

Welcome to the MIT System Design and Management Program Systems Thinking Webinar Series

**A Systems Approach for Addressing the Crisis in
Employment and Consumer Demand**
Reconciliation with Environmental Sustainability

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TECHNOLOGY, GLOBALIZATION,
AND SUSTAINABLE DEVELOPMENT

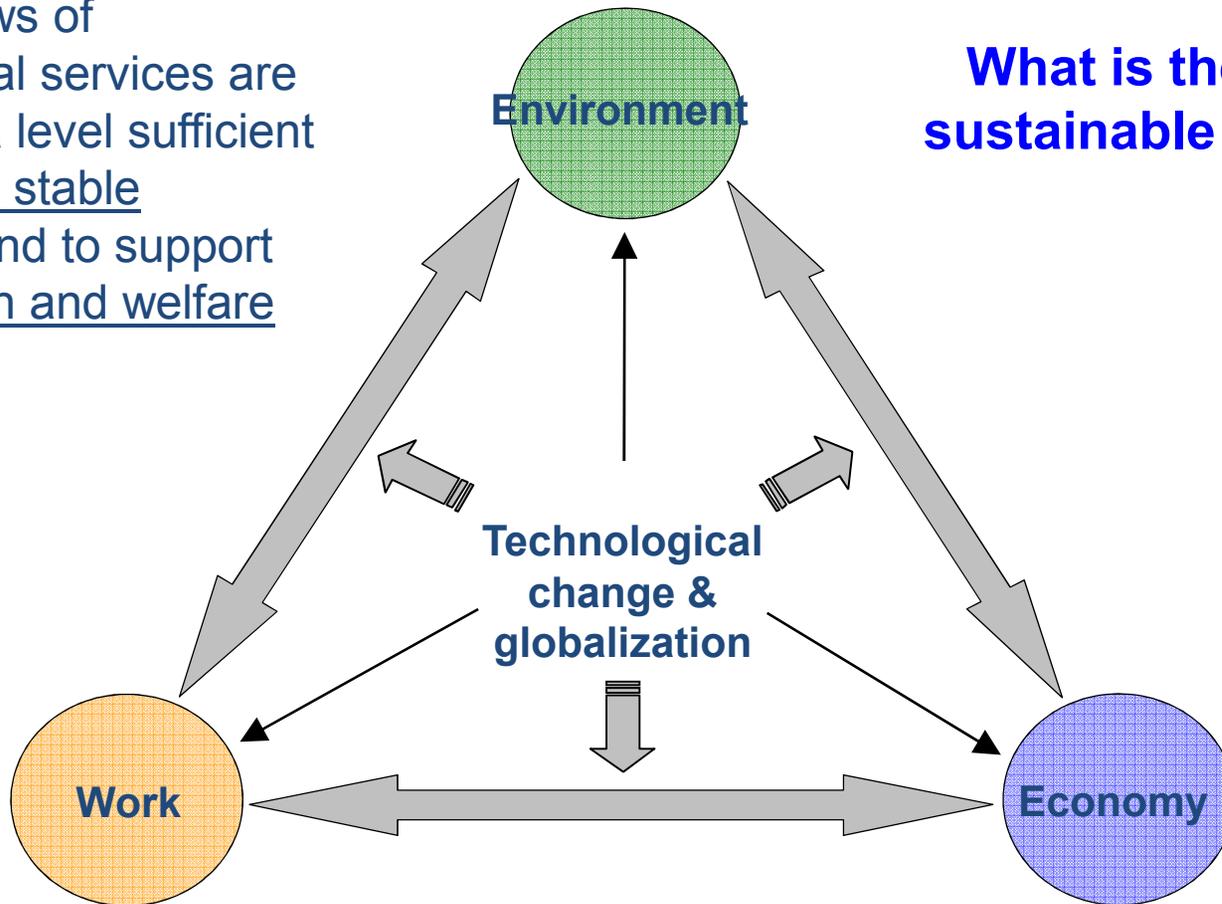
TRANSFORMING THE INDUSTRIAL STATE



environment • economy • employment

Long-run flows of environmental services are provided at a level sufficient to maintain a stable ecosystem and to support human health and welfare

What is the meaning of sustainable development?



Livelihoods are secure and available that provide satisfying engagement in work and equitable reward for labor, permit the maintenance of a decent standard of living, and are conducted in a safe working environment

The economy provides goods and services adequate to satisfy the basic material needs of all members of society and provides abundant and equitable opportunities for the realization of human potential

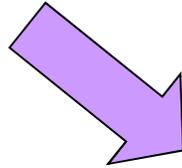
The Importance of Work and the Workplace

- Work is combined with physical and natural capital to produce goods and services
 - The workplace is the place (i.e., a marketplace) where *comparative advantage* is exchanged
 - Work has been the main means of *distributing wealth* and *creating purchasing power*
-
- Work provides a *means of engagement* in the society
 - The workplace provides an important *social environment* and mechanism for *enhancing self-esteem*
 - Involves more than labor-market policy: industrial and economic policy, environmental policy, and trade policy all have important consequences for employment

What Exactly is the System?

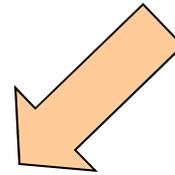
Supply Side

Extraction industries
Manufacturing
Agriculture
Transportation
Energy
Services
Housing
ICT



Demand Side

Consumer Consumption
Commercial Consumption
Government Consumption



SUSTAINABILITY CHALLENGES

Inadequate Supply of, and Access to, Essential Goods & Services

Toxic Pollution

Climate Disruption

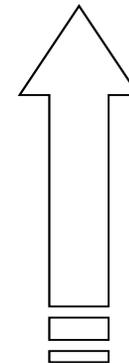
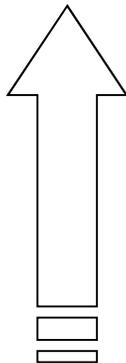
Resource Depletion

Biodiversity/Ecosystem Integrity

Environmental Injustice

Employment/Purchasing Power

Economic Inequity



SOLUTIONS

Education & Human Resource Development

Industry Initiatives

Government Intervention/Regulation

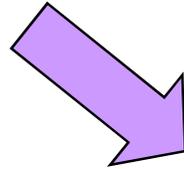
Stakeholder Involvement

Financing Sustainable Development

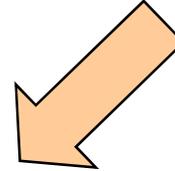
Supply Side

Extraction industries
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Producer-created demand →



FINANCE
← Subsidies
← Credit →



Consumer Consumption
Commercial Consumption
Government Consumption

Demand Side

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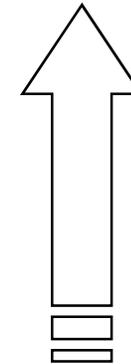
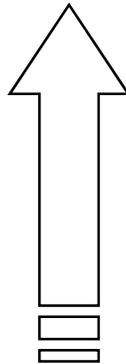
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What is the Nature of the Crisis?

- **EMPLOYMENT:** A crisis in increasing and high un- and under-employment, with **declining skills, wages, and purchasing power** for some ← the finance/credit crisis
- **CONSUMPTION:** The decline in purchasing power lowers **consumer demand** → further unemployment
- **PRODUCTION:** Focus on **productivity** → overcapacity (unrealized profits), the **increasing reliance on trade** to generate revenue, and the **end of cheap energy**
- **ENVIRONMENT:** Excessive and polluting production, throughput, and consumption by part of the society using too much energy and natural capital
- **FINANCE:** Reluctance of banks to lend, and producers and consumers to borrow in uncertain and volatile futures

I

Toxic Pollution
Climate Change
Ecosystem Disruption
Resource Depletion

VI

II



- Development & environment (industrialization)
- Trade & environment
- Investment & environment

Technological change & globalization

Increased environmental footprint from the need to increase employment & industrial throughput [??]

Environmental/energy improvements creating Employment [??]



- Skills
- Wages
- Purchasing Power
- Job Security
- Health and Safety
- Job Satisfaction
- Number of Jobs

- Changing international division of labor
- Changes in the nature of work
- **Changes in internal and external finance**

- Improvements in competitiveness, productiveness, and the use of physical, natural, & human capital
- Economic changes (arising from labor replacement & capital relocation)
- Financing growth and development

V

IV

III

Improving labor Productivity

- **Definition: labor productivity is output per (cost of) unit of labor (this is not a good metric of economic health)**
- **increase worker skills**
 - » increase **labor productiveness**
 - » Labor content and rewards to workers are increased
- **use/develop better hardware, software, and manufacturing systems**
 - » increase **capital productiveness**
 - » Labor content and workers' share of profits are decreased
- **externalize the cost of manufacturing and services onto the consumer**
 - » assemble your own bookcase; tech support, banking, travel help

Theoretical implications for employment and for the environment of increasing productivity

- Lower costs of goods/services by decreasing labor content →
- Lower prices →
- Increased demand and sale of goods and services
 - » in the original industry/market
 - » in new markets (influenced by increases in disposable income and producer-created demand)
- Are more workers hired than displaced?
 - » It depends on whether growth in production outstrips (capital) productiveness growth – end of a virtuous process?
- Increasing employment may require or stimulate a continual throughput economy with increasing consumption
- → adverse effects on environmental sustainability
- Eventually demand for consumer goods/services will decline

What are the significant contributions to unemployment and under-employment?

- Technological displacement and attendant deskilling of labor, leading to decreases in purchasing power
- Tendency to shift from utilizing labor to utilizing physical capital, driven by both costs associated with labor benefits and by volatility of the economy
- Location of production and service facilities abroad
- Reluctance to expand employment in volatile times
- Not a mismatch of skills supplied and demanded
- Not “houselock” brought on by mortgage crisis

What is unlikely to work in the long-term to increase employment and wages?

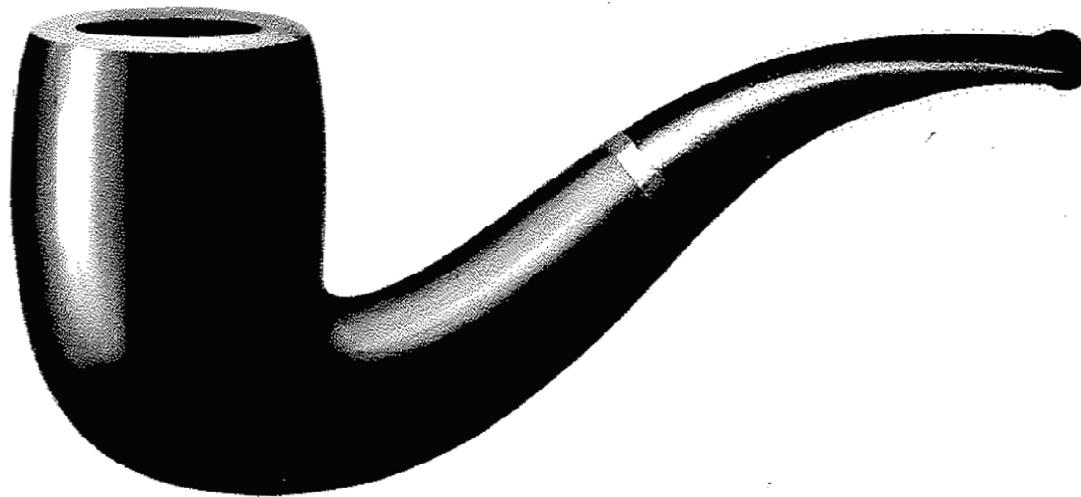
- Lowering taxes on the rich
- Continuing to increase productivity by displacing labor
- Greening manufacturing and energy → green jobs? (a triple dividend?)
- Spreading work out through adoption of a shorter work week (the 21 hour week?) – more leisure without retaining income parity
- Implementing Keynesian spending (to jump start the economy) which would take a year in any event to be implemented: good short-term, not a permanent solution
- Adopting austerity measures like those imposed on Greece – which would really choke-off growth and especially impact those at the socio-economic bottom

Increasing earning capacity, purchasing power, and/or sustainable livelihoods

- Income and wealth transfers
 - » changes in the taxing of income
 - » tax excess profits
- Tax pollution and energy, instead of labor
- Provide incentives for hiring labor
- Collect employer-based labor benefits as a percentage of sales, rather than on a per-worker basis
- Spread out existing work while retaining wage or income parity (~France – shorten workweek)
- Prohibit elimination of jobs (~Germany ~ 9% growth)
- Increase labor's claim on profits from production/services
 - » By **designing work back into production and services**

Increasing earning capacity, purchasing power, and/or sustainable livelihoods cont'd

- Meet *essential* needs of consumers in a different way (**shift to product services**) – lowering consumption, lowering costs to consumers, increasing wages, and lowering environmental impacts
- Encourage the production of **essential goods and services** and discourage others – regulate advertising; tax the “bads”
- Invest and spend more money on **labor-intensive production and services**
- **Change workers into owners** (Robert Ashford)
 - » By allowing them to acquire capital with the (future) earnings of capital (two-factor economics)
- **Tax Corporations which shift production/services abroad**
- **Educate workers/consumers for the economy of the future**



Ceci n'est pas une pipe.

Magritte

THIS IS NOT A PIPE RENE MAGRITTE 1929

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Book website:

<http://ralphphall.wordpress.com/technology-globalization-and-sustainable-development/>

Paper related to this webinar:

<http://www.sciencedirect.com/science/article/pii/S2210422412000032>

October 17th webinar:

http://sdm.mit.edu/news/news_articles/webinar_101711/webinar-ashford-systems.html