

The Social and Economic Spheres in the Age of Automation

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In the age of barter, the social environment was the economic environment

- ▶ In the dim past in the age of barter, there was no great distinction in the social and economic spheres.

In the age of barter, the social environment was the economic environment

- ▶ Hand-to-mouth existence outside the most forgiving and fruitful environments meant a large percentage of waking time was involved in merely existing: gathering and storing food, seeking shelter from the elements – most time was spent in merely surviving. (Of course, there were those few places where life was much easier, but the combination of continuous warm, safe climate with copious year-round naturally occurring food resources is surprisingly uncommon.)

As time passed, the ability to more efficiently interact

- ▶ As time passed, our ability to more efficiently use resources meant that specialization of work and the development media of exchange allowed us to create the idea of an economy.
- ▶ Societies became structured around these ideas, literally so in cases such as caste systems.

Surprises along the way

- ▶ Along with the growth of more liquid media of exchange, and particularly the growth of paper monetary systems, many innovations had many stumbling blocks.

Surprises along the way

- ▶ The many of these stumbling blocks during the 17th and 18th centuries were centered in the developing area of global trade; the most famous are probably the economic bubbles, and among the best known are the tulip bubble in the Netherlands, the Mississippi / Bank Royale bubble in France, and the South Sea bubble in the United Kingdom.

Surprises along the way

- ▶ The famous resource here is Charles Mackay's "Extraordinary Popular Delusions and the Madness of Crowds" – still available at Amazon

Efficiency rapidly expanded in the Age of Industrialization

- ▶ The technology that was created in the Industrial Age introduced much greater social and economic pressures than previous technological advances.

Along with technological developments came social concerns

- ▶ Most technological developments in the late 18th and 19th centuries were incremental rather than revolutionary; better land transportation and communication systems, improved farming and better understanding of crops, better water management and better understanding of sanitation

Along with technological developments came social concerns

- ▶ However even these merely incremental technological developments caused concerns about the social effects of these new technologies.

Luddites, the Swing Riots, and sabotage?

- ▶ The Luddites, Protection of Stocking Frames Act
- ▶ The Swing Riots
- ▶ sabotage

On the other hand, there is a point to Pangloss

- ▶ The Panglossian view: Many authors like to point out that instead over the last two centuries that a great number of jobs have been created; many of these jobs would not have existed without the many new developments in social
- ▶ Certainly we in the developed world live quite well: abundant food, affordable transportation, well-developed shelter and even remarkable travel accommodations.

Exploring the growing technological foundations in the social and economic spheres

- ▶ Clearly in the social area, we have an unprecedented ability for people-to-people communications unexampled in human history. For instance, you can have instant access to the finest in Japanese newspapers: The Nikkei (“Nihon Keizai Shimbun”) (but it has moved to a paywall approach...), or the ever-colorful British press

Exploring the growing technological foundations in the social and economic spheres

- ▶ Communication is fundamental in many ways to many parts of economic structures

Exploring the growing technological foundations in the social and economic spheres

- ▶ And vice versa is also the case (at least to a degree): economics plays a role in how much communications might be engaged in by a society. However, legal systems are often paternalistic (if not utterly authoritarian) and seek to regulate and even to limit communications.

Exploring the growing technological foundations in the social and economic spheres

- ▶ In addition to communications, we also have far greater access to data resources; obvious ones are Wikipedia-type compendia and metadata like Alexa, the Alexa topsites for the US.

But the real economics of the Internet have turned out to be advertising, ISPs, and hardware

- ▶ Google, Google, Google
- ▶ Facebook, Facebook
- ▶ Apple, Apple

Direct economic effects

- ▶ As mentioned earlier in the lecture, economies are built on the idea of exchange; we are now seeing the possible development of media of exchange that can only exist because of technology.
- ▶ Technology has of course immensely aided existing ideas, such as automating the process of transferring money, stocks, bonds, and other financial instruments.

Direct economic effects: financial engineering

- ▶ Consider the expanses of mathematical finance
- ▶ And then the necessity for computer science and technology
- ▶ Indeed, some financial activities literally could not exist without the vast computations need to support these, such as risk management computations like VAR that must be computed for large securities firms

Then consider the world of “Flash Boys”

- ▶ High Frequency Trading
- ▶ Michael Lewis’s Flash Boys

Paul Wilmott's take

“Unfortunately, as the mathematics of finance reaches higher levels so the level of common sense seems to drop. There have been some well publicised cases of large losses sustained by companies because of their lack of understanding of financial instruments. . . . It is clear that a major rethink is desperately required if the world is to avoid a mathematician-led market meltdown.”

But interactions are not limited to the economic

- ▶ Technology, as it always has, is having a profound effect on the battlefield; for instance, Cyberwarfare on the Battlefield
- ▶ Cybersoldiers

But interactions are not limited to the economic

- ▶ Clausewitz's "On War":

"24.—*War is a mere continuation of policy by other means.*

"We see, therefore, that war is not merely a political act, but also a real political instrument, a continuation of political commerce, a carrying out of the same by other means. All beyond this which is strictly peculiar to war relates merely to the peculiar nature of the means which it uses. . . . But however powerfully this may react on political views in particular cases, still it must always be regarded as only a modification of them; for the political view is the object, war is the means, and the means must always include the object in our conception." Clausewitz

The future of warfare

- ▶ Drones, swarms, and robots
- ▶ Warfare's new battlefields
- ▶ Drones, swarms, and the new arms race
- ▶ DARPA tries to save the cyberworld

Fluid battlefields become home grounds

- ▶ Drones on the water
- ▶ What happens when the battlefield is wherever a drone can go?
- ▶ What happens when local enforcement take up the tools developed for the battlefield? Police drones, Bill would allow Connecticut Police to Weaponize Drones

Can privacy be enhanced by technology?

- ▶ Maybe...?
- ▶ Tor network
- ▶ I2P
- ▶ Anonymous cryptocurrency?
- ▶ Zeronet

When the technology becomes the expert

- ▶ Cardiac Science's AED