Human Rights and New Emerging Technologies

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Technology

- *Techne* + *logos* skill + study of something
- 17th century skilled craft
- Tools, instruments, products, processes, materials, and systems
- Emerging technologies: technologies that are perceived as capable of changing the status quo
- Merging technologies: e.g. merger of biotech and infotech
- NBIC (nano-bio-info-cogno-) technologies

Transformative Technologies

Technology	Date	Classification	
Wheel	4,000-3,000BC	Product	
Railway	Mid 19 th century	Product	
Computer	20 th century Third generation 1963–	Product	
Internet	20 th century (1980) 1995	Product	
Biotechnology	20 th century	Process	
Robots and Artificial intelligence	21 st century	Product and Process	

Fantasy and Dystopian Views on Technology



Basic questions

- Will technology make us (humans) irrelevant? (Harari)
- Would AI/GE further enhance commodification?
- Can humans control the application of technology?
- Would it contribute to the fragmentation of personhood?
- Commodification of the human body/ beings?

Legal concerns

- Privacy concerns: surveillance capitalism (Shoshana Zuboff)
- How could human rights principles be implemented in technical design?
- "Making up people" (Ian Hacking)
- Would uneven access to technology increase vulnerability and discrimination?

The world of science

 "For 300 years scientific knowledge has been striving for a description of the world from which the observer is excluded...That's why we didn't become any wiser. We have become smarter, which means that we can deal with the outside world better. ... But it also makes a person an object... "

Márta Fehér (1942-2020)



Facial Expression Recognition Technologies



83% happy, 9% disgusted, 6% fearful and 2% angry. She was less than 1% neutral, and not at all surprised.

2005

When to Regulate A New Technology? Learning from the case of the Internet?

- Collingridge's dilemma: regulating a new technology in its early stage is difficult because we do not know enough about it and about its probable effects and risks
- But when the technology is already well developed its regulation may be more expensive and the industry affected may oppose the intervention as it could be very costly for them

David Collingridge (1980)

The Social Control of Technology

Technology and Human Rights

- "To reclaim human rights in a world governed by technology, we must understand how power is delegated to technological system."
- "Only then can the delegations be monitored and supervised so as to satisfy our desire for ordered liberty and informed self-governance."

Sheila Jasanoff (2016) The Ethics of Invention

The Need to Examine Different Technologies Together

- Insights from different technology fields must be combined
- Different technological fields should be studied jointly
- Artificial intelligence and gene sequencing
- Hybrid human-animal embryos

Two Emerging Technologies

GENOME EDITING

- Biological enhancement
- Providing treatment opportunities for genetic diseases
- Hard to control and may lead to discrimination

ARTIFICIAL INTELLIGENCE

- Technical enhancement
- Capacity to deal with big data
- May further accelerate existing discrimination
- Gender bias, racial bias
- The scientific basis of application is question-able (facial expressions are not universal)



1. Genome Editing of Humans

Right to Life, Privacy, Disability, Genetic Based Discrimination

Gene/Genome Editing

- Genome editing is the deliberate alteration of a selected DNA sequence in a living cell. A strand of DNA is cut at a specific point and naturally existing cellular repair mechanisms, then fix the broken DNA strands.
- The way they are repaired can affect gene function and new DNA sequences can be delivered when the DNA is cut and act as templates for generating an altered sequence

Percent of Americans who said they would probably use the following methods, if it increased the chance their child could attend a top-100 university.

📒 % Mostly Willing 🧧 % Mostly Unwilling



Gene Editing for Higher Chance of Success

Adapted from Public views on polygenic screening of embryos, Meyer et. al., *Science*, Feb 2023.

Responsible Research



Human Rights Assessment

Legal aspects	patient/ research participant	Researcher	Society
Fundamental rights	safety Protection of life Dignity Prohibition of discrimination	Freedom of research Integrity	Fairness Access Therapy or Enhancement Safety
Private laws	Prohibition of financial gain	IP protection	

Ethics of Enhancement

THERAPY OR ENHANCEMENT?

- Is it allowed only when it serves therapeutic purposes?
- It should not have a hereditary effect (prohibition of germ-line intervention)
- Multiple changes on multiple parts of the genome is not allowed

CONSENT

- What kind of preliminary information is necessary?
- What are the rights of the parents? On behalf of whom they may decide? (Child? Fetus?
- In vitro embryo?)

Oviedo Convention (1997)

- Article 13 Interventions on the human genome
- An intervention seeking to modify the human genome may only be undertaken for preventive, diagnostic or therapeutic purposes and only if its aim is not to introduce any modification in the genome of any descendants. To modify the human genome may only be undertaken for preventive, diagnostic or therapeutic purposes and only if its aim is not to introduce any modification in the genome of any descendants

Council of Europe (Interpretation in 2021)

Article 13 of the Convention addresses concerns about genetic enhancement or germline genetic engineering by limiting the purposes of any intervention on the human genome, including in the field of research, to prevention, diagnosis or therapy. Furthermore, it prohibits any intervention with the aim of introducing a modification in the genome of any descendants.

Human Genome Registries (2021)

- WHO Expert Advisory Commission on Developing Global Standards for Governance and Oversight of Human Editing (2021)
- To create and host a Registry for human genome editing that will provide structured mechanisms for collecting and curating details of planned and ongoing clinical trials involving genome editing
- Ensuring that clinical trials included in the Registry went through prior ethics approval

Normative Anchors

- Somatic
- Therapy
- In vitro
- Appears in nature
- Single genetic disorder

- Germ line
- Enhancement
- In vivo
- Does not appear in nature
- Polygenic condition



2. Artificial Intelligence

Risk-based, sectoral approach, multiple instruments

Al Definition

- "Artificial Intelligence (AI) refers to the ability of algorithms encoded in technology to learn from data so that they can perform automated tasks without every step in the process having to be programmed explicitly by a human."
- WHO 2021

Adopting Human Rights to Al

- Data protection is relatively developed field
- But more interpretation is needed in the other fields
- What constitutes discrimination in the context of using an AI technology? (classification)
- AI should be used for targeted eras e.g. providing a better analysis of multiple gene interactions/ or modeling

Data and Bias

- Although AI applications have the potential to reduce human bias and error, they can also reflect and reinforce biases in the data used to train them
- We should also develop privacy rules applicable to Al

Al and Governance

- The Toronto Declaration Protecting the right to equality and non-discrimination in machine learning systems (2018)
- "When creating and deploying machine learning systems, they must take meaningful measures to promote accountability and human rights, including, but not limited to, the right to equality and non-discrimination, as per their obligations and responsibilities under international human rights law and standards."

Al and Governance

- 2019, the Council of Europe released Guidelines on artificial intelligence and data protection
- European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and their environment (2018)
- Recommendation CM/Rec(2020)1 of the Committee of Ministers to member States on the human rights impacts of algorithmic systems (Adopted by the Committee of Ministers on 8 April 2020)

WHO 2021

- Ethics and governance of artificial intelligence for health: WHO guidance
- "AI technologies should not harm people. They should satisfy regulatory requirements for safety, accuracy, and efficacy before deployment, and measures should be in place to ensure quality control and quality improvement."
- "Governments should strive to ensure that the "digital divide" within and between countries is not widened..."

Global Norms

- UNESCO (2021) Recommendation on the ethics of artificial intelligence (193 Member States)
- "15. Persons may interact with AI systems throughout their life cycle and receive assistance from them, such as care for vulnerable people or people in vulnerable situations, including but not limited to children, older persons, persons with disabilities or the ill."

UNESCO

 "... Within such interactions, persons should never be objectified, nor should their dignity be otherwise undermined, or human rights and fundamental freedoms violated or abused."

UNESCO 2021



Specificity of the AI Technology

- Fear of substitution (Knowing me, knowing you?) but also need for substitution
- Amplifying biases
- How can AI create a better world and not a worse one?
- What are the human rights issues in the context of using AI technology?
- How to adapt, translate, and implement them in the context of AI?

Concerns Raised About Al

- Concerns have been raised about the potential of AI to lead to discrimination in ways that may be hidden, or which may not align with legally protected characteristics, such as gender, ethnicity, disability, or age
- It has been found that biases can be embedded in the algorithms themselves, reflecting the beliefs and prejudices of AI developers



Al and Ethics

- Ethics by Design: the technical/algorithmic integration of ethical reasoning capabilities as part of the behavior of artificial autonomous system;
- Ethics in Design: the regulatory and engineering methods that support the analysis and evaluation of the ethical implications of AI systems as these integrate or replace traditional social structures;
- Ethics for Design: the codes of conduct, standards and certification processes that ensure the integrity of developers and users as they research, design, construct, employ, and manage AI systems

The Relevance of AI in Health Care

 Machine learning has been shown to successfully diagnose Parkinson Disease, analysis of the MRI data, predict ischemic stroke, predict lung cancer better than pathologists, and predict colorectal cancer prognosis better than colorectal surgeons. There are also claims that machine learning algorithms trained using Electronic Health Record data can predict suicide up to two years in advance with 80 % accuracy.

EGE

- European Group on Ethics in Science and New Technologies
- Close interaction between humans and machines: co-bots, cyber crews, digital twins, integration of smart machines into the human body
- Control and human moral responsibility: meaningful human control is essential for moral responsibility. Humans should remain in control and be morally responsible.

Future of Artificial Intelligence

- Safety and beneficence of Artificial General Intelligence (AGI)
- Artificial Superintelligence (ASI)
- Does it involve enhanced responsibility?
- Nicole A. Vincent: responsibility and enhancement

• Human–AI hybrids?

Fairness and Non-Discrimination

 AI actors should promote social justice and safeguard fairness and non-discrimination of any kind in compliance with international law. This implies an inclusive approach to ensuring that the benefits of AI technologies are available and accessible to all, taking into consideration the specific needs of different age groups, cultural systems, different language groups, persons with disabilities, girls and women, and disadvantaged, marginalized and vulnerable people or people in vulnerable situations.

Tech Vulnerability

- Technology creates dependence
- Problems with obsolete technology
- What happens when spare parts are no longer available, the consumer is not able to buy a new software of application, or the patient is not able to pay for new medical technologies, etc.
- Discrimination between the human beings that live with the old or the new technological model

Novel Rights in the Context of Al

- Right to be forgotten
- Right to mental integrity
- Right to mental self determination
- Right to AI free zones
- Right to preserve digital memories

Novel Rights in the Context of GE

- Right to genetic consultation (predictive testing)
- Right to genetic privacy
- Right to genetic affinity
- Right not be discriminated based on genetic features
- Right to know the circumstances of birth/ genetic treatment
- Novel interpretation to right to life and right to autonomy

Common Human Rights Reflections

GE

- Genetic transparency
- New forms of discrimination
- Delineation between therapy and enhancement is blurred
- Commodification

AI

- Fear of replaceability
- Loss of privacy
- Loss of data protection
- Surveillance
- Commodification

Human Rights Design

- Human rights: Ensure they do not infringe on the internationally recognized human rights -if possible- use examples of rights violations specific to the AI.
- Well-being: Prioritize metrics of well-being in their design and use
- Accountability: Ensure that their designers and operators are responsible and accountable
- Transparency: Ensure they operate in a transparent manner
- Awareness of Misuse: Minimize the risks of misuse

Sharing of benefits (UNESCO: 2005)

1. Benefits resulting from any scientific research and its applications should be shared with society as a whole and within the international community, in particular with developing countries

2. Benefits **should not constitute improper inducements** to participate in research.

Future Generations

Article 16

Protecting future generations

The impact of life sciences on future generations, including on their genetic constitution, should be given due regard.

New Regulatory Responses

- The European Commission shifted towards a legislative approach and called for the adoption of a new regulatory framework on artificial intelligence
- Since the existing legislation protecting human rights and ensuring safety and consumer rights (including data protection and non-discrimination laws) appear to be insufficient to tackle the risks posed by AI technologies, the Commission proposes the adoption of harmonized rules for the development, market placement, and use of AI systems.



Using AI for Prediction in Criminal Justice System

Prohibited Applications

Eight High Risks Al Systems

- 1. Biometric identification and categorization of natural persons;
- 2. Management and operation of critical infrastructure;
- 3. Education and vocational training;
- 4. Employment, worker management, and access to self-employment;

Eight High Risks Al Systems

- 5. Access to and enjoyment of essential private services, as well as public services and benefits;
- 6. Law enforcement;
- 7. Migration, asylum-seeking, and border control management;
- 8. Administration of justice and democratic processes.

Conclusions

- Human rights serve important tool in different stages in the development/implementation of new technologies.
- Human *responsibility* should be preserved
- Human *dignity* is a general reference point
- AI should play an important role in medical diagnoses, in genetic studies and interpreting genetic data, in monitoring and controlling health condition, in physical care — but should never fully replace personal care



- In each step of introducing a new technology into a new domain, a human rights assessment should be made
- When a new technology emerges, all biological/technological aspects need to be assessed by ethics reviews
- Besides bioethics, technoethics is becoming more and more relevant – and the latter may learn from the institutional solutions the former has developed

Conclusions

- During the Covid pandemic, the scientific process and its steps have become more transparent, thus doubts have become more visible to the public
- Science is no longer magic
- But it can be seen as a promising human endeavor that requires deliberation beyond technical parameters, needs transparency and human rights design, and analysis during the different stages of its development



Thank you for your attention!