

References and Bibliography

The following works (not all of which are cited in the text or the footnotes of this background paper) are alphabetized by author and by date for each author. The works include paper documents, videocassettes, online resources, and other types of information resources. The acronym *URL* stands for Uniform Resource Locator, a specification—in a standard format used by the World Wide Web [12,77]—for resources available via the Internet. Unless otherwise noted, a citation containing a URL refers only to an online resource; a paper version may not be published.

1. 4th Wave, Inc., "Virtual Reality Market Estimates," *Multimedia Monitor*, July 1994, p. 28.
2. Adam, J. A., "Virtual Reality Is for Real," *IEEE Spectrum*, Special Report: Virtual Reality, October 1993, pp. 22-29.
3. Adam, J. A., "Medical Electronics," *IEEE Spectrum*, January 1994, pp. 70-73.
4. Alluisi, E. A., "The Development of Technology for Collective Training: SIMNET, a Case History," *Human Factors*, vol. 33, no. 3, 1991, pp. 343-362.
5. Andrews, A., and Maples, C., "VIEWS™: The Virtual Interactive Environment Workspace," unpublished brochure, July 1, 1994.
6. Apostolakis, G., "The Concept of Probability in Safety Assessments of Technological Systems," *Science*, vol. 250, Dec. 7, 1990, pp. 1359-1354.
7. "Arcade System Sources," *PCVR Magazine*, no. 15, May/June 1994, p. 9.
8. Aukstakalnis, S., and Blatner, D., *Silicon Mirage*, S.F. Roth (ed.) (Berkeley, CA: Peachpit Press, 1992).
9. Bartle, R., "Interactive Multi-User Computer Games," December, 1990; (c) MUSE Ltd., British Telecom plc.
URL=<ftp://cogsci.uwo.ca/pub/vr/papers/mudreport.txt>.
10. Baumann, J., "Military Applications of Virtual Reality," *Encyclopedia of Virtual Environments*, as of Aug. 16, 1994.
URL=<http://gimble.cs.umd.edu/vrtp/eve-articles/11.G.Military.html>.
11. Bickers, C., "UTD: High Fidelity at Low Cost," *Jane's Defence Weekly*, Aug. 27, 1994, p. 24.
12. Boutell, T., et al., "World Wide Web Frequently Asked Questions," Sept., 2, 1994.
URL=<http://sunsite.unc.edu/boutell/faq/www-faq.html>.
13. Bricken, M., "Building the VSX Demonstration: Operations with Virtual Aircraft in Virtual Space," HITL-M-90-9 (Seattle, WA: University of Washington, Human Interface Technology Laboratory, 1990).
14. Bricken, M., "Gender Issues in Virtual Reality Technology," presentation, HITL-P-91-6 (Seattle, WA: University of Washington, Human Interface Technology Laboratory, 1991).
15. Brill, L.M., "Virtual Reality," *Funworld*, July 1994, pp. 18ff.
16. Brooks, F., Ouh-Young, M., Batter, J., and Kilpatrick, P., "Project GROPE—Haptic Displays for Scientific Visualization," *Computer Graphics*, vol. 24, no. 4, August 1990, pp. 177-185.

17. Brooks, F. P., testimony, in U.S. Congress, Senate Committee on Commerce, Science, and Transportation, Subcommittee on Science, Technology, and Space, *New Developments in Computer Technology: Virtual Reality*, hearing, Serial No. 102-553, May 8, 1991.
18. Brown, A.C., *Bodyguard of Lies* (New York, NY: Harper and Row, 1975).
19. Burdea, G., and Coiffet, P., *Virtual Reality Technology* (New York, NY: John Wiley & Sons, 1994).
20. Burgess, D., "3-D Sound FTP Site," as of Aug. 16, 1994.
URL=<ftp://multimedia.cc.gatech.edu/papers/3Daudio/README.html>.
21. Cantele, J., et al., "Silicon Graphics' SILICON SURF Home Page," June 22, 1994.
URL=<http://www.sgi.com/>.
22. Cartwright, G.F. "Virtual or Real? The Mind in Cyberspace," *The Futurist*, March-April 1994, pp. 22-26.
23. Casner, S., "Frequently Asked Questions (FAQ) on the Multicast Backbone (MBONE)," Aug. 15, 1994.
URL=<ftp://venera.isi.edu/mbone/faq.txt>.
24. Ceranowicz, A., "Modular Semi-Automated Forces," *Proceedings of Elecsim 1994: Electronic Conference on Constructive Training Simulation*, R.D. Smith (cd.) (conducted on the Internet, April 11 - May 27, 1994).
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECS194.ZIP>, May 27, 1994.
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECS194.sea.hqx>, June 8, 1994.
25. Chien, Y.T., and Jenkins, J. (eds.), *Virtual Reality Technology* (Washington, DC: U.S. Government Printing Office, 1994).
26. Christenson, W.M., and Zirkle, R.A., *73 Easting Battle Replication JANUS Combat Simulation*, IDA P-2270 (Alexandria, VA: The Institute for Defense Analyses, September 1992).
27. Clark, S., "A Review of VR Resources on the Internet," pp. 47-53 in *Proceedings of the First U.K. Virtual Reality Special Interest Conference*, Held on the 14th March 1994 at Nottingham University.
URL=<ftp://eta.lut.ac.uk/Public/vrsig94/Proceedings.zip>. Also available as
URL=<ftp://eta.lut.ac.uk/Public/vrsig94/Proceedings.txt> and
URL=<ftp://eta.lut.ac.uk/Public/vrsig94/Proceedings.ps>.
28. CM Research, "Thermal Feedback," *PCVR Magazine*, no. 14, March/April 1994, pp. 14-18.
29. Cook, N., "VR: Even Better than the Real Thing," *Jane's Defence Weekly*, vol. 21, no. 8, February 26, 1994, pp. 24-25.
30. Cramer, J.G., "News from CyberSpace: VR and Hypertext," *Analog Science Fiction and Fact*, vol. 114, July 1994, pp. 217-221.
31. Criterion Software Ltd., "DOSTANK," a RenderWare™ software demonstration program, Aug. 5, 1994.
URL=<ftp://192.88.128.32/pub/renderware/dos/demo/dostank.zip>.
32. Cruz-Neira, C., et al., *Scientists in Wonderland: A Report on Visualization Applications in the CAVE Virtual Reality Environment*, as of Aug., 17, 1994.
URL=<http://www.ncsa.uiuc.edu/EVL/docs/cave/vrpaper/report.html>
33. *CyberEdge Journal* (quarterly), vol. 1, no. 1, Special edition: Military & Aerospace (Sausalito, CA: The Delaney Companies, fall 1993).
34. Cynamon, J.J., "The Basics," *Simulation Validation Workshop Proceedings (SIMVAL II)*, A.E. Ritchie (cd.) (Alexandria, VA: Military Operations Research Society, April 1992).
35. Davis, P. K., "Some Lessons Learned from Building Red Agents in the RAND Strategy Assessment System (RSAS)," *Human Behavior and Performance as Essential Ingredients in Realistic Modeling of Combat-MORIMOC II*, (Alexandria, VA: Military Operations Research Society, February 1989).
36. Davis, P. K., *A Framework for Verification, Validation, and Accreditation*, report R-4249-ACQ (Santa Monica, CA: The RAND Corp., 1992).
37. Davis, P. K., "A Framework for Verification, Validation, and Accreditation," *Simulation Validation Workshop Proceedings (SIMVAL II)*, A.E. Ritchie (cd.) (Alexandria, VA: Military Operations Research Society, April 1992).
38. Davis, P.K., and Blumenthal, D., *The Base of Sand Problem: A White Paper on the State of*

- Military Combat Modeling*, RAND Note N-3148 -OSD/DARPA (Santa Monica, CA: The RAND Corporation, 1991).
39. DeFanti, T. A., Sandin, D. J., and Cruz-Neira, C., "A 'Room' with a 'View,'" *IEEE Spectrum*, October 1993, pp. 30-33.
 40. Delaney, B., "A Survey of Head Mounted Displays," *AI Expert*, Virtual Reality '93: Fall Special Report, September 1993, pp. 21-24.
 41. Delaney, B., "Virtual Reality Lands the Job," *NewMedia*, ISSN 1060-7188, vol. 4, no. 8, August 1994, pp. 40-45.
 42. DIASPAR™ Virtual Reality Network, computer bulletin board system (BBS), dial (714) 376-1200 for a 1,200-baud connection or (714) 376-1234 for a 9,600-baud connection. Also accessible by telnet.
URL=telnet://diaspar.com.
 43. DIS Steering Committee, *The DIS Vision, A Map to the Future of Distributed Simulation*, version 1, IST-SP-94-01 (Orlando, FL: The University of Central Florida, Institute for Simulation and Training, May 1994).
 44. Division, Inc., "Review," (brochure), 1993.
 45. Dunn, W. H., (U.S. Army Modeling and Simulation Management Office) "VV&A Implementation Initiatives in Army & DoD," briefing charts, University of Alabama in Huntsville, Mar. 22, 1994.
 46. duPont P., electronic mail message, with attachments, to Toni Emerson, Apr. 12, 1994, archived in:
URL=ftp://stein2.u.washington.edu/public/virtual-worlds/faq/commercial/Division-press-releases.
 47. Emerson, T., *Virtual Reality Update*, vol. 2, no. 2, March/April 1994.
URL=ftp://stein2.u.washington.edu/public/VirtualReality/HITL/Bibliographies/VRU/vru-v2n2.txt.
 48. Emerson, T., "Virtual Audio Bibliography," technical report B-94-2, (Seattle, WA: University of Washington, Human Interface Technology Laboratory, 1994).
URL=ftp://stein2.u.washington.edu/public/VirtualReality/HITL/Bibliographies/Virtual-Audio-Bibliography.txt.
 49. Emerson, T., "Virtual Interface Technology Bibliography, Selected Citations from the Literature," revised 1994.
URL=ftp://stein2.u.washington.edu/public/VirtualReality/HITL/papers/tech-reports/emerson-B-93-2.txt
 50. Emerson, T., "Information Resources in Virtual Reality (IRVR)," Apr. 6, 1994.
URL=ftp://stein2.u.washington.edu/public/VirtualReality/HITL/papers/tech-reports/irvr.txt.
 51. Emerson, T., *Virtual Reality Update*, vol. 2, no. 3, September 1994.
URL=ftp://140.142.56.2/public/VirtualReality/HITL/Bibliographies/VRU/vru-v2n3.txt.
 52. Emmett, A., "Simulations on Trial," *Technology Review*, May/June 1994, pp. 30-36.
 53. Erichsen, M. N., *Weapon System Sensor Integration for a DIS-Compatible Virtual Cockpit*, thesis, Air Force Institute of Technology, AFIT/GCS/ENG/93-07, December 1993. DTIC AD-A274 088.
 54. "Europeans, Japanese Invest Heavily in MEMS Research," *Aviation Week and Space Technology*, March 1, 1993, p. 39.
 55. Farrow, S., "Multi-Service Distributed Training Testbed (MDT2)," *Distributed Interactive Simulation (DIS) Joint Newsletter*, vol. 2, no. 5 (Orlando, FL: Naval Air Warfare Center, Training Systems Division, July 1994).
 56. "Feedback Devices," *PCVR Magazine*, no. 14, March/April 1994, p. 19.
 57. Finlay, P. N., and Wilson, J. M., "The Paucity of Model Validation Operational Research Projects," *OR*, the journal of the Operational Research Society, vol. 39, no. 4, 1987, pp. 303-308.
 58. Flexman, R.E., Roscoe, S. N., Williams, A.C. Jr., and Williges, B. H., *Studies in Pilot Training: The Anatomy of Transfer* (Urbana, IL: Engineering Publications Office, College of Engineering, University of Illinois at Urbana-Champaign, 1972).
 59. Freedman, J. E., and Starr, S. H., "Use of Simulation in the Evaluation of the IFFN Process," in North Atlantic Treaty Organization (NATO) Advisory Group for Aerospace Research and Development (AGARD) Conference **Proceed-**

- ings No. 268 (AGARD-CP-268), presented at a Meeting of the Avionics Panel, Paris, France, 15-19 October 1979.
60. **Furness, T.**, "The Super Cockpit and Human Factors Challenges," **HITL-M-86-1** (Seattle, WA: University of Washington, Human Interface Technology Laboratory, 1986).
61. **Furness, T.**, "Designing in Virtual Space," **HITL-R-87-1** (Seattle, WA: University of Washington, Human Interface Technology Laboratory, 1987).
62. **Furness, T.**, "Harnessing Virtual Space," **HITL-M-88-1** (Seattle, WA: University of Washington, Human Interface Technology Laboratory, 1988).
63. **Furness, T.**, "Configuring Virtual Space for the Super Cockpit," **HITL-M-89-1** (Seattle, WA: University of Washington, Human Interface Technology Laboratory, 1989).
64. **Furness, T.**, "Creating Better Virtual Worlds," **HITL-M-89-3** (Seattle, WA: University of Washington, Human Interface Technology Laboratory, 1989).
65. **Furness, T.**, in U.S. Congress, Senate Committee on Commerce, Science, and Transportation, Subcommittee on Science, Technology, and Space, *New Developments in Computer Technology: Virtual Reality*, hearing, **Serial No. 102-553**, May 8, 1991, pp. 23-48.
66. **Gaver, D.**, "Face Validation and Face Validity," *Simulation Validation Workshop Proceedings (SIMVAL II)*, **A.E. Ritchie** (cd.) (Alexandria, VA: Military Operations Research Society, April 1992).
67. Georgia Institute of Technology, Graphics, Visualization, and Usability Center, Virtual Environments Group, "GVU Center Virtual Environments Group, Home Page," as of Sept. 20, 1994.
URL=<http://www.cc.gatech.edu/gvu/virtual/VirtualEnvironments.html>.
68. **Giadrosich, D.**, "Validating Models and Simulations," *Simulation Validation Workshop Proceedings (SIMVAL II)*, **A.E. Ritchie** (cd.) (Alexandria, VA: Military Operations Research Society, April 1992).
69. **Gibbons, J. H.**, President's Science Advisor, and **Panetta, L. E.**, Director, Office of Management and Budget, Memorandum for the Heads of Executive Departments and Agencies, Subject: "FY 1996 Research and Development (R&D) Priorities," May 6, 1994.
70. **Gore, A.**, opening remarks, in U.S. Congress, Senate Committee on Commerce, Science, and Transportation, Subcommittee on Science, Technology, and Space, *New Developments in Computer Technology: Virtual Reality*, hearing, **Serial No. 102-553**, May 8, 1991, p. 1.
71. **Gore, R. A.**, "Reality or Virtual Reality? The Use of Interactive, Three-Dimensional Computer Simulations at Trial," *Rutgers Computer & Technology Law Journal*, vol. 19, 1993, pp. 459-493.
72. **German, P.**, testimony, in U.S. Congress, Senate Committee on Armed Services, *Department of Defense Authorization for Appropriations for Fiscal Year 1993 and the Future Years Defense Program*, hearings, **Serial No. 102-883**, part 1, May 21, 1992, pp. 673-730.
73. **Gradecki, J.**, "Virtual Reality Arcade Systems," *PCVR Magazine*, no. 15, May/June 1994, pp. 5-8.
74. **Grimes, G.**, "Digital Data Entry Glove Interface," U.S. Patent No. 4,414,537, filed Sept. 15, 1981.
75. **Grimes, J.** "Virtual Reality Goes Commercial with a Blast," *IEEE Computer Graphics and Applications*, March 1992, pp. 4-7.
76. **Hamit, F.**, *Virtual Reality and the Exploration of Cyberspace* (Carmel, IN: Sams Publishing, 1993).
77. **Hayes, B.**, "The World Wide Web," *American Scientist*, vol. 82, September-October 1994, pp. 416-420.
78. **HCI Launching Pad** (links to Human-Computer Interface Bibliography Project, et al.), as of Aug. 16, 1994.
URL=<http://hydra.bgsu.edu/HCI/>.
79. "Head Mounted Display Study; What's Wrong with Your Head Mounted Display?," *Cyber-Edge Journal*, supplement to issue#17, September-October 1993.
80. **Heeter, C.**, "BattleTech Demographics," *IEEE Computer Graphics and Applications*, March 1992, pp. 4-7.
81. **Heim, M.**, *The Metaphysics of Virtual Reality* (New York, NY: Oxford University Press, Inc., 1993).

82. Heinlein, R. A., "Waldo," *Amazing Science Fiction*, August 1942.
83. Helsel, S., "BattleTech Center," *Virtual Reality Report* (Westport, CT: Meckler Corp., 1991).
84. Henderson, D., "The Multidimensional Space of Validation," *Simulation Validation Workshop Proceedings (SIMVAL II)*, A.E. Ritchie (cd.) (Alexandria, VA: Military Operations Research Society, April 1992).
85. Henry, D., "The Design of TopoSeattle," technical report R-92-4, 1992.
URL=<ftp://stein2.u.washington.edu/public/VirtualReality/HITL/papers/tech-reports/henry-R-92-4.ps>.
86. Hepburn, F., Kaiser Electro-Optics, Inc., personal communication (fax), Aug. 18, 1994.
87. Hodges, A., *Alan Turing: The Enigma* (New York, NY: Simon and Schuster, 1983).
88. Hodges, L. F., et al., "Virtual Environments, Phobia Project," as of Sept. 19, 1994.
URL=<http://www.cc.gatech.edu/gvu/virtual/Phobia.html>.
89. Hoffman, H., and Lopez, L., "Mouse Tactors," *PCVR Magazine*, no. 14, March/April 1994, pp. 11-13.
90. Hollands, R., "The Virtual Reality Primer," *PCVR Magazine*, no. 15, May/June 1994, p. 17.
91. Holzer, R., "Panel: Simulation Can Aid Joint Forces," *Defense News*, August 1-7, 1994, p. 22.
92. Holzer, R., "U.S. Debates Live Fire vs. Simulation," *Defense News*, August 1-7, 1994, pp. 22-23.
93. Howe, D. (cd.), "The Free On-line Dictionary of Computing," as of Sept. 14, 1994.
URL=<http://wombat.doc.ic.ac.uk/>.
94. "Human Interface Technology Laboratory Bibliography, Virtual World Database," Jan. 28, 1992.
URL=ftp://stein.u.washington.edu/public/VirtualReality/HITL/Bibliographies/furness_bib.txt.
95. Institute of Electrical and Electronic Engineers, *IEEE Standard Glossary of Modeling and Simulation Terminology*, IEEE Standard 610.3-1989 (Piscataway, NJ: IEEE Customer Service Center, 1989).
96. Institute of Electrical and Electronic Engineers, *IEEE Standard Glossary of Computer Graphics Terminology*, IEEE Standard 610.6-1991 (Piscataway, NJ: IEEE Customer Service Center, 1991).
97. Institute of Electrical and Electronic Engineers, *IEEE Standard for Information Technology - Protocols for Distributed Interactive Simulation Applications, Entity Information and Interaction*, IEEE Standard 1278-1993 (Piscataway, NJ: IEEE Customer Service Center, 1993).
98. Isdale, J., "What Is Virtual Reality? A Homebrew Introduction and Information Resource List," Oct. 8 1993.
URL=<ftp://ftp.u.washington.edu/public/virtual-worlds/papers/whatisvr.txt>.
99. Jacobs, J.F., *The SAGE Air Defense Systems: A Personal History* (Bedford, MA: MITRE Corp., 1986).
100. Jacobson, R., "Applying the Virtual Worlds Paradigm to Mapping and Surveying Data," *Virtual Reality World*, September/October 1994, pp. 61-69.
101. Jenks, A. "Could the Surgeon General Warn: 'VR Is Hazardous to Your Health' ?," *Washington Technology*, vol. 9, no. 8, July 28, 1994, pp. 1, 28, and 30.
102. Joly, M., "Virtual World Entertainment," *PCVR Magazine*, no. 15, May/June 1994, pp. 14-16.
103. Kaiser Electro-Optics, Inc., "SIM EYE™," brochure, Oct. 11, 1993.
104. Kaiser Electro-Optics, Inc., "VIM™ personal viewer™," brochure, Apr. 1, 1994.
105. Kalawsky, R. S., *The Science of Virtual Reality and Virtual Environments* (Reading, MA: Addison-Wesley, 1993).
106. Karnow, C. E. A., "Implementing the First Amendment in Cyberspace," *Virtual Reality World* (supplement to *Multimedia Review*), vol. 1, no. 2, Summer 1993, pp. J-N.
107. Karnow, C.E.A., "The Uneasy Treaty of Technology and Law," *Virtual Reality Special Report*, vol. 1, no. 1, 1994, pp. 33-38.
108. Karnow, C.E.A., "The Electronic Persona: A New Legal Entity," *Virtual Reality World*, vol. 2, no. 1, January 1994, pp. 37-40.
109. Karr, C. R., and Root, E., "Eagle/DIS Interface," *Proceedings of Elecsim 1994: Electronic Conference on Constructive Training Simulation*, R.D. Smith (cd.) (conducted on the Internet, April 11- May 27, 1994).

- URL=<ftp://ftp.my.stech.com/pub/elecsim/ELECS194.ZIP>, May 27, 1994.
- URL=<ftp://ftp.my.stech.com/pub/elecsim/ELECS194.sea.hqx>, June 8, 1994.
110. Kelly, L., *The Pilot Maker* (New York, NY: Grosset and Dunlap, 1970).
 111. Kercheval, H., "MUSE Gives Virtual Reality a Humanistic New Twist," *Sandia Lab News*, vol. 46, no. 10 (Albuquerque, NM: Sandia National Laboratories, May 13, 1994), pp. 1, 5, and 6.
 112. Kitfield, J., "Trading Bullets for Bytes," *Government Executive*, June 1994, pp. 18-25.
 113. Kollin, J. S., "The Virtual Retinal Display," July 27, 1993.
URL=<ftp://stein2.u.washington.edu/public/VirtualReality/HITL/papers/General/VirtualRetinalDisplay.ps>.
 114. Kooper, R., "Meta Virtual Environments," as of Aug. 15, 1994.
URL=<http://www.cc.gatech.edu/gvu/people/Masters/Rob.Kooper/Meta.VR.html>
 115. Kooper, R., "Virtual Environments, Acrophobia," as of Aug. 15, 1994.
URL=<http://www.cc.gatech.edu/gvu/virtual/Acrophobia.html>.
URL=<http://www.cc.gatech.edu/gvu/virtual/mpeg/elevator.mpg>.
 116. Lamson, R. J., "Virtual Therapy of Anxiety Disorders," *CyberEdge Journal*, Issue no. 20, vol. 4, no. 2, March/April 1994, p. 1ff.
 117. Lanier, J. Z., and Zimmerman, T. G., "Computer Data Entry and Manipulation Apparatus and Method," U.S. Patent No. 4,988,981, filed Feb. 28, 1989, issued Jan. 29, 1991.
 118. Lanier, J. Z., testimony, in U.S. Congress, Senate Committee on Commerce, Science, and Transportation, Subcommittee on Science, Technology, and Space, *New Developments in Computer Technology: Virtual Reality*, hearing, Serial No. 102-553, May 8, 1991.
 119. Larijani, L. C., *The Virtual Reality Primer* (New York, NY: McGraw-Hill, 1993).
 120. Latta, J., 4th Wave, Inc., facsimile transmission, Sept. 9, 1994.
 121. Ledermann, S.J., and Taylor, M. M., "Fingertip Force, Surface Geometry, and the Perception of Roughness by Active Touch," *Perception and Psychophysics*, vol. 12, no. 5, 1972, pp. 401-408.
 122. Lederman, S.J., and Klatzky, R.L., "Hand Movements: A Window into Haptic Object Recognition," *Cognitive Psychology*, vol. 19, no. 3, 1987, pp. 342-368.
 123. Levine, R., Schelling, T., and Jones, W., *Crisis Games 27 Years Later: Plus C'Est Deja Vu, P-7719* (Santa Monica, CA: RAND, 1991).
 124. Lewis, R. O., (General Research Corp., Huntsville, AL), "Position Paper for the 10th Verification, Validation, and Accreditation (VV&A) Process for Distributed Interactive Simulations (DIS)," 1994.
 125. Loeffler, C. E., and Anderson, T. (eds.), *The Virtual Reality Casebook*, (New York, NY: Van Nostrand Reinhold, July 1994).
 126. Lytle, D., "A Radical New Approach to Virtual Reality," *Photonics Spectra*, August 1994, p. 48.
 127. Mathews, J., and Anselmo, J., "Even Good Simulation Has Its Limitations," *Aviation Week and Space Technology*, Sept. 12, 1994, pp. 69 and 71.
 128. McDonough, J., "Doorways to the Virtual Battlefield," *Virtual Reality '92 Conference Proceedings: Virtual Reality Becomes a Business* (Westport, CT: Meckler Corp., 1992), pp. 104-114.
 129. McVey, S., "STOW: SIMNET Was Just the Beginning," *CyberEdge Journal Special Edition: Military & Aerospace*, vol. 1, no. 1, Fall 1993, pp. 1 and 3.
 130. McVey, S., "The Battle of 73 Easting, 4D History Books," *CyberEdge Journal Special Edition: Military & Aerospace*, vol. 1, no. 1, Fall 1993, pp. 1-2.
 131. McVey, S., "VR in Weapon Systems Development," *CyberEdge Journal Special Edition: Military & Aerospace*, vol. 1, no. 1, Fall 1993, p. 2.
 132. "Medicine Meets Virtual Reality," as of Aug. 16, 1994.
URL=<http://bitmed.ucsd.edu/text-repository/mmvr.html>
 133. Metzger, J., "Verification," *Simulation Validation Workshop Proceedings (SIMVAL II)*, A.E. Ritchie (ed.) (Alexandria, VA: Military Operations Research Society, April 1992).
 134. Miller, T., and Milliner, R., "Toy Scouts," as of Aug. 15, 1994.

- URL=<http://www.vsl.ist.ucf.edu/projects/scouts/scouts.html>.
135. Nelson, T. H., *Computer Lib: You Can and Must Understand Computers Now and Dream Machines* (texts printed together back-to-back and inverted), 1st ed. (Chicago, IL: [available from] Hugo's Book Service, c 1974).
 136. Nelson, T. H., *Computer Lib; Dream Machines*, Rev. ed. (Redmond, WA: Tempus Books of Microsoft Press, 1987).
 137. Null, C. H., and Jenkins, J. P., *NASA Virtual Environment Research, Applications, and Technology* (Washington, DC: National Aeronautics and Space Administration, 1993).
 138. *MUSE Demonstration*, version 1.0, Sept. 16, 1993, (VHS videocassette), Division 1415, Sandia National Laboratory, P.O. Box 5800, Albuquerque, NM 87185, 1993.
 139. Parrish, L., *Space-Flight Simulation Technology*, 1st ed. (Indianapolis, IN: H. W. Sarns, 1969).
 140. Pimentel, K., and Teixeira, K., *Virtual Reality: Through the New Looking Glass* (New York, NY: Windcrest Books, McGraw-Hill, Inc., 1992).
 141. Prothero, J., "A Survey of Interface Goodness Measures," technical report R-94-1, 1994.
URL=<ftp://stein2.u.washington.edu/public/VirtualReality/HITL/papers/tech-reports/prothero-.ps>.
 142. Pulkka, A. K., "Sci.Virtual-Worlds Meta-FAQ (Frequently Asked Questions)," version 94.01, 1994.
URL=<ftp://stein2.u.washington.edu/public/virtual-worlds/Meta-FAQ>.
 143. Ramsdale, C., Division, Inc., personal communication, Aug. 22, 1994.
 144. Ressler, S., "Movie Samples," April 11, 1994, as of Aug. 15, 1994.
URL=<http://nemo.ncsl.nist.gov/~sressler/OVRTmovies.html>.
 145. Ressler, S., "Open Virtual Reality Testbed," April 26, 1994.
URL=<http://nemo.ncsl.nist.gov/~sressler/OVRThome.html>.
 146. Ressler, S., "Surrogate Travel and MOSAIC," April 11, 1994.
URL=<http://nemo.ncsl.nist.gov/~sressler/projects/nav/sur/navSurr.html>.
 147. Reynolds, P.F., Jr., "DISorientation," *Proceedings of Elecsim 1994: Electronic Conference on Constructive Training Simulation*, R.D. Smith (cd.) (conducted on the Internet, April 11- May 27, 1994).
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECSI94.ZIP>, May 27, 1994.
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECSI94.sea.hqx>, June 8, 1994.
 148. Rheingold, H., *Virtual Reality* (New York, NY: Simon & Schuster, 1991).
 149. Rheingold, H. *The Virtual Community: Homesteading on the Electronic Frontier* (Reading, MA: Addison-Wesley, 1993).
 150. Richmond, A., "WebStars: Virtual Reality," as of Aug. 15, 1994.
URL=<http://guinan.gsfc.nasa.gov/WebStars/VR.html>.
 151. Ritchie, A.E. (cd.), *Simulation Validation Workshop Proceedings (SIMVAL II)*, (Alexandria, VA: Military Operations Research Society, April 1992).
 152. Roland, E., Kelleher, E., and Brandt, K., "Modeling Coalition Warfare: Multi-Sided Simulation Design," *Proceedings of Elecsim 1994: Electronic Conference on Constructive Training Simulation*, R.D. Smith (cd.) (conducted on the Internet, April 11- May 27, 1994).
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECSI94.ZIP>, May 27, 1994.
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECSI94.sea.hqx>, June 8, 1994.
 153. Scales, Brigadier General Robert S., Jr., U.S. Army, *Certain Victory: The US Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, United States Army, 1993).
 154. Scott, W. B., "Micro-Machines Hold Promise for Aerospace," *Aviation Week and Space Technology*, March 1, 1993, pp. 36, 37, and 39.
 155. Seglie, E., and Sanders, P., "Accreditation," *Simulation Validation Workshop Proceedings (SIMVAL II)*, A.E. Ritchie (cd.) (Alexandria, VA: Military Operations Research Society, April 1992).
 156. Simsalabim Systems (Berkeley, CA), *Cyberscope* demonstration software for IBM PC/AT, 1994.
URL= <ftp://cogsci.uwo.ca> from the directory /pub/vr/cyberscope_demo/cyberfun.exe. See also

- URL=ftp://cogsci.uwo.ca/pub/vr/cyberscope_demo/readme. 1st.
157. Smith, R.D. (cd.), *Proceedings of Elecsim 1994: Electronic Conference on Constructive Training Simulation* (conducted on the Internet, April 11 - May 27, 1994).
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECSI94.ZIP>, May 27, 1994.
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECSI94.sea.hqx>, June 8, 1994.
 158. Stampe, D., Roehl, B., and Eagan, J., *Virtual Reality Creations: Explore, Manipulate and Create Virtual Worlds on Your PC* (Corte Madera, CA: Waite Group Press, 1993)
 159. Steinman, J. S., and Wieland, F., "Parallel Proximity Detection and the Distribution List Algorithm," *Proceedings of Elecsim 1994: Electronic Conference on Constructive Training Simulation*, R.D. Smith (cd.) (conducted on the Internet, April 11 - May 27, 1994).
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECSI94.ZIP>, May 27, 1994.
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECSI94.sea.hqx>, June 8, 1994.
 160. Stipp, D., " 'Phantom' Simulates Wielding a Scalpel, Tossing a Ball," *Wall Street Journal*, Aug. 23, 1994, pp. B1 and B6.
 161. Stock fisch, J. A., *Models, Data, and War: A Critique of the Study of Conventional Forces*, RAND Report R-1526-PR (Santa Monica, CA: The RAND Corporation, 1975).
 162. Sutherland, I.E., "The Ultimate Display," *Information Processing, 1965; Proceedings of IFIP Congress 65*, vol. 2, Kalenich, W.A. (cd.) (Washington, DC: Spartan Books, 1965).
 163. Task Group on Virtual Reality, *Virtual Reality Assessment*, A Report of the Task Group on Virtual Reality to the High Performance Computing and Communications and Information Technology (HPCCIT) Subcommittee of the Information and Communications Research and Development Committee of the National Science and Technology Council (NSTC), Apr. 15, 1994.
 164. *The Economist*, March 5, 1994, supplement: *Manufacturing Technology Survey*, "Living in the Material World," pp. 11-13.
 165. U.S. Congress, House of Representatives, *Conference Report on H.R. 4739, National Defense Authorization Act for Fiscal Year 1991*, Conference Report, *Congressional Record* 139(146, Pt. 2): H12167, Oct. 23, 1990.
 166. U.S. Congress, Office of Technology Assessment, *Who Goes There: Friend or Foe?*, OTA-ISC-537 (Washington, DC: U.S. Government Printing Office, June 1993).
 167. U.S. Congress, Office of Technology Assessment, *The Future of Remote Sensing from Space: Civilian Satellite Systems and Applications*, OTA-ISC-558 (Washington, DC: U.S. Government Printing Office, July 1993).
 168. U.S. Congress, Office of Technology Assessment, *Data Format Standards for Civilian Remote Sensing Satellites*, OTA-BP-ISC-114 (Washington, DC: U.S. Government Printing Office, July 1993).
 169. U.S. Congress, Office of Technology Assessment, *Assessing the Potential for Civil-Military Integration: Technologies, Processes, and Practices*, OTA-ISC-611 (Washington, DC: U.S. Government Printing Office, in press).
 170. U.S. Congress, Office of Technology Assessment, *Distributed Interactive Combat Simulation*, Background Paper (Washington, DC: U.S. Government Printing Office, in press).
 171. U.S. Congress, Senate Committee on Appropriations, Senate Report SR101-521, pp. 154-155.
 172. U.S. Congress, Senate Committee on Commerce, Science, and Transportation, Subcommittee on Science, Technology, and Space, *New Developments in Computer Technology: Virtual Reality*, hearing, Serial No. 102-553, May 8, 1991.
 173. U.S. Congress, Senate Committee on Armed Services, *Department of Defense Authorization for Appropriations for Fiscal Year 1993 and the Future Years Defense Program*, hearings, Serial No. 102-883, part 1, May 21, 1992, pp. 673-730.
 174. U.S. Department of Commerce, *Industrial Outlook 1994* (Pittsburgh, PA: Superintendent of Documents, P.O. Box 371954, 1994), chapter 27.
URL=<ftp://141.211.190.102/ebb/industry/outlook/indout27.txt>.
 175. U.S. Department of Defense, Advanced Research Projects Agency, "Simulation-Based Design System (SBDS)," announcement of contract award, Broad Agency Announcement

- BAA 92-38, *Commerce Business Daily*, Issue PSA-0956, October 21, 1993.
176. U.S. Department of Defense, Advanced Research Projects Agency, "Simulation-Based Design Workshop," Special Notice SN93-04, *Commerce Business Daily*, Issue PSA-0841, May 7, 1993.
 177. U.S. Department of Defense, Advanced Research Projects Agency, "Research In Human-Computer Interaction," solicitation, Broad Agency Announcement BAA 93-42, *Commerce Business Daily*, September 20, 1993.
 178. U.S. Department of Defense, Advanced Research Projects Agency, "Simulation-Based Design Enabling Technologies," solicitation, Broad Agency Announcement BAA 93-45, *Commerce Business Daily*, Issue PSA-0942, September 30, 1993.
 179. U.S. Department of Defense, Advanced Research Projects Agency, "Advanced Biomedical Technology," solicitation, Broad Agency Announcement BAA 94-14, *Commerce Business Daily*, January 27, 1994.
 180. U.S. Department of Defense, Advanced Research Projects Agency, "SBD Prototype Development," solicitation, Broad Agency Announcement BAA 94-39, *Commerce Business Daily*, Issue PSA-1107, June 1, 1994.
 181. U.S. Department of Defense, Advanced Research Projects Agency, "BAA Proposer Information Packet," [for BAA94-39], ARPA listserver, list "baa94-39", file "pip", as of Aug. 16, 1994.
 182. U.S. Department of Defense, Advanced Research Projects Agency, "Frequently Asked Questions," [about BAA94-39], ARPA listserver, list "baa94-39", file "faq," as of Aug. 16, 1994.
 183. U.S. Department of Defense, Department of the Army, Headquarters, *Army Model and Simulation Management Program*, Army Regulation 5-11, 10 June 1992.
 184. U.S. Department of Defense, Department of the Army, Headquarters, *Verification, Validation, and Accreditation of Army Models and Simulations*, Department of the Army Pamphlet 5-11 (DA PAM 5-11), 15 October 1993.
 185. U.S. Department of Defense, Department of the Army, *Army Model and Simulation Master Plan*, May 1994.
 186. U.S. Department of Defense, Department of the Army, Army Research Institute for the Behavioral and Social Sciences, ARI MacHTTP Server, as of Aug. 14, 1994,
URL=<http://alex-immersion.army.mil/vr.html>.
 187. U.S. Department of Defense, Department of the Army, Army Research Laboratory, Simulation Technology Division, Simulation Methodology Branch, "Synthetic Environments Technology for the Individual Soldier," as of Aug. 14, 1994.
URL=<http://info.arl.army.mil/ACIS/STD/SMB/VR/vr.html>.
 188. U.S. Department of Defense, Department of the Army, Army Research Laboratory, Simulation Technology Division, Simulation Methodology Branch, "STD Variable Resolution Terrain," as of Aug. 22, 1994.
URL=<http://info.arl.army.mil/ACIS/STD/SMB/VRT/vrt.html>.
 189. U.S. Department of Defense, "Defense Acquisition Management Policies and Procedures," Department of Defense Instruction, Number 5000.2, February 23, 1991.
 190. U.S. Department of Defense, "Modeling and Simulation Management Plan," Deputy Secretary of Defense Memorandum, June 21, 1991.
 191. U.S. Department of Defense, "DoD Modeling and Simulation (M&S) Management," Department of Defense Directive Number 5000.59, January 4, 1994.
 192. U.S. Department of Defense "Online Modeling & Simulation Information System," DMSO Node, as of Sept. 22, 1994.
URL=<gopher://dmso.dtic.dla.mil>: 4350.
 193. U.S. Department of Defense, "Online Modeling & Simulation Information System," TWSTIAC Node, as of Sept. 22, 1994.
URL=<gopher://yvette.iac.ist.ucf.edu>:70.
 194. U.S. Department of Defense, Office of the Chairman, The Joint Chiefs of Staff, *Department of Defense Dictionary of Military and Associated Terms*, Joint Pub 1-02 (Washington, DC: U.S. Government Printing Office, 23 March 1994).
 195. U.S. Department of Defense, Office of the Under Secretary of Defense for Acquisition, Establishment of the Defense Modeling and Simulation Office, Memorandum, July 22, 1991.

96. U.S. Department of Defense, Office of the Under Secretary of Defense for Acquisition, Defense Science Board, *Report of the Defense Science Board Task Force on Simulation, Readiness, and Prototyping: Impact of Advanced Distributed Simulation on Readiness, Training, and Prototyping*, January 1993, slide 6.
197. U.S. Department of Defense, Office of the Under Secretary of Defense for Research and Engineering, Defense Modeling and Simulation Office, briefing to OTA staff, 20 May 1994.
198. "U.S. Forms Simulation Office," *Defense News*, August 1-7, 1994, p. 22.
199. U. S. General Accounting Office, *Models, Data, and War : A Critique of the Foundation for Defense Analyses, PAD-80-21* (Gaithersburg, MD: U.S. General Accounting Office, March 12, 1980).
200. U.S. General Accounting Office, *DoD Simulations: Improved Assessment Procedures Would Increase the Credibility of Results, PEMD-88-3* (Washington, DC: U.S. General Accounting Office, December 1987).
201. U.S. National Aeronautics and Space Administration, Johnson Space Center, Software Technology Branch, "STB Virtual Reality Lab," Aug. 11, 1994.
URL=<http://www.jsc.nasa.gov/~mle/vr.html>.
202. U.S. National Aeronautics and Space Administration, Johnson Space Center, Flight Crew Support Division, Graphics Research and Analysis Facility, "Virtual Reality at the GRAF," as of Aug. 15, 1994.
URL=<http://139.169.134.181/Hompages/GRAF-Lab>.
203. U.S. National Aeronautics and Space Administration, Johnson Space Center, Software Technology Branch, "HST Training System," Aug. 11, 1994.
URL=<http://www.jsc.nasa.gov/~mle/Hubble/hubble.html>.
204. *U.S. Senate Hearing on Virtual Reality, PANEL ONE* (VHS videocassette), R. Miller (cd.) (Palo Alto, CA: Pure Grain Film & Video, 1991).
205. *U.S. Senate Hearing on Virtual Reality, PANEL TWO* (VHS videocassette), R. Miller (cd.) (Palo Alto, CA: Pure Grain Film & Video, 1991).
206. Virtual Entertainment, Inc., "VR Slingshot," as of Sept. 22, 1994.
URL=<http://www.cts.com/~vrman>.
URL=<ftp://ftp.cts.com/pub/vrman/vrs.exe>.
207. "Virtual Reality: Tools, Trends and Applications," *IEEE Spectrum*, October 1993, pp. 22-39.
208. *Virtual Worlds: How People Are Using Virtual Reality to Change the Real World ... for Better or Worse* (VHS videocassette), R. Miller (cd.) (Palo Alto, CA: Pure Grain Film & Video, 1993).
209. Vomastic, V. S., "F/A-18 Single-Seat Versus Dual-Seat Crew Simulation," *Phalanx* (journal of the Military Operations Research Society), September 1989, pp. 19-23.
210. Vomastic, V. S., and Shea, D. P., *Joint Strike Assessment—Platform Electiveness (Task 3): Potential Applications of Virtual Reality Technologies for Strike Training and Mission Rehearsal, CIM 336* (Alexandria, VA: Center for Naval Analyses, January 1994).
211. Voss, L. D., *A Revolution in Simulation: Distributed Interaction in the '90s and Beyond* (Arlington, VA: Pasha Publications, Inc., 1993).
212. Williams, M.L., and Sikora, J.J., "Overview," *Simulation Validation Workshop Proceedings (SIMVAL II)*, A.E. Ritchie (cd.) (Alexandria, VA: Military Operations Research Society, April 1992).
213. Wilson, A.L., and Weatherly, R. M., "New Traffic Reduction and Management Tools for ALSP Confederations," *Proceedings of Elecsim 1994: Electronic Conference on Constructive Training Simulation*, R.D. Smith (cd.) (conducted on the Internet, April 11- May 27, 1994).
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECS194.ZIP>, May 27, 1994.
URL=<ftp://ftp.mystech.com/pub/elecsim/ELECS194.sea.hqx>, June 8, 1994.
214. Zyda, M., "The NPSNET Research Group," as of Sept. 16, 1994.
URL=ftp://taurus.cs.nps.navy.mil/pub/NPSNET_MOSAIC/npsnet_mosaic.html.

Note added in proof: The National Academy of Sciences has announced the release of National Research Council, Committee on Virtual Reality Research and Development, *Virtual Reality: Scientific and Technological Challenges* (Anne Mavor, Study Director) (Washington, DC: National Academy Press, 1994). A press release summarizing the committee's conclusions and recommendations is available on the Internet by ftp, gopher, and World Wide Web: National Academy of Sciences, "Substantial Technology Gap Exists Between What Is Virtual, What Is Reality," Sept. 20, 1994. **URL=**<http://xerxes.nas.edu:70/1/onpi/pr/virtual>.