Technology, Society and Environment

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What is Technology?

▶ Origin: *techne + logos*

  ▶ *Techne:* art, skill, craft, or the way, manner, or means by which a thing is gained

  ▶ Logos: word or the utterance by which inward thought is expressed e.g., a saying, or an expression.

  ▶ Technology: Words or discourse about the way things are gained.

▶ Technology can be defined as "purposeful intervention-by-design"

  ▶ It is a human activity, known as 'technological practice', that results in technological outcomes that have impact in the world

▶

Society?

- A **society** is a group of people with common territory, interaction, and culture

  - **Territory:** Most countries have formal boundaries and territory that the world recognizes as theirs. However, a society's boundaries don't have to be geopolitical borders, such as the one between two countries. Instead, members of a society, as well as non-members, must recognize particular land as belonging to that society.
    - No Mans Land

  - **Interaction:** Members of a society must come in contact with one another. If a group of people within a country has no regular contact with another group, those groups cannot be considered part of the same society. Geographic distance and language barriers can separate societies within a country.

  - **Culture:** People of the same society share aspects of their culture, such as language or beliefs. **Culture** refers to the language, values, beliefs, behavior, and material objects that constitute a people's way of life. It is a defining element of society.

Technology: Contemporary Usage

- **Technology as a Process:**
  - Begins with a need and ends with a solution

- **Technology as an Objects:**
  - Set of means created by technological process such as, tools, machines, instruments, weapons, appliances etc.

- **Technology as Knowledge:**
  - The know-how behind technological innovation

- **Technology as Activities:**
  - What people do – their skills, methods, procedures, routines

- **Technology as a Socio-technical System:**
  - The manufacture and use of objects involving people and other objects in combination

  - Examples: internet (and its problems of security, privacy, and design), urban, regional and global transportation systems, regional and national power grids, telecommunication networks, the global financial system, environmental systems, national healthcare systems, cities and other large-scale projects with significant societal impact.

- Technology draws on science and contributes to it
  - Technology as eyes, ears of science and some muscles too…

  - Technology provide motivation and direction for theory and research

- It involves design

- It involves making

- It is multidimensional

- It is concerned with values

- Technology extends our abilities to change the world

- All technologies involve control

- All technological system can fail

- Technologies always have side effects

- It is Socially Shaped/Shaping?

ISSUES IN TECHNOLOGY

▶ Human presence

▶ Technological and social systems interact strongly

▶ The social system imposes some restrictions on openness in technology

▶ Decisions about the use of technology are complex

▶

Technology and Human Evolution

▶ Where does our capacity for developing technology come from?

- ▶ The periodization of human history

- ▶ Paleolithic' ('ancient stone,' the period of chipped stone artifacts)

- ▶ 'Mesolithic' ('middle stone')

- ▶ 'Neolithic' ('new stone,' the period of polished stone artifacts)

- ▶ 'Bronze Age' (when copper and bronze artifacts appear)

- ▶ 'Iron Age' was inspired by human tool production and tool use

It reflects that all species of humans that have ever existed probably used and modified tools

- Humans: On the top of the food chain to dominate all other life forms on planet earth
- Man the tool maker
  - Paleolithic Technology

  - *As long as there have been people, there has been technology. Indeed, the techniques of shaping tools are taken as the chief evidence of the beginning of human culture. On the whole, technology has been a powerful force in the development of civilization*

  - *In the broadest sense, technology extends our abilities to change the world: to cut, shape, or put together materials; to move things from one place to another; to reach farther with our hands, voices, and senses.*

- ▶ Are humans the only tool-using species on earth?
  - ▶ Otters using stones to crack crab shells, birds that use stones to crack snail shells, and chimpanzees that use twigs to catch termites, ants, or honey from a honey comb

- ▶ Artifacts are being used to manipulate nature
- ▶ So, how special are Humans in use of technology?

▶

Technological object vs social object

Sherry Turkle: Alone together

Technology and Society

"We have embraced technologies because of the wonders we have accomplished with them and the promise that they will continue to unlock new possibilities. Technologies have helped us to eradicate diseases, communicate with friends around the world, and even eliminate bad breath. New technologies are often equated with progress itself in large part because they can help us to do things that were not previously possible and solve problems that have plagued humanity for centuries."

▶ Does technology has some negative social and
▶ environmental side effects?

Connected, Yet Disconnected (Dr. Hirnmay Ghosh, IEE Senior Member)

Dear Editor:

The sociological impact of modern technology is indeed a concern. I happened to witness a small event – but with a deep implication. I thought of sharing it with IEEE SSIT members.

"It was a Saturday evening. My spouse and I went to a nearby coffee-shop to have a dessert and some quiet time together ... There they came ... a young couple. They walked in and occupied a cozy corner. A chocolate cladpastry and a cup of coffee appeared on their table in due time. The man took a sip and the woman took a bite ... and then a cell phone rang. Was it an urgent business call? The man got engrossed ...The woman finished the pastry in silence. ... some more time ... and she pulled out her cell phone from her purse. She fiddled with the buttons and somebody was there at the other end ... She got quite frivolous as she talked on. Time ticked by. ...

The man finished his coffee with a frown on his forehead. After a while, the check was presented ... the man quickly paid and they walked out ...Cell phones were still glued to their ears ... hands were not held and glances were not stolen. We thanked our stars that we did not belong to that generation. Cell phones have the great power of "Connecting people" ... do they have the power to disconnect too?"

► Technological Singularity (Ray Kurzweil) and Cyborgs

  ► Bridging the gap

    ► Natural born cyborgs

    ► Embodying values in Technology

Positive and Negative Appraisal of Technology

► Esther Dyson, one of the early enthusiasts for the Internet, states in her book *Release 2.0* . :

► 'The Net offers us a chance to take charge of our own lives and to redefine our role as citizens of local communities and of a global society. It also hands us the responsibility to govern ourselves, to think for ourselves, to educate our children, to do business honestly, and to work with fellow citizens to design rules we want to live by.' (Dyson, 1997).

► Dyson argues that the Internet offers us the chance to build exciting communities of likeminded individuals, enables people to redefine their work as they see fit, fosters truth-telling and information disclosure, helps build trust between people, and can function for people as a second home.

►

For a negative appraisal, consider the opinion of the Council of Torah Sages, a group of leading orthodox rabbis in Israel

▶ in 2000 issued a ruling banning the Internet from Jewish homes. The Council claimed that the Internet is "1,000 times more dangerous than television" (which they banned thirty years earlier). The Council described the Internet as "the world's leading cause of temptation" and "a deadly poison which burns souls" that "incites and encourages sin and abomination of the worst kind." The Council explained that it recognized benefits in the Internet, but saw no way of balancing these with the potential cost, which they defined as exposure to "moral pollution" and possible addiction to Internet use that could quash the motivation to learn Torah, especially among children.

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Technology: Issue of Acculturation and Assimilation

► To assimilate or acculturate

► **Acculturation:** The process of becoming communicatively competent in a culture we have not been raised in.

► **Assimilation:** The process of two different things coming together to blend and, in some cases, create a new thing all together.

►

Perceived Benefits

- Access to information
- Information Dissemination
- Communication
- Developing and maintain social relationships
- Community formation and social organization
- Production and commerce
- Leissure and entertainment
- Identity formation and Psychological development
- Learning and cognitive development
- Cultural Understanding

Perceived Harms

- Information Overload
- False Information
- Harmful Information
- Harmful communications
- Harmful effect on social relationship
- Harmfull effects on community and social organisations
- Harmful effects on identity formation and psychological development.
- Harmful effects on learning and cognitive development.
- Cultural fragmentation.
- Loss of the sense of reality.
- Loss of privacy and private-public boundaries.