INTRODUCTION: TECHNOLOGY AND ETHICS

Technology shapes every aspect of human experience. It is the primary driver of social and ecological change. It is a source of power, vulnerability, and inequality. It influences our perspectives and mediates our relationships. Given this, it is surprising that we spend so little time studying, analyzing, and evaluating new technologies. Occasionally, an issue grabs public attention – for example, the use of human embryonic stem cells in medical research or privacy in social networking. However, these are the exceptions. For the most part, we seem to suffer from technological somnambulism (to borrow a term from Langdon Winner [Ch. 4]) – we incorporate new technologies into our lives with little critical reflection on what the impacts will be.

The goal of this textbook is to help students develop linguistic, conceptual, critical, and perspectival resources for thinking carefully about the ethics of new technologies. Toward that end, this Introduction provides an overview on ethics and emerging technologies and suggests an approach to analyzing the ethical dimensions of emerging technologies. Section 1 discusses the significance of technology in human life and culture. Section 2 highlights several prominent themes in the ethics of emerging technologies and proposes a framework for ethical analysis and evaluation based on the themes. Section 3 is a primer on some common ethical theory and value concepts employed in the ethics and technology discourse.

1. TECHNOLOGY IN HUMAN LIFE

When analyzing and evaluating the ethical dimensions of emerging technologies, it is crucial to keep in view the robust interactions between technology and society, as well as the essential role that technology plays in our way of life. The aim of this section is to begin to elucidate these fundamental features of the human–technology relationship.

1.1 Technology and society: beyond technology as a tool

Technology is often conceived of as a tool, something that is developed and used by people to accomplish their goals. It is also often thought to be value neutral – the idea is that the goodness or badness of a technology depends entirely upon the goals or ends for which it is used. There is some truth to this technology as tool view, since technology certainly helps people to accomplish things they would
not otherwise be capable of doing. In fact, engineering is often described as the creative application of scientific principles to design processes and structures in order to solve problems and overcome barriers. Drugs are engineered to address diseases; crops are engineered to increase food productivity; networking software is engineered to facilitate communication; solar panels are engineered to produce energy; manufacturing processes are engineered to produce reliable products at high volumes and low costs. Moreover, many technologies can be used for both good and bad ends. Synthetic genomics can be used to develop pharmaceuticals or for bioterrorism; GPS technologies can be used to improve supply chain efficiency or to track people without cause and without their knowledge; autonomous military robotics can be used for self-defense or for unjust attacks.

However, the technology as tool view is only part of the story about the complex relationships between technology, society, and ethics. The reason for this is that technologies, in addition to being means to ends, are also complex social phenomena.

Some technologies are encouraged by society through social demand or public funding. This is often the case with medical technologies, for example. Other technologies are opposed or rejected by society (or at least by some members of society). For example, genetically modified crops have been resisted in parts of Europe and Africa, and many countries have passed laws banning human reproductive cloning. Technologies are always implemented in and disseminated through society. Sometimes they help us to solve social problems. For example, vaccines, medical databases and analytical tools help us to respond to disease epidemics and generally improve public health. Sometimes technologies create social problems. For example, many mining technologies have caused tremendous environmental pollution and degradation. In no cases are technologies separate from social context. They are all, always, socially situated. Every instance of technology creation and use is historical. It occurs in a particular place, time, and circumstance (Pacey, Ch. 2). As a result, technologies are in constant interaction with social systems and structures. They are not merely tools to be used by us. Technology shapes us and our social and ecological world as much as we shape technology.

Technology shapes the spaces we inhabit. In our homes, businesses, and public buildings almost every aspect of the physical space is structured by technology. This has social implications. It influences who we see and interact with, as well as the conditions under which those interactions occur. Technology also shapes broader spaces – for example, many cities and towns are organized in ways that accommodate themselves to car travel. Entire geographical areas – e.g. the Midwestern United States – have been transformed by technology. Where there were once vast prairies and woodlands, there are now vast farmlands. This impacts who lives there, what they do, how they relate to each other, and what they value. Social interactions and perspectives are structured by the types of places we inhabit, and the places we inhabit are shaped by technology.

Technology also shapes our conceptions of sociability – i.e. how we conceive of social life and what constitutes social relationships. Perhaps the clearest example of this is the impact of information technologies on social interactions. Cell phones, web chatting, social networking, massively multiplayer online gaming, and virtual realities have opened up new forms of social interaction and new types of social