

7 Economics/Humanitarian Issues

It is irrefutable that technologies, methodologies, and systems that aim at reducing human intervention in our day-to-day lives are evolving at a rapid pace and are poised to transform the lives of individuals in multiple ways. The public feels unprepared personally and professionally in a period of dramatic change. Overly optimistic advocacy about the positive outcomes competes with legitimate concerns on the emerging individual and institutional harms related to privacy, discrimination, equity, security of critical infrastructure, and other issues. Dialogue about the effects of technology on people is needed with respect to those technologies that can have a longer term, chronic effect on human wellbeing. A more balanced, granular, analytical, and objective treatment of this subject will more effectively help inform policy making, and has been sorely lacking to date. A concerted effort is required between and among technologists, ethicists, civil society, and public policymakers on how to identify and measure gaps, barriers, and benefits, and to initiate a sustainable, scalable dialogue between and among different stakeholders.

As part of our “systems-engineering” approach to human-technology systems, emphasis has been placed on approaches (such as shared metrics, taxonomy conversion tables, hybrid and integrated incentives and penalty structures, etc.) that can best integrate the learning about human and social wellbeing from a number of perspectives such as environmental, cultural, political, socio-economic, and resource constraints. Also, the “system” scope at issue is considered to include the encounters between information-fueled technologies and the entire human species. This scope, in turn, invites an analytical construction of problems and potential solutions that can address both current issues in developed countries and also humanitarian issues in developing economies; recognizing that some problems and solutions will be more “localized” within a given population than others.

The aim of our multi-stakeholder Committee is to identify the key drivers shaping the human-technology global ecosystem, and to suggest key opportunities for solutions that could be implemented by unlocking critical choke points of tension. In fact, the presence of various “tensions” viewed from economic, social, cultural, political, and other perspectives provide signposts of entrepreneurial opportunity—each is an opportunity to address perceived “risk arbitrage” of multiple parties—with the potential for generating great value

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from holistic solutions. With this shared understanding of the power dynamics across various categories of stakeholders, our goal is to create the beginnings of a shared agenda with a prioritized set of actions. The goal of our recommendations is to suggest a pragmatic direction related to these central concerns in the relationship of humans, their institutions, and emerging information-driven technologies, to facilitate interdisciplinary, cross-sector dialogue that can be more fully informed by expert, directional, and peer-guided thinking regarding these issues.

Section 1 – Automation and Employment

While there is evidence that robots and automation are taking jobs away in various sectors, a more balanced, granular, analytical, and objective treatment of this subject will more effectively help inform policy making, and has been sorely lacking to date.

Issue:
Misinterpretation of artificial intelligence and autonomous systems (AI/AS) in media is confusing to the public.

Background

Information, analysis, and disinformation in the media regarding robotics/AI and jobs tend to focus on gross oversimplifications such as doom and utopia. This does not help in starting an objective debate and sends a wrong message to the general public.

Candidate Recommendation

Create an international, independent information

clearinghouse that can properly disseminate objective statistics, fact-check and generally inform media, policymakers, the general public and other stakeholders about the impact of robotics and AI on jobs, growth, and new employment structures.

Issue:
Automation is not typically viewed only within market contexts.

Background

Robotics and AI are expected to have an impact beyond market domains and business models. Examples of impact include safety, public health, and socio-political considerations of deploying robotics/AI systems. This impact will diffuse through the global society.

Candidate Recommendation

In order to properly understand the impact of robotics/AI on society including those related to employment, it is necessary to consider both product and process innovation as well as wider implications from a global perspective.

Further Resources

- Pianta, M. Innovation and Employment, Handbook of Innovation. Oxford University Press, 2003.
- Vivarelli, M. Innovation and Employment: A Survey, Institute for the Study of Labor (IZA) Discussion Paper No. 2621, 2007.

Issue:

The complexities of employment are being neglected regarding robotics/AI.

Background

Current attention on automation and employment tends to focus on the sheer number of jobs lost or gained. Other concerns include changes in the traditional employment structure(s).

Candidate Recommendation

It is important to focus the analysis on how the structures surrounding employment structure will be changed by automation and AI rather than on solely dwelling on the number of jobs that might be impacted. The analysis should focus on how current task content of jobs are changed based on a clear assessment of the automatibility of the occupational description of such jobs.

Further Resources

- RockEU. Robotics Coordination Action for Europe Report on Robotics and Employment.

Issue:

Technological change is happening too fast for existing methods of (re)training the workforce.

Background

The current pace of technological change would heavily influence changes in the employment structure. In order to properly prepare the workforce for such evolution, actions should be proactive and not only reactive.

Candidate Recommendations

To cope with the technological pace and ensuing progress, it will be necessary that workers improve their adaptability to rapid technological changes through adequate training programs provided to develop appropriate skillsets. Training programs should be available to any worker with special attention to the low-skilled workforce. Those programs can be private (sponsored by the employer) or public (offered freely through specific public channels and policies), and they should be open while the worker is in-between jobs or still employed. Fallback strategies also need to be developed for those who cannot be re-trained.

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Issue:

AI policy may slow innovation.

Background

There exists a false concern that policy and regulation necessarily slows down innovation. However, it is important that emerging technologies should be regulated such that their adverse effects on society are minimized. This requires agility in governance.

Candidate Recommendation

It is imperative that legislation and AI policy are nimble enough to keep up with the rapid advancement of technology while proposing rules and regulations that protect societal values and facilitate, rather than unnecessarily stymie, innovation. Close collaboration of governments, industries, and civil society take on a renewed meaning more than ever, given these concerns.

Section 2 – Accountability and Equal Distribution

For AI systems to be adopted in an atmosphere of trust and safety, greater efforts must be undertaken to increase transparency, clarity, and availability of these resources.

Issue:

AI and autonomous technologies are not equally available worldwide.

Background

We need to ensure the equitable distribution of the benefits of AI/AS technology worldwide. Training, education, and opportunities in robotics and autonomous systems worldwide should be provided particularly with respect to underdeveloped nations.

Candidate Recommendation

Working with appropriate organizations (e.g., United Nations, OAS, etc.) stakeholders from a cross-sectional combination of government, corporate, and NGO communities should:

1. Engage in discussions regarding effective education and training;

2. Encourage global standardization/harmonization and open source software; and,
3. Promote distribution of knowledge and wealth generated by the latest autonomous systems, including formal financial mechanisms (such as taxation or donations to effect such equity worldwide).

Issue:

Lack of access and understanding regarding personal information.

Background

How to handle privacy and safety issues, especially as it applies to data in humanitarian and development contexts?

Candidate Recommendation

Urgent issues around individual consent, potential privacy breaches, and potential for harm or discrimination regarding individual's personal data require attention and standardized approaches. This is especially true with populations that are recently online, or lacking a good understanding of data use and "ownership," privacy, and how their digital access generates personal data by-products used by third parties.

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According to GSMA, the number of mobile Internet users in the developing world will double from 1.5 billion in 2013 to 3 billion by 2020, rising from 25 percent of the developing world population to 45 percent over the period.

^{lxiv} In Sub-Saharan Africa, just 17 percent of the population were mobile Internet subscribers in 2013, but penetration is forecast to increase to 37 percent by 2020—making the generation, storage, use, and sharing of personal data in the developing world an issue that will continue to gain gravity.

In the humanitarian sector, digital technologies have streamlined data collection and data sharing, frequently enabling improved outcomes. With a focus on rights and dignity of the populations served, practitioners and agencies have advocated for more data sharing and open data in the social good sector. Timely access to public, social sector, and private data will speed response, avoid collection duplications, and provide a more comprehensive summary of a situation, based on multiple data streams and a wider range of indicators.

However, there are inherent risks when multiple sources of data are overlaid and combined to gain insights, as vulnerable groups or individuals can be inadvertently identified in the process. The privacy threat is the most discussed risk: When is informed consent or opt-in really ethical and effective? Best practices remain an unresolved issue among practitioners when working with communities with fewer resources, low literacy, lower connectivity, and less understanding about digital privacy.

The “do no harm” principle is practiced in emergency and conflict situations. Humanitarian responders have a responsibility to educate the populations about what will happen with their data in general, and what might happen if it is shared openly; there is often lack of clarity around how these decisions are currently being made and by whom. Remedial steps should include community education regarding digital privacy, as well as helping vulnerable groups become more savvy digital citizens.

There are perception gaps regarding what constitutes potential and actual harm stemming from data use practices. A collaborative consensus across sectors is needed on safeguarding against risks in data collection, sharing, and analysis—particularly of combined sets. From the outset, iterative, ethics-based approaches addressing data risk and privacy are key to identify and mitigate risks, informing better action and decision-making in the process.

Further Resources

- For more on responsible data use, see the [Responsible Development Data Book](#). Oxfam also has a [responsible data policy](#) that provides a field-tested reference.
- [Example Use Case from GSMA](#): When Call Data Records (CDRs) are used to help in the response to the Ebola outbreak, mobile operators wish to ensure mobile users’ privacy is respected and protected and associated risks are addressed.

Section 3 – Empowering Developing Nations to Benefit from AI

Many of the debates surrounding AI/AS take place within advanced countries among individuals benefiting from adequate finances and higher than average living situations. It is imperative that all humans in any condition around the world are considered in the general development and application of these systems to avoid the risk of bias, classism, and general non-acceptance of these technologies.

Issue:
Increase the active representation of developing nations in The IEEE Global Initiative.

Background

At the point of its first release, The Global Initiative is primarily made up of individuals from North America and Europe.

Candidate Recommendation

Representatives from developing countries should be part of every committee of *Ethically Aligned Design* so that proper concerns are accurately

reflected. The conditions that would facilitate the inclusion of inputs from developing nations should be fostered.

Institute educational initiatives for universities, industry, and government to promote a balanced understanding of robotics/AI risks, benefits, and consequences. Scholarships, exchange programs, and distinguished lecturer series are some possible ways this can be realized.

Issue:
The advent of AI/AS can exacerbate the economic and power structure differences between and within developed and developing nations.

Background

How will developing nations implement AI/AS via existing resources? Do the economics of developing nations allow for AI/AS implementation? How can people without technical expertise maintain these systems?

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Candidate Recommendation

Develop mechanisms for increasing transparency of power structures and justly sharing the economic and knowledge acquisition benefits of robotics/AI. Facilitate robotics/AI research and development in developing nations. Ensure that representatives of developing nations are involved.

Further Resources

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- Brynjolfsson, E., and A. McAfee. *The Second Age of Machine Intelligence: Work Progress and Prosperity in a Time of Brilliant Technologies*. New York: W. W. Norton & Company, 2014.
- Dahlman, C. *Technology, Globalization, and Competitiveness: Challenges for Developing Countries. Industrialization in the 21st Century*. New York: United Nations, 2006.
- Fong, M. *Technology Leapfrogging for Developing Countries. Encyclopedia of Information Science and Technology*, 2nd ed. Hershey, PA: IGI Global, 2009 (pp. 3707–3713).
- Frey, C. B., and M. A. Osborne. "The Future of Employment: How Susceptible Are Jobs to Computerisation?" (working paper). Oxford University, 2013.
- Rotman, D. "How Technology Is Destroying Jobs." *MIT Technology Review*, June 12, 2013.
- McKinsey Global Institute. "Disruptive Technologies: Advances That Will Transform Life, Business, and the Global Economy" (report), May 2013.
- Sauter, R., and J. Watson. "Technology Leapfrogging: A Review of the Evidence, A Report for DFID." Brighton, England: University of Sussex. October 3, 2008.
- *The Economist*. "Wealth Without Workers, Workers Without Wealth." October 4, 2014. .
- World Bank. "Global Economic Prospects 2008: Technology Diffusion in the Developing World." Washington, DC: World Bank, 2008.