

programmed. He mentioned the zombielike commutes, the retreat to the same chair, the hand reaching for the TV remote, and the near-identical routines, from toothbrushing to feeding the animals. “It’s more interesting,” he said, “when humans delve inside themselves and say, ‘Why am I doing this? And why is it relevant and important to be human?’” His machine would

nudge people toward that line of inquiry. Even with an avatar for a face and a robotic voice, the *Jeopardy* machine would invite comparisons to the other two contestants on the stage. This was inevitable. And whether it won or lost on a winter evening in 2011, the computer might lead millions of spectators to reflect on the nature, and probe the potential, of their own humanity.

## 2.3 NANOTECHNOLOGY

### 2.3.1 NEUROSCIENCE, NANOTECHNOLOGY, AND ETHICS: PROMISE & PERIL

RAY KURZWEIL

Inventor, entrepreneur, author, and futurist, Ray Kurzweil is one of the leading thinkers about contemporary and future technology and its impact on society. In this reading, he argues that the pace of technological change is exponential rather than linear, as many people implicitly believe, and that the twenty-first century will witness a major technological revolution springing from the convergence of the sciences of genetics, nanotechnology, and robotics (GNR) and artificial intelligence. However, like all new technologies, GNR is a “double-edged sword” that holds great promise and great peril for human civilization. One worry, is that self-replicating nanobots will escape into the environment and cause severe and irreparable damage to the natural world. Although he takes such threats seriously, Kurzweil believes that the development and introduction of GNR is inevitable and that broad relinquishment of these technologies is not feasible, but that it is possible to develop ethical guidelines for “fine-grained” relinquishment of certain kinds of particularly dangerous GNR applications. While continuing to be optimistic about the promise of these technologies, he believes that it is possible for society to control them so as to enjoy their benefits while avoiding the dangers they pose.

#### FOCUS QUESTIONS

1. What are the three features of technological evolution that lead Kurzweil to conclude that the rate of technological change is exponential rather than linear?
2. Kurzweil suggests that the introduction of some kinds of nanotechnology devices is inevitable. What reasons does he adduce that support this conclusion?

Source: From the *Encyclopedia of Science, Technology, and Ethics*, Vol. a–c, 2006, Macmillan Reference, pp. xli–xlvii, Gale, a part of Cengage Learning.