Five Moral Dimensions of the Information Age

The major ethical, social, and political issues that information systems raise include the following moral dimensions.

- *Information rights and obligations* What **information rights** do individuals and organizations possess with respect to themselves? What can they protect?
- *Property rights and obligations* How will traditional intellectual property rights be protected in a digital society in which tracing and accounting for ownership are difficult, and ignoring such property rights is so easy?
- *Accountability and control* Who can and will be held accountable and liable for the harm done to individual and collective information and property rights?
- *System quality* What standards of data and system quality should we demand to protect individual rights and the safety of society?
- *Quality of life* What values should be preserved in an information- and knowledge-based society? Which institutions should we protect from violation? Which cultural values and practices does the new information technology support?

We explore these moral dimensions in detail in Sections 4-3 and 4-4.

Key Technology Trends that Raise Ethical Issues

Ethical issues long preceded information technology. Nevertheless, information technology has heightened ethical concerns, taxed existing social arrangements, and made some laws obsolete or severely crippled. Five key technological trends are responsible for these ethical stresses, summarized in Table 4.2.

The doubling of computing power every 18 months has made it possible for most organizations to use information systems for their core production processes. As a result, our dependence on systems and our vulnerability to system errors and poor data quality have increased. Social rules and laws have not yet adjusted to this dependence. Standards for ensuring the accuracy and reliability of information systems (see Chapter 8) are not universally accepted or enforced.

Advances in data storage techniques and rapidly declining storage costs have been responsible for the proliferation of databases on individuals—employees, customers, and potential customers—maintained by private and public organizations. These advances in data storage have made the routine

TABLE 4.2   **TECHNOLOGY TRENDS THAT RAISE ETHICAL ISSUES**

TREND	IMPACT
Computing power doubles every 18 months	More organizations depend on computer systems for critical operations and become more vulnerable to system failures.
Data storage costs rapidly decline	Organizations can easily maintain detailed databases on individuals. There are no limits on the data collected about you.
Data analysis advances	Companies can analyze vast quantities of data gathered on individuals to develop detailed profiles of individual behavior. Large-scale population surveillance is enabled.
Networking advances	The cost of moving data and making data accessible from anywhere falls exponentially. Access to data becomes more difficult to control.
Mobile device growth impact	Individual cell phones may be tracked without user consent or knowledge. The always-on device becomes a tether.

Credit card purchases can make personal information available to market researchers, telemarketers, and direct mail companies. Advances in information technology facilitate the invasion of privacy.

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violation of individual privacy both inexpensive and effective. Enormous data storage systems for terabytes and petabytes of data are now available on-site or as online services for firms of all sizes to use in identifying customers.

Advances in data analysis techniques for large pools of data are another technological trend that heightens ethical concerns because companies and government agencies can find out highly detailed personal information about individuals. With contemporary data management tools (see Chapter 6), companies can assemble and combine myriad pieces of information about you stored on computers much more easily than in the past.

Think of all the ways you generate digital information about yourself—credit card purchases; telephone calls; magazine subscriptions; video rentals; mail-order purchases; banking records; local, state, and federal government records (including court and police records); and visits to websites. Put together and mined properly, this information could reveal not only your credit information but also your driving habits, your tastes, your associations, what you read and watch, and your political interests.

Companies purchase relevant personal information from these sources to help them more finely target their marketing campaigns. Chapters 6 and 12 describe how companies can analyze large pools of data from multiple sources to identify buying patterns of customers rapidly and make individualized recommendations. The use of computers to combine data from multiple sources and create digital dossiers of detailed information on individuals is called **profiling**.

For example, several thousand of the most popular websites allow Google Marketing Platform (formerlyDoubleClick), an Internet advertising broker, to track the activities of their visitors in exchange for revenue from advertisements based on visitor information Google Marketing Platform gathers. Google Marketing Platform uses this information to create a profile of each online visitor, adding more detail to the profile as the visitor accesses an associated Google Marketing Platform site. Over time, Google Marketing Platform can create a detailed dossier of a person's spending and computing habits on the web that is sold to companies to help them target their web ads more precisely. Advertisers can combine online consumer information with offline information, such as credit card purchases at stores.

LexisNexis Risk Solutions (formerly ChoicePoint) gathers data from police, criminal, and motor vehicle records, credit and employment histories, current and previous addresses, professional licenses, and insurance claims to assemble and maintain dossiers on almost every adult in the United States. The company sells this personal information to businesses and government agencies. Demand for personal data is so enormous that data broker businesses, such as Risk Solutions, Acxiom, Nielsen, Experian, Equifax, and CoreLogic, are flourishing. The two largest credit card networks, Visa Inc. and Mastercard Inc., have agreed to link credit card purchase information with consumer social network and other information to create customer profiles that could be sold to advertising firms.

A data analysis technology called **nonobvious relationship awareness (NORA)** has given both the government and the private sector even more powerful profiling capabilities. NORA can take information about people from many disparate sources, such as employment applications, telephone records, customer listings, and wanted lists, and correlate relationships to find obscure connections that might help identify criminals or terrorists (see Figure 4.2).

NORA technology scans data and extracts information as the data are being generated so that it could, for example, instantly discover a man at an airline ticket counter who shares a phone number with a known terrorist before that person boards an airplane. The technology is considered a valuable tool for homeland security but does have privacy implications because it can provide such a detailed picture of the activities and associations of a single individual.

FIGURE 4.2   NONOBVIOUS RELATIONSHIP AWARENESS (NORA)

NORA technology can take information about people from disparate sources and find obscure, nonobvious relationships. It might discover, for example, that an applicant for a job at a casino shares a telephone number with a known criminal and issue an alert to the hiring manager.