AfroLeap-21Podcast

"Africa Leapfrogging to the 21st Century"

Episode three

Technology and transformational leapfrogging

1. Technology as the driver

- Innovation was central in social transitions since the ***discovery of fire and the production of the first-hand tools*** followed by farming that led to sedentary settlements
- However, it was the industrial revolution that significantly redefined human agency and its relationship with nature
- This include (Schwab 2019):
  - ***First industrial revolution*** characterized by the discovery of coal and development of steam engine
  - ***Second industrial revolution*** characterized by the power of electricity and transportation technologies
  - ***Third industrial revolution*** characterized by the development of information and communication technologies and digital computing

The fourth industrial revolution (4IR)

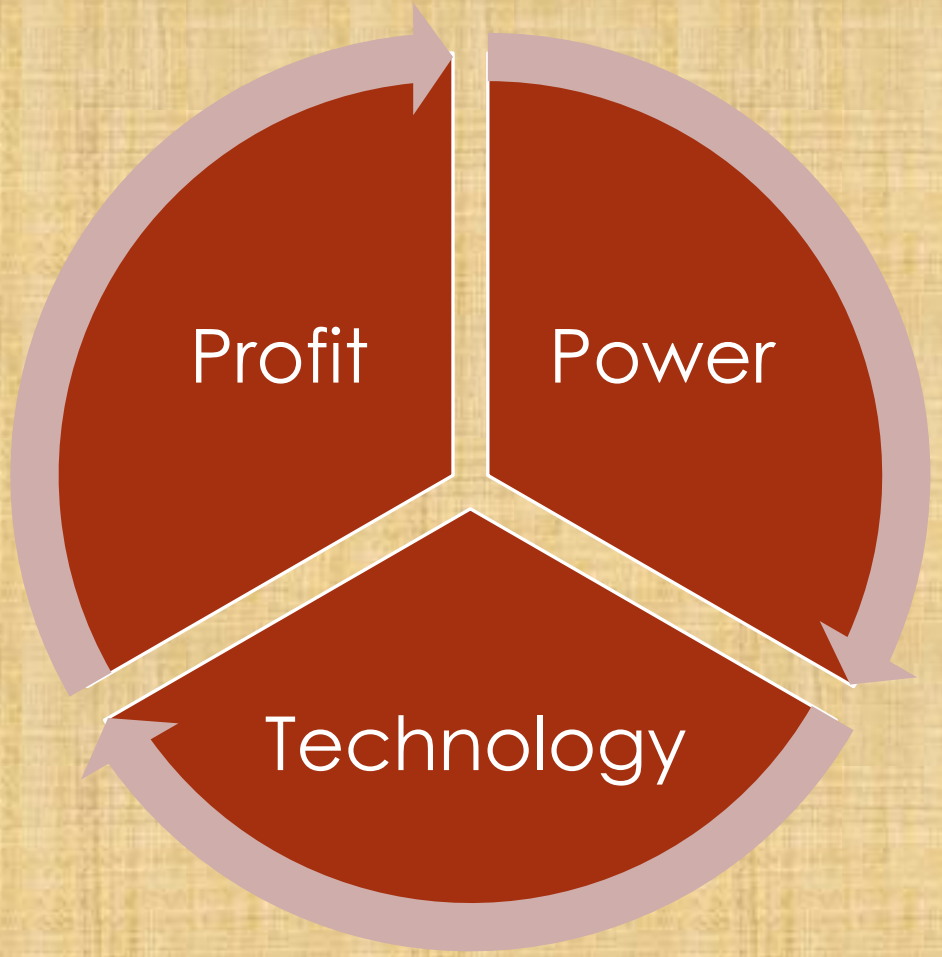
- The twenty first century is characterized by new technologies that ***ushered the fourth industrial revolution*** and which are expected to have wide ranging impacts
- Emerging disruptive technologies associated to the Fourth Industrial Revolution (4IR), including Artificial Intelligence (AI), ***will yet again redefine our relationship*** with one another and nature
- While technological innovation comes with new opportunities the ***misguided deployment of disruptive technologies*** could further lead to more complex challenges
- Overall, the global community has entered another ***major transformational moment*** that would have impacts of tectonic proportion on humanity

The distinctions *(Power & Progress, Acemoglu & Johnsson 2023)*

- ***The 340 years*** that have passed since Francis Bacon's warning in 1960 have seen far more scientific change ***than all the previous 5000 years***
- The ***exponential impact of the disruptive technologies*** such as Artificial Intelligence and robotics, would significantly dwarf the impact of the preceding three and half centuries
- Historically, the skewed nature of the deployment of new technologies has ***always led to concentration of power and profit*** in the hands of the few
- The vision of almost inexorable benefits from new technology, including intelligent machines, ***led by talented entrepreneurs is an AI-illusion***

Technology and human agency

- Technology has ***continuously redefined human agency*** besides productivity improvement
- It was also highly instrumental for the ***consolidation of profit and power***
- The current deterministic deployment of disruptive technologies is ***replacing rather than redefining human agency***

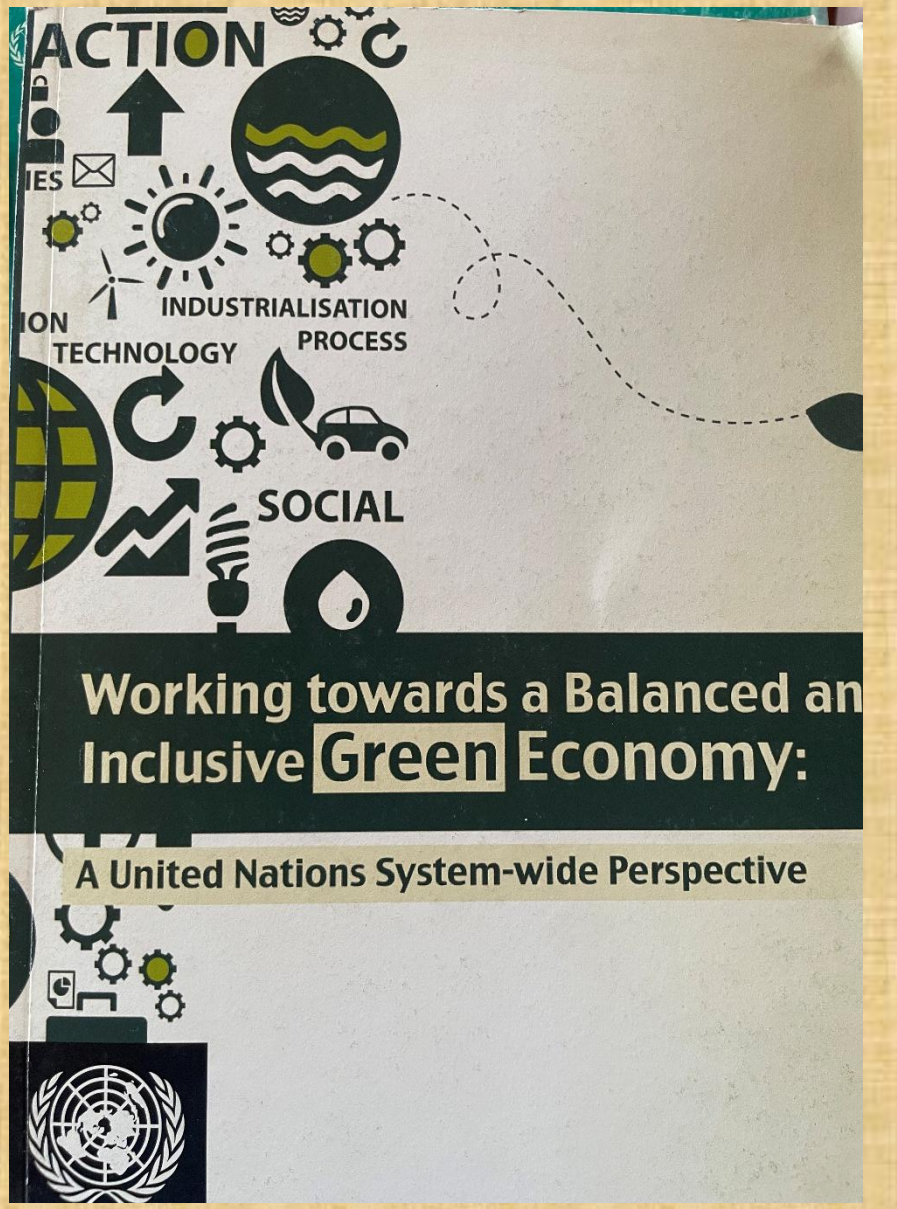


Utopian versus dystopian

- The struggle for having the upper hand of the ***concentration of profit and power*** is approaching its pick between the major frontier technology companies and countries
- The 'Utopianists' ***'Heralding the age of abundance'*** where no one needs to work and every citizen will receive a ***'Universal Basic Income'***
- The 'Dystopianists' portraying more scary consequences and socio-economic impacts of the ***so-called 'liberating deployment'*** of Agentic AI and robotics
- Growing concern about the lack of preparedness at national and global level to introduce ***efficient governance of the deployment*** of disruptive technologies

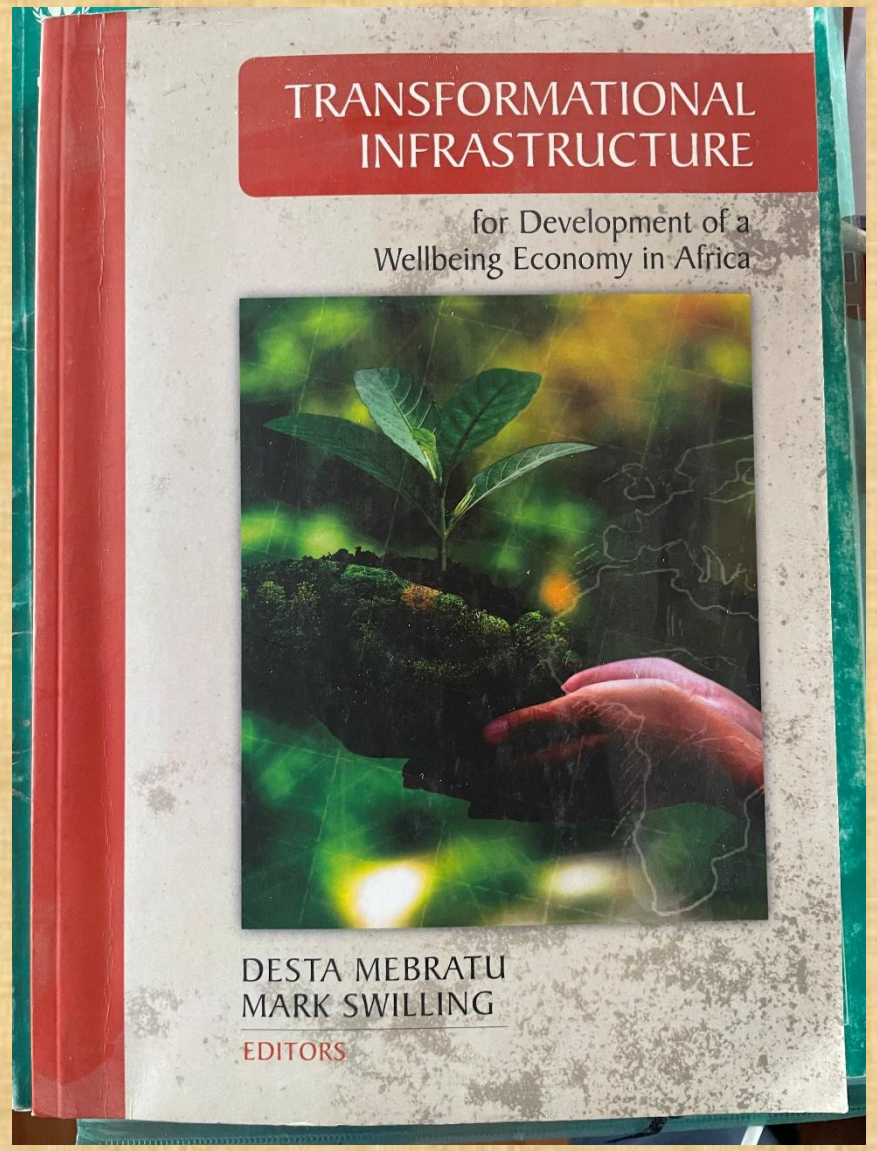
Chapter 14: Innovation and technology, UN 2011

'…the success of newly developed technologies has often been determined by the institutional and socio-economic structures that affect both the rate and direction of technological changes in society and underlined ***the importance of promoting social innovation*** in tandem with technological innovation'.



Chapter 7: Distributed renewable economy for Africa, 2019

'the battle is already on between the conventional groups that are bent on making the ***maximum profit and power consolidation*** out of the emerging disruptive technologies and the ***advocates for the transformational utility*** of these technologies for the broader and higher benefit of humanity'.



2. Transformational leapfrogging

- Leapfrogging from an early to advanced generation of technology has been ***natural part of technology diffusion*** from developed to developing economies and frontiers
- Presence of a ***well thought efficient technology regimes*** that ensure effective utilization of technologies is a function of the human and institutional capacities of the respective countries
- Most African countries have experienced a ***mix of blind and incidental leapfrogging*** that is more supply-driven since independence
- What ***Africa needs is transformational leapfrogging*** that is context-relevant and demand-driven and that capitalizes on the dynamic creativity of its use

Promoting transformational leapfrogging

Blind leapfrogging

- Total submission
- Uprooting local knowledge systems
- Extractive

(The Colonial era)

Incidental leapfrogging

- Supply driven
- Transplanting alien models
- Growth-centered

(The neocolonial era)

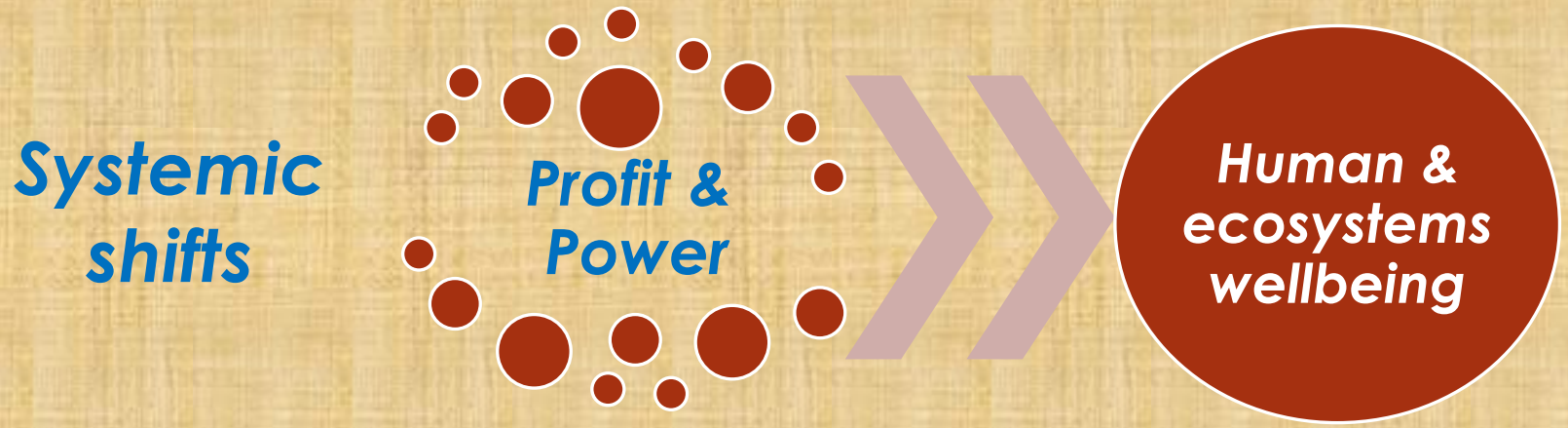
Transformational leapfrogging

- Demand driven
- Context relevant
- Wellbeing-centered

(The sustainability era)

Required global transition

- Develop an effective ***global socio-technological governance regimes*** by coupling the fast pace of technological innovation with an equally robust social innovation through key stakeholders' participation
- Strongly advocate for shifting the strategic focus of the development and deployment of AI-related technologies from ***profit and power focused to human and ecosystems wellbeing*** focused



Continental consideration

- Promote ***systematic assessment of frontier technology preparedness*** of countries and define key priority areas of focus
- Develop and implement ***national AI strategy and action plan*** with a particular focus on building the required skill sets and institutional setups
- Develop national/sub-regional/continental **data centers that could ensure data sovereignty** and serve as a backbone for transformational leapfrogging
- Introduce the required reforms in ***universities and*** promote technology innovation and incubation centers and start-up support centers

Potential sources of hope *(Amodei, D. 2024)*

- Most people are underestimating just how radical the upside of AI could be just as they are ***underestimating how bad the risks could be***
- It's dangerous to view companies as unilaterally shaping the world, and ***dangerous to view practical technological goals in essentially religious terms***
- Everyone (including AI companies!) will need to do their part ***both to prevent risks and to fully realize the benefits***
- ***Culture's values*** (social innovation) ***are a winning strategy*** because they're the sum of a million small decisions that have clear moral force and that tend to pull everyone together onto the same side.

Further readings

1. Acemoglu & Johnsson. 2023. Power and Progress: Our thousand-year struggle over technology and prosperity. London: Basic Books
2. Amodei, D. 2024. Machines of Loving Grace: How AI could transform the World for the better. https://darioamodei.com/essay/machines-of-loving-grace
3. Mebratu, D. 2019. Distributed renewable economy for wellbeing economy development in Africa, in Mebratu D. & Swilling, M., 'Transformation infrastructure for development of a wellbeing economy in Africa'. Stellenbosch: Africa Suna Media
4. United Nations. 2011. Working towards a balance and inclusive Green Economy: A UN System-wide Perspective. New York: United Nations.