

group. Mark the source and date on each article. The articles should be current, that is, published or distributed during this time period. Write a brief summary and commentary on two articles in each category, indicating how they relate to topics covered in this book.

## NOTES

- <sup>1</sup> Chris Morgan and David Langford, *Facts and Fallacies: A Book of Definitive Mistakes and Misguided Predictions*, St. Martin's Press, 1981, p. 64. Mr. Duell made his comment while urging the President to abolish the Patent Office. (Morgan and Langford refer to Duell only by his title; his name is given in Christopher Cerf and Victor Navasky, *The Definitive Compendium of Authoritative Misinformation*, Pantheon Books, 1984, p. 203.)
- <sup>2</sup> Stephen E. Ambrose, *Undaunted Courage: Meriwether Lewis, Thomas Jefferson and the Opening of the American West*, Simon & Schuster, 1996, p. 53. Smoke signals and other visual signaling systems were exceptions.
- <sup>3</sup> Jacqueline Klosek, *Data Privacy in the Information Age*, Quorum Books, 2000, p. 2. Erin White and Nick Wingfield, "Online Retail Spending Gained in Fourth Quarter," *Wall Street Journal*, Jan. 3, 2002, p. A3.
- <sup>4</sup> "Beyond Repair: The Politics of the Machine Age Are Hopelessly Obsolete," *The New Democrat*, July/Aug. 1995, pp. 8–11.
- <sup>5</sup> Joan E. Rigdon, "Technological Gains Are Cutting Costs, And Jobs, in Services," *Wall Street Journal*, Feb. 24, 1994, p. A1.
- <sup>6</sup> Saul Hansell, "Cash Machines Getting Greedy at a Big Bank," *New York Times*, Feb. 18, 1994, p. A1, C16.
- <sup>7</sup> The rate of attacks on customers at ATMs in the mid-1990s was one in 3.5 million transactions (and as high as one in a million in some neighborhoods). F. Barry Schreiber, "The Future of ATM Security," *Security Management*, Mar. 1994, v. 38, n. 3, p. 18A.
- <sup>8</sup> The term "claim-rights" is used by J. L. Mackie in *Ethics: Inventing Right and Wrong*. Another term that could be used for positive rights is entitlements.
- <sup>9</sup> Nolan Bushnell, "Relationships between fun and the computer business," *Communications of the ACM*, 39:8, Aug. 1996, pp. 31–37.
- <sup>10</sup> The comments from the restaurant manager (of a Hungry Hunter restaurant) and the medical clinic were reported in a term paper "Automation: Friend or Foe," by my student Thomas Chhoa. The example of tracking parts (for Land Rovers) is described in Laurie Hays, "Using Computers to Divine Who Might Buy a Gas Grill," *Wall Street Journal*, Aug. 16, 1994, pp. B1, B4.
- <sup>11</sup> "Being Digital," *Wired*, February 1995, p.182.
- <sup>12</sup> Wade Roush, "Spinning a Better Web," *Technology Review*, April 1995, pp. 11–13. John Byczkowski, "Site Seers," *NetGuide*, June 1995, p. 28. Yahoo: A Guide to WWW. 1998 Internet and WWW data from IntelliQuest Information Group Inc., Austin TX, and the NEC Research Institute, reported in Thomas E. Weber, "Who, What, Where: Putting The Internet in Perspective," *Wall Street Journal*, Apr. 16, 1998, p. B10.
- <sup>13</sup> S. Fox and L. Rainie, *The Online Health Care Revolution: How the Web Helps Americans Take Better Care of Themselves*, Pew Charitable Trusts, Washington, DC, 2000.
- <sup>14</sup> The May 2001 and April 1995 issues of *Communications of the ACM* contain special sections with many articles on digital libraries.
- <sup>15</sup> Quoted in "U.S.'s New Web Site Provides Statistics From 70 Agencies," *Wall Street Journal*, May 23, 1997, p. A20.
- <sup>16</sup> Valerie Reitman, "Look Who's Getting a License to Drive," *Wall Street Journal*, July 25, 1997, p. A9C. Gautam Naik, "This Robot Drives and May Save Lives," *Wall Street Journal*, April 5, 1994, p. B1. Stuart F. Brown, "Trucking Gets Sophisticated," *Fortune*, July 24, 2000, pp. 270B–270R.
- <sup>17</sup> William M. Bulkeley, "Illiterates Find Computers Are Patient Mentors," *Wall Street Journal*, Nov. 16, 1992, p. B1.
- <sup>18</sup> The information on ARJIS is from Donald A. Woodmancy, "Spreading the Word," *Police*, Sept. 1989, pp. 50–52, 87–91; Kathryn Balint, "Upgrade Due for Cops' Computer System," *San Diego Union*, "ComputerLink" section, Mar. 26, 1996, p. 14; and materials provided by San Diego Data Processing Corp.
- <sup>19</sup> Bill Knight, San Diego Police Department, quoted in Woodmancy, "Spreading the Word."
- <sup>20</sup> Viveca Novak and Joe Davidson, "Clinton Unveils Measures To Fight U.S. Terrorism," *Wall Street Journal*, Apr. 24, 1995, pp. A3, A4. Andrea Gerlin, "New High-Tech Tools Help Solve Old Murders," *Wall Street Journal*, June 19, 1995, pp. B1, B5. Bill Richards, "Cops Nab Perps With Digitized Drawings and Databases," *Wall Street Journal*, Jan. 28, 1998, pp. B1, B2. Peter Loftus, "Police Test Wireless Fingerprint Device, As Terror Attacks May Increase Demand," *Wall Street Journal*, Nov. 26, 2001, p. B7D.
- <sup>21</sup> "Radiologists report CT scans can reduce appendectomies," *San Diego Union-Tribune*, Dec. 4, 1996, p. A9. Carol Gentry, "Seeing the Body Electric, in 3-D," *Wall Street Journal*, Jan. 24, 2000, p. B1, B4.
- <sup>22</sup> Joshua Cooper Ramo, "Doe in a Box," *Time*, Fall 1996, pp. 55–57. Joseph R. Garber, "Heart Software,"

- Forbes*, Dec. 20, 1993, p. 248. "FDA Clears Machines Aiding Heart Patients Needing Transplants," *Wall Street Journal*, Sept. 30, 1998, p. B6.
- <sup>23</sup> Antonio Regalado, "Heart Hackers," *Technology Review*, Sept./Oct. 1998, p. 28–29.
- <sup>24</sup> Stephen Sobek, "Robot pharmacist: 30 million prescriptions, zero headaches," *The San Diego Union-Tribune*, Jan. 4, 1996, p. C-3.
- <sup>25</sup> Sources include: Laura Johannes, "3-D Imaging Guides Design of AIDS Drug," *Wall Street Journal*, Apr. 15, 1999, p. B1, B2. Yunje Cho, Svetlana Gorina, Philip D. Jeffrey, and Nikola P. Pavletich, "Crystal Structure of a p53 Tumor Suppressor-DNA Complex," *Science*, July 15, 1994, 265:5170, pp. 346–355. Siegfried H. Reich and Stephen E. Webber, "Structure-based drug design," *Perspectives in Drug Discovery and Design*, v. 1, 1993, pp. 371–390. "Rational Drug Design," chapter in *Proceedings of the 2nd Annual Paine Webber Biotechnology Conference*, San Diego, CA, Oct. 1989, pp. 305–332. *Agouron Pharmaceuticals Inc. Annual Report 1989*. Michael Waldholz, "Scientists Unveil a 3-D Portrait of Cancer Gene," *Wall Street Journal*, July 15, 1994, p. B1. Richard Turner, "Agouron Pharmaceuticals Shares Soar after Discovery Linked to Common Cold," *Wall Street Journal*, March 14, 1994. Telephone interview with Dr. Steve Worland, Agouron, July 22, 1994. Penni Crabtree, "The Protein Puzzle," *San Diego Union-Tribune*, Apr. 3, 2001, p. C1. Robert Langreth, "Chiron Designs New Meningitis Vaccine That Employs Gene-Mapping Procedure," *Wall Street Journal*, Mar. 10, 2000, p. A3, A4.
- <sup>26</sup> The quotation is from *Proceedings of the 2nd Annual Paine Webber Biotechnology Conference*, p. 311.
- <sup>27</sup> Laura Landro, "Ready Access to Patient Records," *Wall Street Journal*, Nov. 13, 2000, p. R23. "Newstrack: Rx for Health Care," *Communications of the ACM*, Apr. 1993, pp. 13–14.
- <sup>28</sup> Robert Fox, "News Track," *Communications of the ACM*, Jan. 1995, 38:1, pp. 9–10. "A Neural Net to Snag Breast Cancer," *Business Week*, Mar. 13, 1995, p. 95. Rochelle Sharpe, "Computer System To Detect Cancer Gets FDA Approval," *Wall Street Journal*, June 20, 1998, p. B7. Robert Langreth, "Ultrasound That Trims Need for Biopsy in Breast Cancer Clears FDA Hurdle," *Wall Street Journal*, Dec. 12, 1995, p. B10. "Computer cuts risk, time in detecting cancer," *Cancer Researcher Weekly*, May 9, 1994, p. 5. Robert Fox, "News Track," *Communications of the ACM*, Aug. 2000, 43:8, pp. 9–10.
- <sup>29</sup> "Prototype: Stroke Sensor," *Technology Review*, July/Aug. 2001, p. 21.
- <sup>30</sup> Victoria L. Contie, "Long-Distance Microscopy," *NCR Reporter*, May/June, 1993, 17: 3, p. 3. Telephone interview with Dr. Mark Ellisman, July 18, 1994. Akio Takaoka, Kiyokazu Yoshida, Hirotaro Mori, Soichiro Hayashi, Stephen Young, and Mark H. Ellisman, "International Telemicroscopy with a 3MV ultra-high voltage electron microscope," *Ultramicroscopy*, v. 83, 2000, pp. 93–101.
- <sup>31</sup> John Hockenberry, "The Human Brain," *Wired*, Aug. 2001, pp. 94–105.
- <sup>32</sup> "Computer Software Makes Playing Music Easier for the Blind," *Wall Street Journal*, Dec. 20, 1999, p. B13C.
- <sup>33</sup> David Lunney, "Adapted Computers as Laboratory Aids for People With Disabilities," 1992. See also David Lunney, "Assistive Technology in the Science Laboratory: a Talking Laboratory Work Station for Visually Impaired Science Students," *Information Technology and Disabilities*, 2:1, Jan. 1995.
- <sup>34</sup> Simson L. Garfinkel, "Enter the Dragon," *Technology Review*, Sept./Oct. 1998, pp. 58–64.
- <sup>35</sup> Disabled Opportunities Center, San Diego, CA. "A Butler in the House," *Electronic House*, March/April 1990. Telephone interview with Christopher Brown, Automated Voice Systems, Inc., Yorba Linda, CA, July 27, 1994.
- <sup>36</sup> "New Technology for Artificial Arms," *Exceptional Parent*, Nov./Dec. 1993, pp. 24–26. Telephone interview with Ed Gosschalk, Southern California Orthotics and Prosthetics, Aug. 15, 1994. Robert Fox, "News Track," *Communications of the ACM*, Dec. 1995, pp. 9–10. Evan Ratliff, "Born to Run," *Wired*, July 2001, pp. 86–97. Various brain interface devices are described in John Hockenberry, "The Human Brain."
- <sup>37</sup> The quote from Lunney is in David Lunney, "Adapted Computers as Laboratory Aids for People With Disabilities," 1992. The quote from Fruchterman is from an e-mail message to me. The navigation product for the blind is described in Peter Tyson, "High-Tech Help for the Blind," *Technology Review*, April 1995, pp. 19–21.
- <sup>38</sup> "High-rise Storage System Combines with Conventional Selection Warehouse for Efficient, Productive Operation," *Grocery Distribution*, 1990. Phone interview with Rick Toneck, Operations Manager, July 12, 1994.
- <sup>39</sup> Tim Blomenberg, "Breaking New Ground in Machine Vision," *Sensors*, Aug. 1994, 11:8, pp. 28–30.
- <sup>40</sup> Gary Fields, "'Smart card' plan would help ID armed officers at airports," *USA TODAY*, June 14, 2000, p. 4.
- <sup>41</sup> Robert Fox, "News Track: The Chicken and the Chip," *Communications of the ACM*, Aug. 2000, 43:8, pp. 9–10.
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<sup>44</sup> William M. Bulkeley, "Information Age," *Wall Street Journal*, Aug. 5, 1993, p. B1. "Newstrack" ("Claims to Fame"), *Communications of the ACM*, Feb. 1993, p. 14.

<sup>45</sup> Betty Friedan, *The Feminine Mystique*, W. W. Norton, 1963, p. 312.

<sup>46</sup> My thanks to an anonymous reviewer for the idea for this exercise.

## BOOKS AND ARTICLES

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- Richard A. Spinello and Herman T. Tavani, eds., *Readings in CyberEthics*, Jones and Bartlett, 2001.
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