

2. Social, ethical, and economic background

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CSCI 135 Information Technology and Society

Topic 2: Social, ethical, and economic background

1. Scope of our inquiry
2. Foundations of ethics
3. Informationalism
4. Globalization

Request for written participation

- For *each* course topic, please write on a note card:
 - *Main point* or idea that *you* get from reading and presentation
 - *Unclear concepts*: consider looking through “concepts” slide at end
 - *Questions not answered*: you may refer to specific slides or study questions

2. Social, ethical, and economic background

Inquiry

- Does today's IT embody values from the social environment? Or is it *value free* (value neutral)?
- How are *social values* shaped by how IT operates and is used?
- Does information technology, acting on itself, *accelerate the rate of change* by enabling application of knowledge to knowledge?
- Does IT enable a *global economy*?
- Does *connectedness of all people* via information technology raise social issues and enable changes in society?

Objectives

- 2a. Explain what social factors have driven the information revolution
- 2b. Explain the impact of computing and information technology on society
- 2c. Discuss IT issues in the context of theories of ethics
- 9f. Document sources used

Readings: S. Baase, Ch. 1; M. Castells, pp. 13-23;
T. Friedman, The World is Flat;
D. Keil, IT and the economic crisis

1. Scope of our inquiry

- Related disciplines:
 - Sociology
 - Computer science
 - Ethics
 - Law
 - Government
 - Economics
 - History
- Ethical challenges raised by IT
- Is IT value neutral?

Related disciplines

Sociology

- *Definition*: “the scientific study of human social relations or group life.... Sociologists examine the ways in which social structures and institutions – such as class, family, community and power – and social problems – such as crime and abuse – influence society” (*Encarta*, 2005)
- *Social interaction*: “the response of individuals to each other”

Computer science

- *Definition*: theoretical and empirical study of computers and transformations of data
- First national CS curriculum: 1968
- *Information technology*, within CS, studies tools of information and data management
- Computer science overlaps with a part of mathematics called *discrete*

Ethics

- Branch of philosophy
- *Philosophy*: critical examination of foundations for beliefs and action
- Concerned with *value and standards* for right and wrong human actions
- Varieties, w.r.t. actions:
 - Consequentialism (evaluates actions by results)
 - Deontological ethics (intrinsic moral qualities of actions)

2. Social, ethical, and economic background

Law

- Study and profession
- *Concerns*: binding practices and rules of conduct in a community
- *Varieties*:
 - Criminal
 - Civil
 - Constitutional
 - Procedural

Government

- The study of government, states, and related decision making
- A social science, a.k.a. political science
- *Origins of the field*: Plato, Aristotle, Saint-Simon, Comte
- Contributors to U.S. ideas: J. Locke, T. Hobbes, T. Jefferson

Economics

- A social science
- Concerned with choices about *scarce resources*
- *Microeconomics* studies individual decision making
- *Macroeconomics* studies global phenomena such as growth, inflation, unemployment

History

- The study of the past
- *Our perspective*: we are studying, in part, changes in society under the influence of technological change.
- *Questions*:
 - How has IT changed society in the past 40 years?
 - How did previous technological revolutions change society?

The Internet has created new ethical challenges

- *Globalization*, enabled by IT, has changed economic relationships
- *Communication* is instant, cheaper, is worldwide in scope
- *Environment* is interactive
- The Internet enables *anonymous* communication
- New ways exist to reproduce information

Example of impact of technical change: Intellectual property

Changes:

- Enhancement of storage media
- Regularity of storage standards
- Speed of digital transmission
- Interoperability of media

Key technical facts: the nature of intellectual objects differs from that of physical ones, and digital media can store *any* intellectual object

The malleability of information

- Computer technology has enabled *malleability of information*; the ability of all to reshape it
- This creates new possibilities for human activity
- The information revolution is not only technological but social and ethical
- *Thesis*: “Many new activities made possible by the new technology are so different from the previous ways of doing things that we need a new set of rules of the game’.” (Baase, p. 26)

Is IT value neutral?

- If IT were seen as *value neutral*, it would be considered just an instrument of values, such as order, freedom, or the quest for knowledge
- Some people view IT is enabling *human freedom* by giving more people access to each other and to expressing themselves
- Others view IT as enabling *corporate or governmental power* by placing communication resources at their disposal

2. Foundations of ethics

Underpinnings of ideas about rights and freedoms

- Life (Locke)
- Property (Locke)
- Autonomy (Kant)
- Rationality (Kant)

Ethics (J. D'Andrea)

- Addresses principles that guide decision making
- “How should I behave?”
- Principles (independent of each other, and not all espoused by all ethicists):
 - *Nonmaleficence*: not only intend no harm, but do no harm unintentionally
 - *Beneficence*: obligation to help others
 - *Justice*: treat people fairly, treat like alike in compensation or distribution
 - *Autonomy*: respect decisions of rational beings

Theories of ethics

- *Utilitarianism* (J. Bentham, 18th cent.): Act in most useful way to give maximum benefit to greatest number of people; aka consequentialism
- *Deontological ethics* (E. Kant, 18th cent.): Duty-driven, regardless of circumstances and consequences; categorical imperative
 - Humanity of persons as an end not only as a means
 - Act as if maxim of an action were to become a universal law
- *Liberal individualism* (J. Locke): Each individual has rights to life, health, freedom, property

Ethics

- *Assumption*: people make free rational decisions
- Ethical theories are *deontological* or *consequential*
- *Immanuel Kant* (absolute deontological): follow rules that can universally apply to everyone; “Do unto others” expresses similar idea; humans as ends not only as means
- *John Stuart Mill*: utilitarian, consequentialist
- *John Locke*: Natural-rights theory

Morality (B. Gert)

Definition:

- “an informal public system
- “applying to all rational persons
- “governing behavior that affects others, and
- “includes what are commonly known as the moral rules, ideals and virtues and
- “has the lessening of evil or harm as its goal.”

Rights, goals, laws

- *Negative rights* (liberties) imply that no one may prevent a person from acting
- *Claim rights* (positive rights) imply an obligation by others to provide something
- *Goals* (e.g., profit maximization) may be ethical, but ethical constraints may also apply to *actions* pursuing these goals
- *Laws* may enforce ethical principles (e.g., against stealing) or may establish *conventions* (e.g., driving on the right)

Examples of liberties and claim rights

- *Liberties*: freedom of speech, from unreasonable search, from arbitrary confiscation of property, to copy public-domain texts or for fair use
- *Claim rights*: access to clean air, water, education, paved streets, firefighting, equal protection of law

Kinds of policy choice

- *Personal*: choices depend on values and on situation
- *Organizational or business*: choices depend on consumer demand, market behavior, ethics, laws
- *Law*: decisions impose constraints on people who didn't make them
- *A moral framework for legal discourse (Baase)*
 - Based on notion of human rights
 - Freedom and autonomy of the individual must be recognized
 - Individuals have responsibility toward society

Example: Internet service providers

- ISPs and web hosts have different roles
 - Common carrier
 - Distributor
 - Editor/creator/publisher
- These roles carry different obligations
- A new look at the roles of the ISP is needed for the legal system

Possible policies for a web browser

Allow a site

1. to install executable programs on user's hard disk and run them
2. to delete information on user's HD without user's knowledge
3. to leave a file on user's disk without informing user
4. to leave a file on user's disk and inform user
5. to give user the information and ability to accept or decline cookies

Example: Copying software for friends

Is it morally justifiable to copy copyrighted software for one's friend?

- Is the law just or unjust?
- Do ethics let us make exceptions for our friends and ourselves?
- Is this case different from stealing CDs?
- What about software makes it different?

Note: Morality is public and requires impartiality (B. Gert)

3. Informationalism

- *A mode of development* that has replaced industrialism, according to M. Castells
- Technology *enables* social actors; social actors *use* technology to pursue their interests
- *State* can be a leading force in technology, or can cause stagnation if it defaults
- Current technological revolution took place in, and to enable, a *restructuring of capitalism*
- *Globalization* (creation of a single world market that operates in real time) was a result

Theoretical foundations

- Studying a subject involves *concepts* and *assumptions* summarized as *models* or *theory*
- Manuel Castells' framework: "societies are organized around human processes structured by historically determined relationships of *production, experience, and power*"
- *Network society*: A new social structure associated with emergence of the *informationalist* mode of development

A theoretical framework (M. Castells)

- *Production*: Action by humans on nature for consumption and accumulation
- *Experience*: Action by humans on selves, interacting with nature and other humans
- *Power*: Forcible imposition of will by human on others, based on production and experience
- Production is associated with class relationships; experience is associated with gender; power is associated with the state

Advanced capitalism and informationalism

- Capitalism and statism are *modes of production*
- Industrialism and informationalism are *modes of development*
- Capitalism went into crisis period in 1970s with stagnating productivity
- Informationalism is linked to the rejuvenation of capitalism, its deregulation, the dismantling of the welfare state, and the disruption of the capital-labor social contract

Modes of development

- *Modes of development* are technological arrangements used in production
 - Agrarian
 - Industrial
 - Informational
- Specific to *informationalism*: action of knowledge on knowledge
- Specific to *industrialism*: use of energy, action of machines on machines

Modes of production

- *Slavery* is ownership of humans by humans
- *Feudalism* binds producers to land and lord
- *Capitalism*
 - separates producers and means of production and places *means of production* under private ownership
 - enables appropriation of surplus by owners
- *Statism* places control in hands of the state; Soviet *statism* failed to use principles of informationalism

Industrialism and informationalism

- Capitalism is driven by *profit* maximization, statism by *power* maximization
- *Informational* mode of development is distinguished by action of knowledge on knowledge as primary source of productivity
- *Industrialism* aims at economic growth, *informationalism* at technical development
- From informationalism we can expect new forms of social interaction, change, and control

Social context and dynamics

- Oil shock of 1973-74 coincided with inventions of 70s to cause, and enable, a *restructuring of capitalism* with a new model of accumulation
- *Synergy* between software and hardware, computers and communication, contributed
- Technological revolution was technologically induced, not socially, but was shaped by social forces (Castells)

Actors and locations in the IT revolution

- Milieus and clusters of innovation played a crucial role
- State, as well as innovative entrepreneurs, played role
- State was initiator, entrepreneur was shaper of decentralized structures

A restructuring of capitalism

- Keynesianism (strong government intervention in the economy to stabilize it through crises) met its limitations in 1970s, with rampant inflation
- Restructuring included deregulation, privatization, dismantling of the capital-labor social contract
- Goals of reforms:
 - deepen logic of profitability in social relations
 - enhance productivity
 - globalize production and markets
 - marshall state support

Informationalism and capitalism

- “Informationalism is linked to the expansion and rejuvenation of capitalism” as industrialism was linked to setting it up
- The world has become digital (Negroponte)
- Informationalism is pervasive; as important as the Industrial Revolution
- Technologies aren't just *tools to use*, but *processes to develop*

What generated informationalism

- The informational economy has the same profit-driven logic as the industrial economy
- The capitalist industrial economy became informational-global to avoid collapse as success of Keynesian economic policy lagged
- *One factor*: a profit squeeze, 1970s
- *Alternative case*: collapse of USSR due in part to failure to shift to new paradigm

Knowledge and information

- *Knowledge*: organized statements presenting judgment or experience.
Contrast: news, entertainment (Bell)
- *Information*: “data that have been organized then communicated” (Porat)
- What is crucial today is not the central role of knowledge and information, but the feedback effect, applying knowledge to the process of knowledge generation

Self in the informational society

- The main *organizing principle* in informational societies is *identity*
- *Identity*: “the process by which a social actor recognizes itself and constructs meaning primarily on the basis of a given cultural attribute or set of attributes, to the exclusion of a broader reference to other social structures” (M. Castells)
- For many people, the self is lost and isolated

Industrial revolutions and informational revolution

- The ascendancy of the West (European-based societies) is associated with technological advances made there
- Two industrial revolutions occurred:
 - (1) machines;
 - (2) use of science, electricity, chemicals, communication
- The IT revolution is occurring now

4. Globalization

- *Key new element:* In a self-feeding spiral, progress in management, knowledge, and technology is applied to management, knowledge, and technology
- This feedback loop as a social phenomenon is enabled by IT
- It enables globalization
- Similarly, a key element in individual human learning is *self-reflection*

'The world is flat'

- Thomas Friedman argued that globalization “flattens” the world economy
- Technologies have changed the rules of the game
- Innovation and ability to adapt quickly are conditions of business success
- Key elements in flattening are information technologies that enable new kinds of collaboration even at distances

Eras of globalization

- 1492-1800: countries globalized
- 1820-2000: companies globalized
- 2000- : individuals and small groups became globalized dynamic agents
- In the current era
 - The “flatteners” (technical enablers) converge
 - Horizontal connections replace vertical control, changing all habits
 - 3 billion people from the East have joined the flattening process

Technical enablers of globalization

- Fall of Berlin Wall, 1989, led to one world economy
- *Windows* was introduced as graphics standard
- *Communication standards* enabled interoperability, e.g., Netscape Internet browser, 1995
- Standards to support *workflow* appeared
- *Outsourcing* (companies purchasing components rather than producing them)

Technical enablers of globalization

- *Offshoring*: companies moving production to other countries
- *Open source software* (Linux, Firefox, Apache)
- *Supply chaining*: sending orders to factory at time of a sale
- *Insourcing*: outsourcing internal logistics
- *Search engines* linked users with sites worldwide
- *Speedup technologies*: voice-over Internet and wireless

Selective globalization

- Global R & D: 1993, 10 countries did 84% of research and development
- R&D is skewed toward the concerns of these countries
- Telephones: late 90s, 20% of global population in high-income countries had
 - 74% of phone lines
 - 93% of Internet users
- Most non-public R&D is by multinational corporations

Hierarchy in the global economy

- 30 Organization for Economic Cooperation and Development (OECD) countries and four Asian tigers (Hong Kong, Singapore, South Korea, Taiwan) did 73% of all manufacturing in 1988
- G-7 countries had 90% of high-technology manufacturing, 80% of all computing power
- Wealth, resources, and dynamism are concentrated in a few countries “a fundamental asymmetry between countries” in integration, competitive capacity, and benefits from growth
- *Result:* Segmentation of the world population, exclusionary and unstable at boundaries

Productivity, competitiveness and the informational economy

- Productivity means output yield per unit of input
- Productivity drives economic progress
- Around 1970s a *downward* trend in productivity growth occurred, creating a crisis
- The most productive IT users synergistically combined customer-focused business strategy with decentralized organizational structure

The new economy

- Internet industry grew 68%/year, 1998-1999, to \$500B
- Internet and IT became the core of the U.S. economy
- Electronic stock trading
 - twice as efficient, raises amount of value traded
 - but increases volatility exponentially
- *Value* of a business is the *expectation* of its *future* value
- This defines a new kind of capitalism unlike laissez-faire or Keynesian capitalism

Accumulation of economic power

- Capitalist ideal is *free* market, i.e., lacking central control
- Deregulation has fostered a merger process and a process of power accumulation by financial managers
- IT has further enabled these processes
- Business processes have been reengineered with the support of IT
- Competition has been intensified by Internet use
- Why has an economic crash come now?

Mass customization

- IT enables a combination of the quality of high-end custom design with the efficiency of mass production
- The *customer-centric enterprise*, resulting from global economy, drove the trend of mass customization
- Cases:
 - Dell
 - Automobiles
 - Telcom

Informationalism and productivity

- *Informationalism*: a mode of development in which action of knowledge on knowledge is the primary source of productivity
- 1980-2000, a main strategy was to broaden markets and fight for market share
- World trade accelerated, enabled by
 - IT support for capital mobility and communication
 - Globalization of the market and IT

A globalized economy

- *Definition:* “an economy with the capability to work as a unit in real time ... on a planetary scale”
- Not the same as world economy, which has existed since 16th century
- Core of most national economies is global
- *Examples of global aspects:* financial markets, international trade, transnational production

Political economy of globalization

- Global economy was result of
 - markets
 - governments
 - international financial institutions
- Three policies (Reagan-Thatcher-neoliberals)
 - deregulation of domestic economies
 - liberalization of international trade
 - privatization of state-owned firms

Globalization policy

- *Goal:* Unify all economies under the rules of the market
- IMF enforced rules of globalization, operating in more than 80 countries
- Those countries that declined were ostracized via loss of emergency IMF credit
- “The triumph of markets over governments,” an outcome *intended* by those governments
- There is no easy or political way back out of globalization

U.S. role in the new economy

- *Technical:* California was birthplace of many IT developments
- *Economic:* size of U.S. economy, dominance
- *Cultural:* entrepreneurialism, individualism, flexibility, multi-ethnicity
- *Institutional:* deregulation and liberalization

The global labor market

- The market for exceptionally-high-demand labor is globalized
- The market for unskilled labor is not
- There also exists a global networking of labor, interlinked by family and business connections
- Developed societies are increasingly multi-ethnic

Concepts

capitalism	Keynesianism	policy choice
claim rights	knowledge	positive right
consequentialism	liberal individualism	power
cyberethics	liberty	production
decentralization	malleability of	rights
deontological ethics	information	social network
ethics	mode of development	sociology
experience	mode of production	statism
freedoms	model	synergy
identity	morality	technologies of life
Industrial Revolution	natural-rights theory	technology
industrialism	negative right	utilitarianism
informationalism	network society	

Questions

- What most stayed in your mind in discussing this topic?
- For you, what was the *least* clear concept that you encountered in this topic?

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