
A brief history of humankind

Ian Barbour's views of technology

❖ **Technology as Liberator**

- ❖ Higher living standards (*medicines, sanitation, drugs, nutrition, reduced manual labor*)
- ❖ Opportunity for choice (*mobility, birth control,...*)
- ❖ More leisure (*education, arts, entertainment, sport,...*)
- ❖ Better communications (*radio, TV, phone, email,...*)

❖ **Technology as Threat**

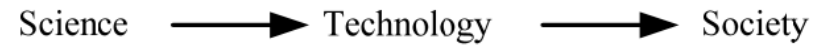
- ❖ Uniformity (*standardized products, lack of individuality*)
- ❖ Narrow criteria of efficiency (*efficiency is defined in terms of quantity where human values are overlooked*)
- ❖ Impersonality (*people feel like cogs in a well-oiled machine*)
- ❖ Uncontrollability (*technology takes on a life on its own; we lose control*)
- ❖ Alienation (*from the process of work, the product of work*)

❖ **Technology as Instrument of Power**

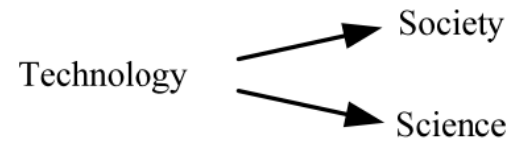
- ❖ Technology and power (*technology is neither good nor evil*)
- ❖ Redirection of technology (*political structures can redirect technology to do more good*)
- ❖ Social construction of technology (*science, society, and technology are mutually reciprocal in influence*)

Ian Barbour's views of technology

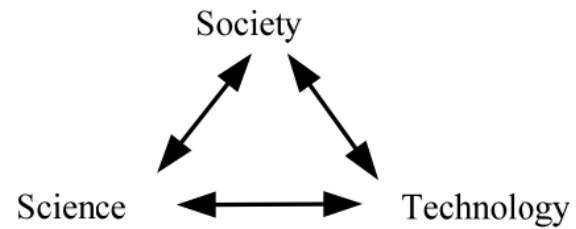
Linear Development:



Technological Determinism:



Contextual Interaction:





Technology is usually fairly neutral. It's like a hammer, which can be used to build a house or to destroy someone's home. The hammer doesn't care. It is almost always up to us to determine whether the technology is good or bad.

Noam Chomsky

What about Computer Science?

Mobile phones



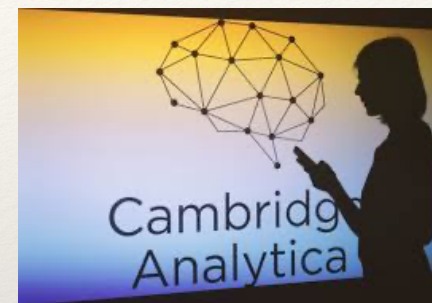
Face recognition



Autonomous drones



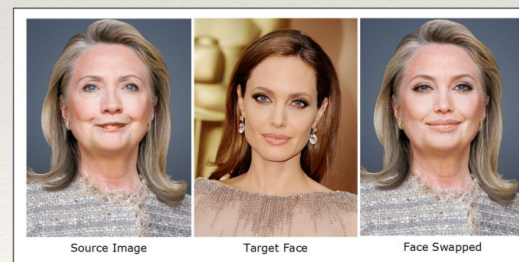
Personalized advertisements



Improving security



Creativity



What about Computer Science?

Mobile phones



The distraction economy

Face recognition



Surveillance, biases

Autonomous drones



Autonomous killing machines

Personalized advertisements



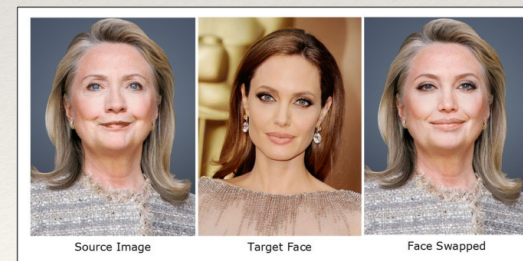
*Reducing autonomy,
threatening democracy*

Improving security



*Mass surveillance;
restricting liberty*

Creativity



*Deception;
Misinformation, damages*

Kranzberg's first law

❖ **Technology is neither good nor bad; nor is it neutral.**

A technology might not have an intention, but it has embedded assumptions and effects. Consider a few examples:

- **Social media algorithms** aren't "neutral" —they're designed to maximize engagement, which mathematically tends to amplify divisive content. The technology itself pushes society in particular directions.
- **Surveillance technology** isn't neutral—its very existence makes certain kinds of control possible that weren't before, which changes power dynamics regardless of whether it's used "for good" or "for bad.”

Kranzberg's second law

❖ **Invention is the mother of necessity**

Every technical innovation seems to require additional technical advances in order to make it fully effective.

Kranzberg's third law

- ❖ **Technology comes in packages, big and small**

The fact is that today's complex mechanisms usually involve several processes and components."

Kranzberg's fourth law

Although technology might be a prime element in many public issues, nontechnical factors take precedence in technology-policy decisions.

Technologically 'sweet' solutions do not always triumph over political and social forces.

Kranzberg's fifth law

- ❖ **All history is relevant, but the history of technology is the most relevant.**

Although historians might write loftily of the importance of historical understanding by civilized people and citizens, many of today's students simply do not see the relevance of history to the present or to their future. I suggest that this is because most history, as it is currently taught, ignores the technological element..

Kranzberg's sixth law

- ❖ **Technology is a very human activity – and so is the history of technology.**

Behind every machine, I see a face—indeed, many faces: the engineer, the worker, the businessman or businesswoman, and, sometimes, the general and admiral. Furthermore, the function of the technology is its use by human beings—and sometimes, alas, its abuse and misuse.

A lady came up to the great violinist Fritz Kreisler after a concert and gushed, “Maestro, your violin makes such beautiful music.” Kreisler held his violin up to his ear and said, “I don’t hear any music coming out of it.” You see, the instrument, the hardware, the violin itself, was of no use without the human element. But then again, without the instrument, Kreisler would not have been able to make music.

An anecdote by Kranzberg