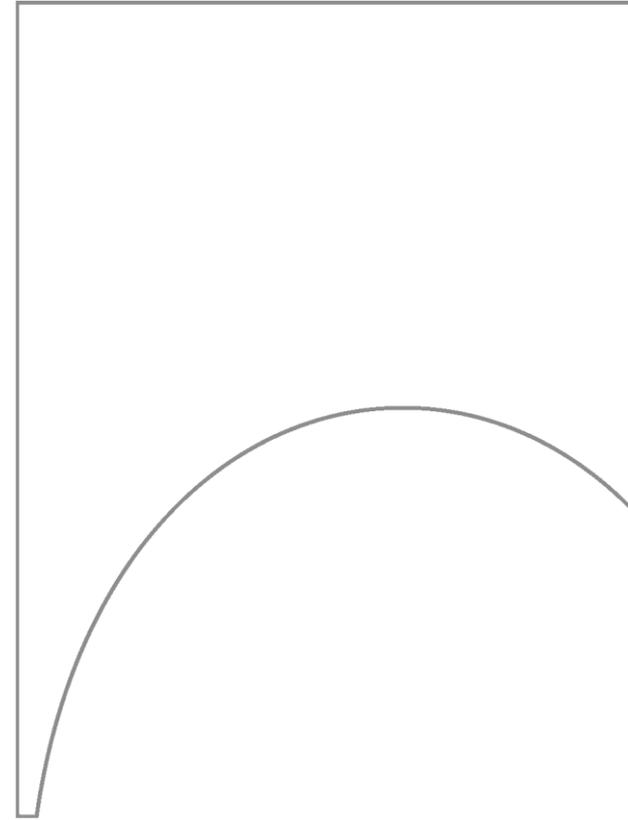


Automation

Ethical Aspects

Prof. Dr. Michael Zichy



What is ethics?

- Every one knows basic moral rules/values and applies them in their judgements and their actions
- Moral rules/values are crucial for a functioning/thriving society

Ethics

- Analyzing, defending, and improving moral rules/values on a scientific basis
- Helping to find morally sound solutions to complex problems

Why ethics?

- Laws/regulations sometimes are insufficient
 - Bad, unjust
 - Do not cover all aspects
- Ethics as complement and correction of laws/regulations

- Laws/regulations are missing (because of new developments)
- Ethics as preparation for new laws/regulations

- Considering ethical aspects in the assessment of science, technology and innovation will help to improve the regulations that are designed to lead these developments in the right direction

Automation

- Automation (with robots, artificial intelligence, computerized algorithms, mobile sensors, unmanned vehicles, etc.) is one major technological development
- Automation will have a deep impact on societies over the world and profoundly change the way we live our lives.

Automation – Some Data

- 47% of *total* jobs are automatable in the US
- 80% of US-jobs in retail, transportation, warehousing, and logistics are at risk
- 63% of sales occupations are at risk in the US

- Automatable jobs in developing countries reach from 55% in Uzbekistan to 85% in Ethiopia

Full Ethical Appraisal

Environmental-ethical
Dimension



Socio-ethical
Dimension



Cultural
Dimension



Societal Dimension

- Very generic: no specific action or policy
- No really reliable data
- No judgement, but a first appraisal

- **Three basic moral values**
 - freedom/autonomy
 - wellbeing/quality of life
 - justice/equality

- **Who is affected?**
 - companies
 - skilled workers
 - unskilled workers
 - developed countries
 - developing countries

Three Analytical Questions

- What are the positive and what are the negative effects on a stakeholder's freedom/autonomy?
- What are the positive and what are the negative effects on a stakeholder's wellbeing/quality of life?
- What are the positive and what are the negative effects on a stakeholder's equal opportunities?

Ethical Matrix

Ethical values	Freedom/Autonomy	Wellbeing/Quality of Life	Justice/Equality

Ethical values Affected groups	Freedom/Autonomy	Wellbeing/Quality of Life	Justice/Equality
Companies			
Skilled workers			
Unskilled workers			
Society - developed countries			
Society - developing countries			

Ethical values Affected groups	Freedom/Autonomy	Wellbeing/Quality of Life	Justice/Equality
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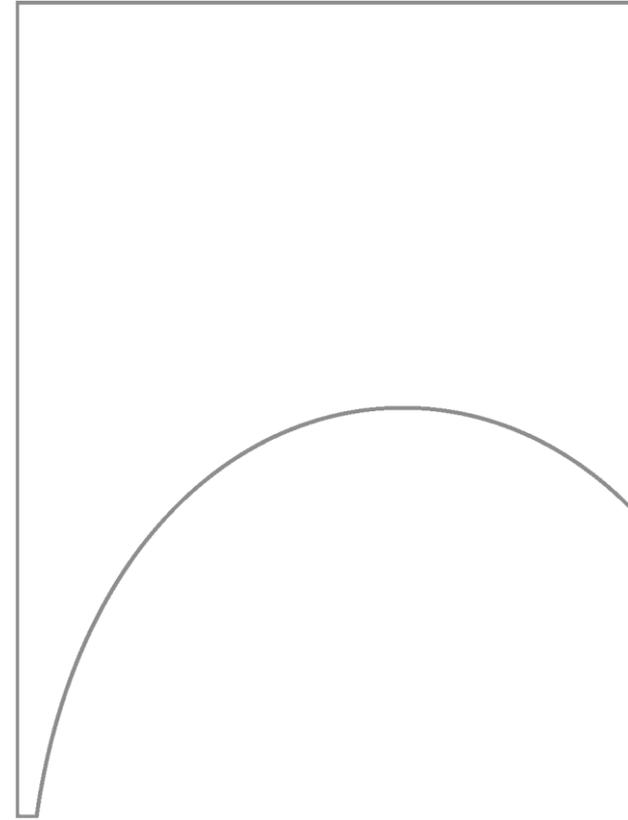
Conclusion

- At the moment, harms of automation seem to outweigh the benefits
- The issue of inequality – both within and across countries – is the most pressing one.
- Governments must react
 - Install a forum for worldwide exchange and monitoring
 - Invest in education
 - Adapt taxation systems to redistribute wealth
- Developing countries must be supported

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Cultural Dimension

- Attitudes towards technology in general
- Attitudes towards robots
- Attitudes towards replacement of human workforce
- Work ethics (importance for identity, social standing etc.)
- Flexibility / adaptability
- Autonomy vs societal harmony

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