

DIGITALIZATION and the Effects on Labour

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Digitalization and the Effects on Labour

Introduction: What is „digitalization“?

- Industrial Revolutions: one, two, three?
- Consequences: Machine blusterers (Luddites) and Mass Unemployment!
- Industry 4.0: A new quality?
- Consequences for labour and labour relations
- Resumée

Digitalization and the Effects on Labour

Various dimensions:

- Demographic Change
- Globalisation
- Technology (= technological change)
- De-Industrialisation (= Service society)

The background of the slide is a photograph of a sunset or sunrise over a body of water. The sky is a deep blue with wispy white clouds. The horizon line is visible, and the water in the foreground is dark blue with gentle ripples. The text is overlaid on the left side of the image.

Industrial Revolutions: One, two, three and four?

„Transformation of the scientific, economic, and social relationships, of labour conditions and circumstances of life“!

If this is correct, then at least three Ind.Rev.

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The 1st IndRev.starts around 1780 and is strengthened in the 19th century, first in England, then, however, in Western Europe and the USA.

Transformation of the agrarian towards the industrial society (clearly visible via the quotes of labour in the three sectors of the economy).

This was preceded by a change in property rights with respect to in particular in the grounds (introducing taxes on property).

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The British cotton industry realized between 1780 and 1790 yearly growth rates of more than 12%, favoured by the change in trade flows toward the Atlantic Sea, which were used intensively by the English trade houses: cotton and cotton products were a significant part of imports and exports; „King Cotton“! (But accompanied by slave economies in the USA and Brasil!)

Since mid of 18th century mechanical innovations and the original usage of non-human energy: spinning-maschine („Spinning Jenny“ 1764) and loom (1784).

Digitalization and the Effects on Labour: Consequences I

The sweeping development of technology, science, and productivity, is accompanied with a strong increase in population and a sharpening of social grievances: in the factories concentrate workers' proletariat; labour unrest are there, but also efforts for social reforms to mitigate the acute misery and to fight their causes.

On the one hand Thomas Robert Malthus' law of population, on the other hand the „brazen law of wages“ („Ehernes Lohngesetz“) of Ferdinand Lassalle (as well as David Ricardo); and as a basic text of that time: Friedrich Engels, Zur Lage der arbeitenden Klasse in England, 1848.

Digitalization and the effects on Labour: Consequences II

David S. Landes defines three processes:

- Mechanisation of hand work by machines,
- Mechanized production and transforming energy via the steam engine (1712 Th. Newcomer, 1769 Patent to James Watt, which, however, was successful in hindering the technological development until the beginning of 1800),
- Massiv usage of new basic materials such as coal and iron.

Digitalization and the effects on labour:

Consequences III

Important basic and supporting was the strong increase in population and the decrease of the death rates, which were possible because of great increases in productivity in the agrarian sector (against the idea of Thomas R. Malthus). Osterhammel however writes of „beispiellosen Eingriffen in die physische Umwelt...keine andere Wirtschaftsordnung hat jemals die Natur drastischer umgestaltet als der Industriekapitalismus“.

Then follow urbanization and the proletariat (because of the great Landflucht) and tremendous social unrest: Maschinenstürmer (Luddites) 1811/12 in Nottingham, 1819 in Manchester.

Digitalization and the effects on Labour: Consequences IV

The IndRev initiated basic changes

- in the economic sector, brought together in the notion of capitalism: importance of means for investment (in contrast to the notion of „primitive accumulation“) for the transformation of the technological innovations, in transport (railways) and in the fabrics as well as in financing of the wage fund of larger men powers.
- in the industrial way of producing,
- and in labour management (recruting, education, and controlling („Zuckerbrot und Peitsche“).

Digitalization and the effects on Labour: Consequences V

A series of „Factory Acts“ were enacted to regulate labour or working hours (children and women's work, cf. Fr. Engels, but also Walter Eucken!).

In the 1830ies Trade Unions take on.

The income of the poorest 65% of population increased according to some estimates between 1760 and 1860 around 70% (Lindert/Williamson): call this the „optimistic view“!

However, up to 1830 wage income increased yearly at 0,3% (Gregory Clark): „pessimistic view“!

But it is shared opinion that the income distribution get more unequal between 1790 and 1830!

Digitalization and the effects on Labour: Consequences VI

Some German researchers name the innovation waves of the 1920ies and 1930ies the third IndRev, while Georges Friedmann calls the 1960ies because of automatization and the usage of nuclear power the third IndRev.

(It is possible also to start with special innovations à la Schumpeter/Kondratieff and call these „long waves“ each as Ind.Rev.!)

But: Here I count on the forth IndRev., and call it Digital Revolution and Industry 4.0!

Digital Revolution and „Industry 4.0“ (I)

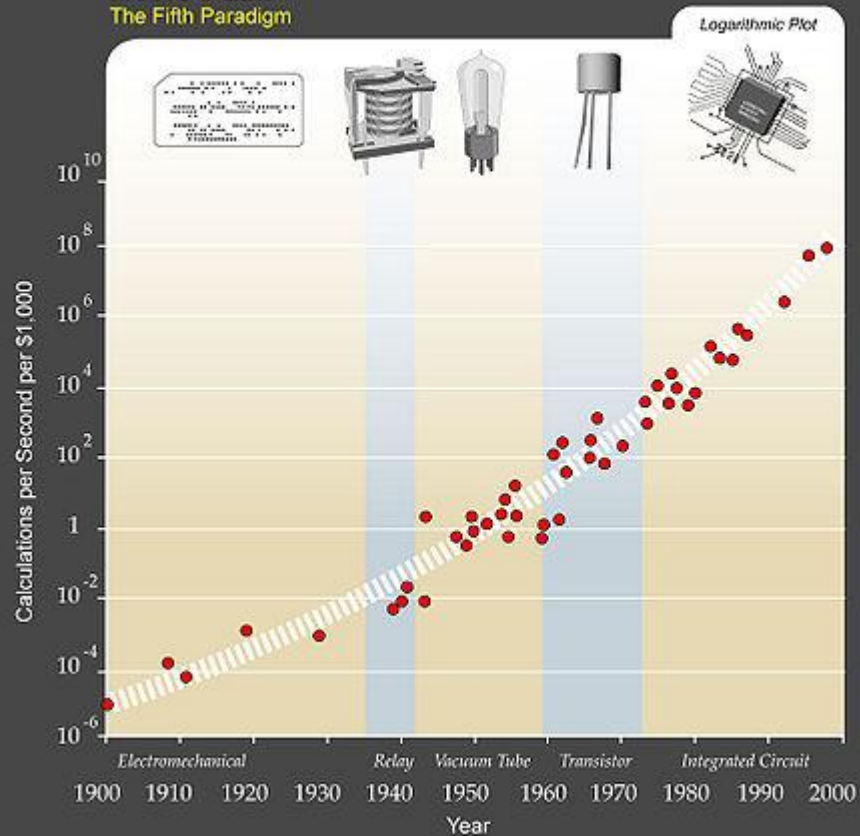
Computer and digitalization unbind a chance in technology as well as in almost all life sectors at the end of the 20th century, similar to the first IndRev: Second Modern Time!

While in 1953 only 3% of the information storage capacity was digital, in 2007 it was already 94%. The world wide telekommunication capacity was already in 1986 digitized up to 20%, in 1993 up to 68% and in 2000 up to 98%!

=> Information explosion!

This was based (1.) upon the invention of the microchip and its steadily increase in power (à la Moore's Law):

Moore's Law The Fifth Paradigm



Digital Revolution and „Industry 4.0“ (II)

Based (2.) upon the introduction of flexible automatization in production and

(3.) the building of world wide communication networks like the Internet (starting in 1989 as WWW, from 2003 as Web 2.0 and the Cloud).

Further: at the beginning was the computer in the 1940/50ies and with the Internet begins the information age!

Digital Revolution and „Industry 4.0“ (III): Consequences for labour I

„Industry 4.0“ is the connection (net work) of the virtual world of the computer with the physical world of industrial production“ (Hirsch-Kreinsen, 2014).

Production systems regulate themselves autonomously, with far-reaching consequences for working forms in the operative and indirect sectors up to the management level:

- Men-machine-cutting edge,
- On the operative work level (substitution of simple, repetitive actions; called the tendency to dequalification; however also qualification enhancing); see Frey/Osborne (2014) on computerization!

Digitalization and effects on Labour: Consequences of „Industry 4.0“

- Hierarchical dimension: Give-away of planning and regulation functions to „lower level“ (decentralization pull and flat organization), disappearance of activities and increased new planning activities.
- Alternative work organizations: polarized organization (simple activities and enlargement of the highly qualified experts) versus cloud organization (easy networking of equal experts, which collaborate in a group/collectiv).

Digitalization and the effects on Labour: Résumé I

As with the first IndRev there are optimists and pessimists: on one hand those, who suppose that the workers, loosing their jobs because of tp, very easily can find new jobs in the industries which produce the tp (or in new industries). On the other hand those, who see a necessary and increasing reserve army!

Already in the 1970ies there was a debate on the end of work (and the deluge of the economy), as nowadays also Jeremy Rifkin declares the end of work (2004).

Digitalization and the effects on Labour: Resume II

Clearly visible today is a skill-premium, which can be explained in particular by the increased velocity of diffusion of new technologies and learning-by-doing as well as the intersectoral mobility.

Digitalization and the effects on Labour:

References I

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Digitalization and the effects on labour:

References III

See also

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