
 Glassner, A., "Musicbox in C: An Interactive, Graphics, Digital Sound Editor", *Proceedings of the 1980 International Computer Music Conference*, Fall 1980  
 Glassner, A., and Kowalski, M., (January 1981), "The NYIT Digital Sound Editor", *The Computer Music Journal*, 6(1)

## Major Invited Presentations

"Storytelling for Visual Analytics", Invited Keynote, *IEEE Symposium on Visual Analytics Science and Technology (IEEE VAST) 2009*, New Jersey, October 2009  
 "Stories and Graphics", *Human Interface Technology Lab*, Canterbury, New Zealand, January 2007  
 "Recreational Computer Graphics", *Adobe Systems*, September 2006

- "Creating First-Person Interactive Narratives", Research Colloquium, SFU School of Interactive Arts and Technology, September 2006
- "Computer Graphics and Storytelling", Keynote Talk, Graphite 2005, New Zealand, December 2005
- "Interactive Storytelling," Keynote Talk, International Digital Media and Arts Conference, Florida, March 2005
- "Stories, Games, and People", Invited Talk, Cartoon Master, La Corona, Spain, April 2004
- "Participatory Narrative", University of Washington Animation Lecture Series, January 2002
- "Do You See What I See?" Conference Keynote, IEEE Visualization 2001, San Diego, CA, October 2001
- "Online Storytelling: People, Stories, and Games", Keynote Talk, International Conference on Virtual Storytelling, Avignon, France, September 2001
- "Storytelling for a Wired World", Plenary Talk, AT&T Visualization Days, AT&T Shannon Laboratory, New Jersey, June 2001
- "Graphics, Stories, and Games", 2001 Symposium on Interactive 3D Graphics, North Carolina, March 2001
- "Free Will, Structure, and Narrative: Designing Large Scale Storied Environments for Animation and Participation", University of Washington Animation Production Series, Seattle, WA, January 2001
- "Digital Storytelling for A Wired World", Simon Fraser University Distinguished Lecture Series, Burnaby, British Columbia, November 2000
- "Stories and Computers", Microsoft Research Lecture Series, Beijing, China, April 2000
- "Fiction: Audiences and Computers", Conference keynote, Eurographics UK, Swansea UK, March 2000
- "Stories and Structures", Conference keynote, Eurographics 99, Milan, Italy, September 1999
- "Active Storytelling", Conference keynote, CGI 99, Canmore, Alberta, June 1999
- "How to Render the World", Programmer's Keynote, Game Developer's Conference, March 1999
- "Is There Hope for New Media?", CGIX 98, Amsterdam, February 1998
- "Computer Graphics and Cultural Change", Graphics Interface '97, Kelowna, BC, June 1997
- "Art and Animation", Computer Graphics Grand Prix '97, Tokyo, Japan, March 1997
- "Networked Shape Synthesis", Graphicon '92, Moscow, Russia, October 1992
- "The Grammar of Geometric Substitutions", 1st International Conference on Scientific Visualization, Caracas, Venezuela, October 1991
- "Growing Complex Shapes From Simple Forms", plenary talk, Eurographics '91, Austria, September 1991
- "The Theory and Practice of Ray Tracing", full-day tutorial at Eurographics '91, Austria, September 1991
- "Ray Tracing", full-day tutorial at Ausgraph '90, Melbourne, Australia, September 1990
- "Geometric Substitutions", Ausgraph '90, Melbourne, Australia, September 1990
- "Ray Tracing: From Algorithms to Programs", full-day course at Graphics Interface '89, 1989

## Commercial Apps

Designer and Programmer, "Maya Date" iPhone app, iTunes Store, 2009

## Online Teaching

"2D Animation and Interaction," 8-week online video course offered through The Imaginary Institute.

## Museum Exhibitions

- The Denver Museum of Nature & Science, Denver, CO, 2013. Mayan artwork and calendar glyphs.
- The Smithsonian National Museum of the American Indian, Interactive website, 2012. Mayan artwork and calendar glyphs.
- Tallinn City Museum, Estonia, 2010. "Time Pillars" exhibition. Mayan artwork and calendar glyphs.

## Shows and Games

- Creator, "Dead Air", Multiplayer murder-mystery game for The Microsoft Network, 1999
- Writer and Director, "Classical Trio", the pilot episode for Dead Air, 1999
- Creator, "That's Bull!", Game for The Microsoft Network, 1999 (unproduced)
- Game Designer, "Demolition Construction Kit", Software toy, Dreamworks, 1999 (unproduced)
- Creator, "Spaceship Mars", Massively-multiplayer game, The Microsoft Network, 1998 (unproduced)
- Creator, "Island Paradise", Multiplayer online game, The Microsoft Network, 1998 (unproduced)

## Other Technical Publications

- Glassner, A., "Clipping a Concave Polygon", in Graphics Gems V, A. Paeth, ed., Academic Press, Cambridge, 1995
- Glassner, A., "Building Vertex Normals From An Unstructured Polygon List", in Graphics Gems IV, P. Heckbert, ed., Academic Press, Cambridge, 1994
- Glassner, A., "Darklights", in Graphics Gems III, D. Kirk, ed., Academic Press, Cambridge, 1992
- Glassner, A., "Anti-Aliasing in Triangular Pixels", in Graphics Gems III, D. Kirk, ed., Academic Press, Cambridge, 1992
- Glassner, A., "Adaptive Run-Length Encoding", in Graphics Gems II, J. Arvo, ed., Academic Press, Cambridge, 1991
- Glassner, A., "Maintaining Winged-Edge Models", in Graphics Gems II, J. Arvo, ed., Academic Press, Cambridge, 1991
- Glassner, A., "A Simple Viewing Geometry" in Graphics Gems, A. Glassner, ed., Academic Press, Cambridge, 1990
- Glassner, A., "Useful 2D Geometry" in Graphics Gems, A. Glassner, ed., Academic Press, Cambridge, 1990 (also in Gems II, III, and IV)
- Glassner, A., "Useful 3D Geometry" in Graphics Gems, A. Glassner, ed., Academic Press, Cambridge, 1990 (also in Gems II, III, and IV)
- Glassner, A., "Frame Buffers and Color Maps" in Graphics Gems, A. Glassner, ed., Academic Press, Cambridge, 1990
- Glassner, A., "Normal Coding" in Graphics Gems, A. Glassner, ed., Academic Press, Cambridge, 1990
- Glassner, A., "Intepretation of Texture Map Indices" in Graphics Gems, A. Glassner, ed., Academic Press, Cambridge, 1990
- Glassner, A., "Multidimensional Sum Tables" in Graphics Gems, A. Glassner, ed., Academic Press, Cambridge, 1990
- Glassner, A., "An Overview of Ray Tracing" (book chapter in "An Introduction to Ray Tracing", A. Glassner, ed., Academic Press, London, 1989
- Glassner, A., "Surface Physics for Ray Tracing" (book chapter) in "An Introduction to Ray Tracing", A. Glassner, ed., Academic Press, London, 1989
- Glassner, A., "A Ray Tracing Glossary" (book chapter in "An Introduction to Ray Tracing", A. Glassner, ed., Academic Press, London, 1989

## Popular Articles

- Glassner, A., "Ray Tracing in Computer Graphics", Computers in Science, September/October 1987, 1(2), pp. 18-25
- Glassner, A., "Ray Tracing for Realism", Byte Magazine, December 1990, 15(2), pp. 263-271

## Journal Columns

- Columns in "Andrew Glassner's Notebook" in IEEE Computer Graphics & Applications:
- "Speed Limit 55", vol. 26, no. 1, January 2005
- "Crop Circles, Part 2", vol. 25, no. 6, November 2004
- "Crop Circles, Part 1", vol. 25, no. 5, September 2004
- "Digital Cubism, Part 2", vol. 25, no. 4, July 2004
- "Digital Cubism, Part 1", vol. 25, no. 3, May 2004
- "Around and Around", vol. 25, no. 2, March 2004
- "About Face", vol. 25, no. 1, January 2004
- "Everyday Visualization", vol. 24, no. 6, November 2003
- "DMorph", vol. 23, no. 5, September 2003
- "Venn and Now", vol. 23, no. 4, July 2003
- "Image Search and Replace", vol. 23, no. 3, May 2003
- "Digital Weaving, Part 3", vol. 23, no. 2, March 2003
- "Digital Weaving, Part 2", vol. 23, no. 1, January 2003
- "Digital Weaving, Part 1", vol. 22, no. 6, November 2002
- "Getting the Picture," vol. 22, no. 5, September 2002

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