## Bernard Amadei Dept. of Civil Engineering The University of Colorado, Boulder, USA



Resilience and Sustainability in Civil, Mechanical, Aerospace and Manufacturing Engineering Systems

## NAVIGATING THE COMPLEXITY ACROSS THE PEACE-SUSTAINABILITYCLIMATE SECURITY NEXUS

Bernard Amadei





### A VUCA World

- **Volatile** Dynamic, fast-paced, perhaps unstable, but not necessarily hard to understand.
- **Uncertain** Cause and effect are known but key information is lacking; the outcome is uncertain.
- **Complex** Many interconnected processes and variables. Some information is available but the volume/nature of it can be overwhelming to process.
  - **Ambiguous** Causal relationships are completely unclear. No precedents exist; "unknown unknowns."



### World Issues in the 21<sup>st</sup> Century

- Climate change and security risks
- Rapid urbanization
- Population growth, migration, and resettlement
- Water, energy, food, and land resources security
- Access to education, shelter, healthcare, etc.
- Environmental damage and biodiversity loss
- Natural and human-induced risks and emergencies
- Peacebuilding, violent conflict prevention, recovery
- Social equality and inclusive growth
- National and global security.







































How can ALL humans have fulfilling lives, meet their basic needs, and live with dignity and at peace?



### **Misinformation:**

- Refers to false or inaccurate information that is spread without the intention of deceiving others. It may be shared unintentionally and result from genuine mistakes or misunderstandings.
- Can come from various sources, including well-meaning individuals, genuine
  mistakes, or misunderstandings. The motivation behind sharing misinformation is not
  necessarily malicious.
- Can spread organically through social networks and communication channels as people share what they believe to be true without ill intentions.
- Detecting and combating misinformation usually involves correcting inaccuracies, educating the public about reliable sources of information, and promoting critical thinking and fact-checking.

#### **Disinformation:**

- Is false or misleading information intentionally created and spread to deceive, manipulate, or influence people.
- Originates from sources with a specific agenda or motive. It is strategically crafted to serve a particular purpose, such as undermining trust in institutions, promoting a specific ideology, or influencing public opinion.
- May involve coordinated efforts to amplify false information through bots, fake accounts, or strategic messaging to make it appear more credible and widespread than it is.
- Requires more proactive measures, such as identifying the sources of false information, addressing the underlying motives, and countering the deliberate spread of false narratives.

### Infodemic

A recent survey by Pew Research involving 24,525 people from 19 countries with advanced economies has shown that online misinformation and climate change ranked the highest as significant threats, with 70% for misinformation and 75% for climate change (Thompson, 2022). Other identified threats included cyberattacks from other countries (67%), the condition of the global economy (61%), and the spread of infectious diseases (61%). Misinformation and disinformation can threaten human development and security (UN, 2023) and create conflicts.



# The Global Source of Scientific Knowledge About The World's Information Environment

Algorithmic manipulation, bias, hate speech, misleading information, deep fakes and other acts have created a global information environment crisis and an existential threat to humanity. The cost is billions of dollars, millions of lives and an erosion of trust in science, our institutions and each other.

Led by top scientists of different disciplines from around the world, the IPIE is a global response. Together, IPIE scientists provide neutral assessments on the condition of the information environment — allowing policymakers to take meaningful action before it's too late.





### **Expert Survey on the Global Information Environment 2023**

Lessons for Technology Policy and Design

How can ALL humans have fulfilling lives, meet their basic needs, and live with dignity and at peace?





Do today's engineering and science graduates, educators, and practitioners have the skills and tools to address the global problems that our planet and humans face today or will be facing within the next 20 years and beyond?





























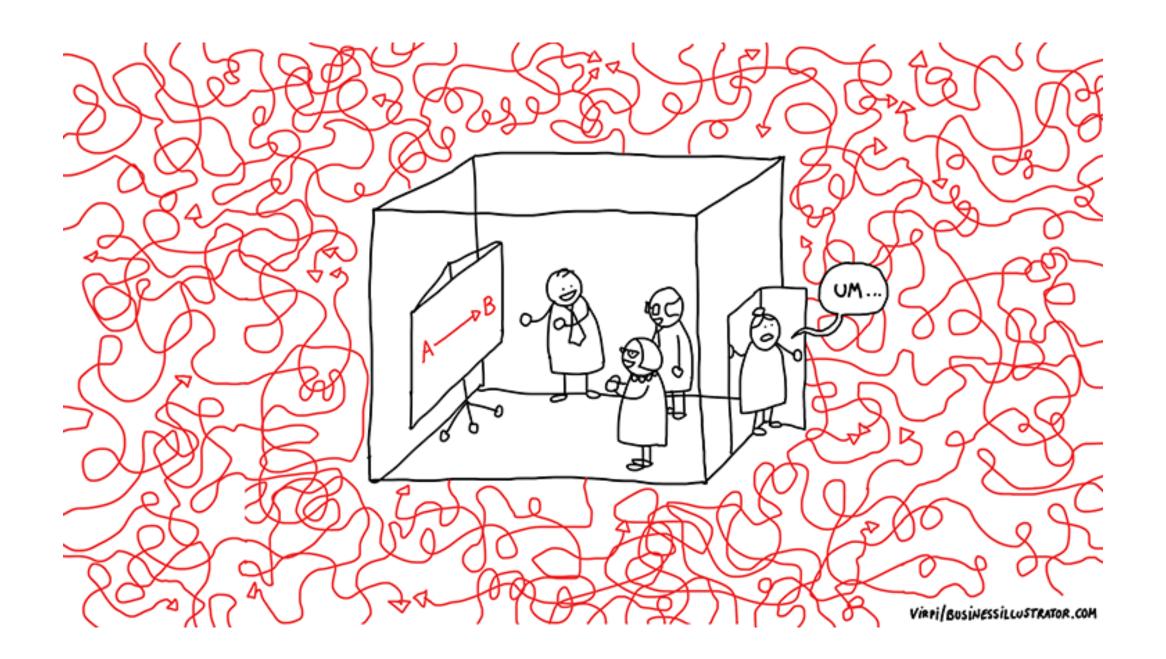












### People

End poverty and hunger in all forms and ensure dignity and equality

### Prosperity

Ensure prosperous and fulfilling lives in harmony with nature

### Partnership

Implement the agenda through a solid global partnership

### Planet

Protect our planet's natural resources and climate for future generations

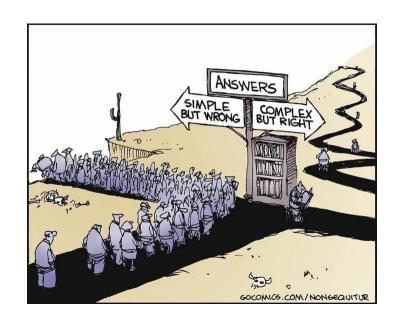
### Peace

Foster peaceful, just, and inclusive societies

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"The significant problems we face today cannot be solved at the same level of thinking we were at when we created them."

Albert Einstein





Contact: amadei@colorado.edu