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## PRESENTATION BY ANDREA KOBETIC



This module is intended to give you a broad understanding of academic perspectives on the politics of involving artificial intelligence with agriculture.

If any of the topics discussed pique your interest and you
would like to explore them more thoroughly, you can refer
 to the number in the top right-hand corner that
 corresponds with a journal article cited in the final
 'References' slide. There is a lot of interesting and
 useful information in these articles that is not presented
 here for the sake of concision.

Happy learning!



Mechanization and technological innovation have undoubtedly transformed agriculture.

It would seem, then, that increasing the presence of robotics and artificial intelligence (AI) in this industry can be related to an ongoing historical process.

Academics in favour of increasing dependence on technology in agriculture refer to demographics to make their case: globally, agricultural workers tend to be in socioeconomically vulnerable positions, and often spend large portions of their income on basic goods (including food).

Some have argued that AI has the potential to improve food security in these cases, particularly in the face of climate change.



The future of agriculture may be considered tenuous due to the diminishing population of agricultural workers and the increasing effects of climate change.

This is further complicated by issues of sustainability and food security.

From a neoliberal perspective, it would seem that AI is a plausible solution to this plethora of problems.



Debates on AI often focus on big industry and the negative impacts it may have on smaller businesses.

In the case of smallholder agriculture, however, innovations such as precision agriculture can potentially serve as affordable, sustainable methods to revive production.

Precision agriculture involves data-driven decisionmaking intended to yield optimal results.



In order for AI to be as accessible to smallholders as the industry may intend, public institutions and policy must also support these objectives.

For instance, in the case of precision agriculture, while the initial cost may not be significant, it may remain inaccessible to smallholders unless there are financial programs instituted by the government or by banking institutions.

As AI regulation is a contentious topic right now with its regulation still undergoing development, therefore the accessibility of AI tools remains to be seen.





THE ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD) HAS MANY USEFUL RESOURCES ON AI INCLUDING WEBINARS, REPORTS, AND ARTICLES.



Take a moment to go through a few articles on your own. Pay attention to the rhetoric that is used and the patterns that are visible. Jot down your observations.

Click on the black icon above or copy-paste the URL below.



https://oecd.ai/en/

A passage in Robotics, AI, and Humanity: Science, Ethics, and Policy (2021) describes two approaches that have been observed in regard to governmental AI regulation:

1) A sectoral approach

2) A cross-sectoral approach



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"A sectoral approach looks to identify the societal risks posed by individual technologies, so that preventive or mitigating strategies can be implemented, on the assumption that the rules applicable to AI, in say the financial industry, would be very different from those relevant to heath care providers."

"A cross-sectoral approach, by contrast, involves the formulation of rules (whether norms adopted by industrial consensus or laws set down by governmental authority) that, as the name implies, would have application to AI-based technologies in their generality."









It is crucial, regardless of the approach, that regulation is not seen as solely the government's responsibility.

Rather, having regulatory mechanisms in place at multiple levels (government/industry, company, interest group) will provide a robust framework.





Adoption of artificial intelligence in agriculture will also impact the value chains in existing food systems.

Traditional knowledge will hold less significance as mechanical operations knowledge gains precedence.

Take a moment to reflect upon the question posed below.

PAUSE

Bearing this in mind, can artificial intelligence ever be compatible with Indigenous agriculture and Indigenous food sovereignty?





### Another contentious aspect of AI is data collection and privacy.

This is especially relevant in contemporary agriculture:

"Less visible both in terms of popular outcry and critical scholarship are some of the largest and longest-standing oligopoly corporations in North America - big agribusinesses - who increasingly centre their business models on the collection and processing of data. Every John Deere tractor manufactured today, for example, contains built-in sensors that passively and continuously collect and stream data (about soil and crop conditions, for example) to cloud-based data collection infrastructures." (Bronson, 2022)





This data, much like data collected from activity on social media sites, can then be used to tailor advertisements to individuals.

However, the information contained in agricultural data goes beyond communicating consumer preferences:

"Social scientist Isabelle Carbonell (2016) says that whatever the specific uses, possessing agricultural big data "gives Monsanto [and other big ag entreprises] a privileged position with unique insights into what farmers are doing around the clock, on a field-by-field, crop-by-crop basis into what is currently a third or more of the US farmland" (Bronson, 2022).





Arguably, big data may become as important to intensive agriculture as pesticides.

This contemporary technological revolution also marginalizes many agricultural workers who lack the digital literacy skills required.

A previous slide mentioned the potential for AI to mitigate the effects of climate change, however, this primarily speaks to the environmental consequences.

There is potential for socioeconomic inequalities to be exacerbated by greater digitalization and reliance on big data.



The Canadian Institute for Advanced Research (CIFAR) is a global leader in AI research and development.

Review their website on your own for a few minutes to get a better sense of the perspectives of the AI industry.

How do they differ from the academic perspectives we've discussed?

Jot down your observations.

Either double click the black icon or copy-paste the URL.



https://cifar.ca/ai/#topskipToContent



Further concerns regarding agricultural data include access and participation.

Much big data is kept private, thereby increasing the information that is available to big industry companies, and preventing its dissemination among the farmers who provide this data.

Participation is central to food sovereignty movements and the esoteric nature of AI creates a large obstacle in relating these contemporary movements.



Bronson (2022) takes this even further in the argument she presents: "while precision agriculture appears to be strengthening power for large agribusinesses and food system actors located in the global North, and reproducing material wealth for the already wealthy, these political and economic interests are shielded from critique in part because of the nature of the technology but also because of the imaginative framework surrounding it."





Artificial intelligence in agriculture is clearly a bountiful subject that needs to be researched and regulated thoroughly.

Policy will certainly be an important regulatory mechanism, but multilevel organizing will be significantly important as well.

Noteably, strong contrasts are prevalent between AI perspectives on agriculture and Indigenous, food sovereignty, and agrarian movement perspectives.





### You've reached the end of Module 10!

## Please make sure to complete the Module 10 Quiz before concluding your learning.

Thank you!





VON BRAUN, J., S. ARCHER, M., REICHBERG, G. M., & SÁNCHEZ SORONDO, M. (2021). ROBOTICS, AI, AND HUMANITY : SCIENCE, ETHICS, AND POLICY. SPRINGER NATURE.

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BRONSON, K. (2022). THE IMMACULATE CONCEPTION OF DATA: AGRIBUSINESS, ACTIVISTS, AND THEIR SHARED POLITICS OF THE FUTURE. MCGILL-QUEEN'S UNIVERSITY PRESS. HTTPS://DOI.ORG/10.1515/9780228 012535

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## REFERENCES