Innovation: means or end?

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Dissection of an obsession

- Our leaders seem to have become obsessed with innovation. Why?
- Innovation as the cure for our current ills:
  - Economic and financial crisis
  - And… (by the way)… “today’s societal challenges”
- How?
  - Growth, jobs, competitiveness

"Innovation means that we bring the wonderful scientific research that we have all the way along a chain until we get it into products and we sell [them] on the market; we develop products, we create products that the markets are there for and that people will want to buy.”

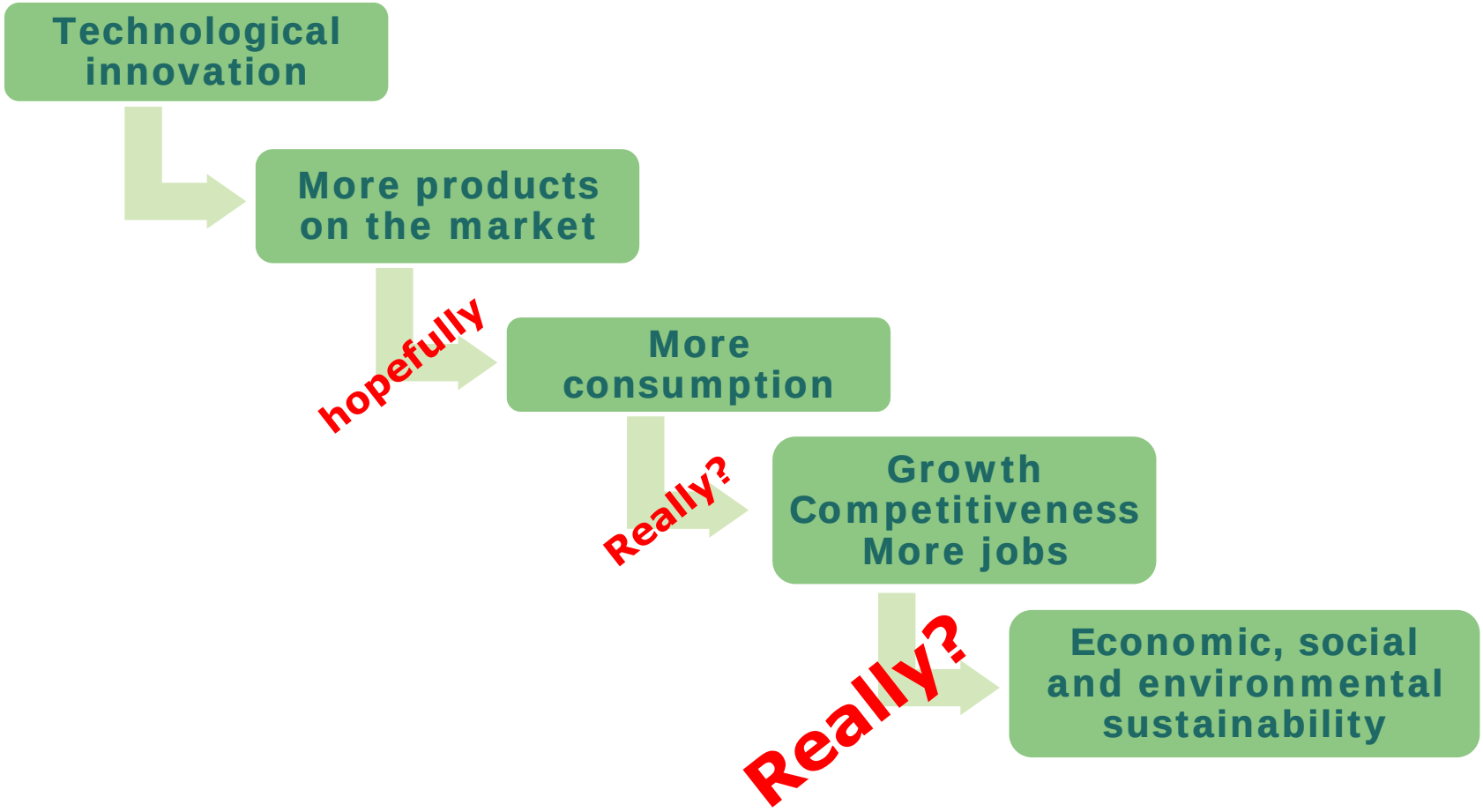
EC Research Commissioner Máire Geoghegan-Quinn

A narrow concept of innovation

- A way to bring more products to markets and deliver economic growth, jobs, profits in the short term
- Thinking mostly in terms of technological innovation
- Yet there are also non-technological, social, institutional, organisational and behavioural innovations

Innovation ≡
new ways of doing & new ways of thinking

The underlying logics



But… why are we doing all this?

- Putting more products on the market, (material) economic growth, productivity, competitiveness and technical innovation are not ends *per se*
- They are (potential) means towards higher aspirations: e.g. enhanced well-being, freedom, peace, sustainability…

⇒ First clarify societal objectives then consider the means to get there

⇒ Re-target innovation towards delivering societal objectives such as better health, quality of life, well-being, sustainability, etc

"Perfection of means and confusion of goals seem, in my opinion, to characterise our age"

A. Einstein (1941)

Exploring the mindset a bit more…

- A series of underlying hypothesis
  1. Innovation is always “good”
  2. Innovation can solve all our problems
  3. Curiosity-driven research is largely irrelevant to innovation

- Problematic and hinder the debate about the consequences of innovation

1. Innovation is always ‘good’

- Almost any innovative product is likely to have both positive and negative consequences (e.g. antibiotics resistance in bacteria)
- Innovation can have unexpected negative consequences, perverse effects, hidden costs (e.g. DDTs, CFCs, nuclear energy, ...)
- Need to reflect on consequences over time of innovations, and on their effects on quality of life, well-being and sustainability

⇒**Gauge an innovation against societal goals**

Governance of innovation

- Decision processes around technology development and deployment need to :
  - Be transparent and dynamic (there are unknowns, knowledge evolves)
  - Build on plural and conditional assessments
  - Apply the precautionary principle when stakes are high, uncertainty and ignorance prevail
  - Consider irreversibility of potential negative consequences
  - Cherish diversity of solutions to build resilience
  - Acknowledge the possibility of surprises
  - Be adaptive, allow to revisit decisions and choices
  - Keep options open, yet accept to close down inappropriate paths…

2. Innovation can solve it all

- Yet solving one problem often creates another one (e.g. bioenergy to mitigate climate change vs. food security and biodiversity)
- Reliance on ‘technofixes’ provides a false sense of security ⇒ wait and see attitudes
- Not a tenable ethical position when confronted with irreversible and severe consequences
- Builds on a myth of controllability of complex systems…

3. Curiosity-driven research, a luxury?

- The belief that to produce innovation, the bulk of resources and efforts should be for applied research and engineering vs. fundamental curiosity-driven research
- Yet we never know where a technological breakthrough will come from (e.g. the positron and the PET scan)
- Different types of research may contribute to innovation, including curiosity-driven, non-technological, social sciences and humanities research.
- Social sciences and humanities research:
  - important for institutional, organisational, behavioural, and social innovation
  - relevant to strategic orientation and deployment of technological innovation

Narrow focuses and lock-ins

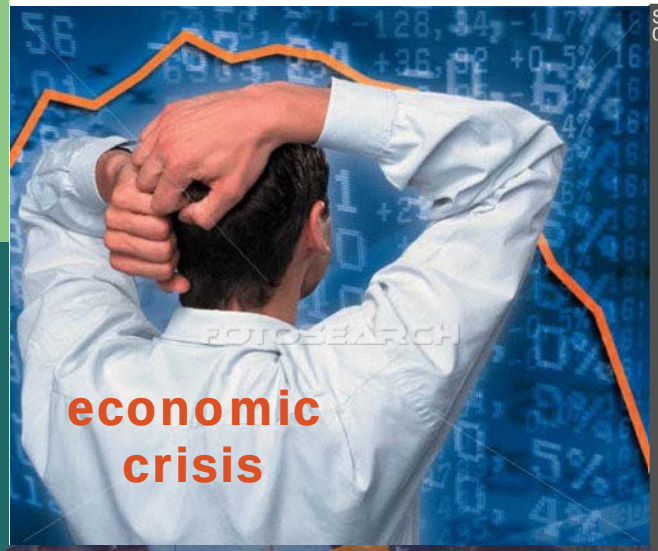
- Narrow focus on technological innovation for economic growth leads to unintended health, societal and environment side-effects.
- Narrow focus on putting goods on the market locks us onto a dominant, fixed and unrealistic path of material growth, based on unsustainable use of finite resources and overburdening the sink capacity of our biosphere.

⇒

Technological lock-ins (e.g. nuclear energy)

Ideological lock-ins (e.g. > consumption = > happiness)

Back to pre-(economic)crisis approach?



And more crises:

- Social
- Population
- Food
- Water
- Energy
- Contamination
- ...

... a series of systemic and intertwined crises: resolving one won't solve the others

Or willing to transform?

Transform how we feel, think, relate to others and to nature, create, live, act, ... and **innovate!**

Environment research can help…

Note: Environmental research ≡ research including a fuller grasp of the connections between the environment, human health and wellbeing

- to understand socio-ecological systems and the systemic crises
- to reflect on possible evolution of the system
- to imagine potential solutions (e.g. living with the legacy of nuclear choices)

Environmental research is... innovative!

- At methodological and epistemological levels: holistic and interdisciplinary methodologies, epistemology of complexity
- As driver of technological innovations:
  - Biomimicry: emulating nature to develop new technologies and materials
  - discovery of organisms with industrial or pharmaceutical applications (e.g. deep-sea extremophiles)
  - directly upstream of many technological innovations aimed at addressing environmental issues (e.g. climate change and renewable energy technologies)

Take-away messages

- A narrow focus on innovation merely to bring more products to markets will continue to produce serious negative consequences for society and the environment.
- Innovation can be re-targeted to deliver better health and wellbeing, an improved quality of life, and sustainability.
- To overcome technological and ideological lock-ins, a broader concept of innovation must be deployed.
- Research on the environment and human health is a crucial driver of socially meaningful innovation.

Summing up

- Innovation is a means, not an end
- Innovation is not just technological, also social, institutional, organisational, behavioural, cultural…
- Humility, diversity, precaution are “de rigueur” in the governance of innovation
- Avoid technological and ideological lock-ins
- Environmental research is crucial
- Innovation with a soul (socially meaningful innovation)… to support *“an economy with a human purpose”*

Thank you!

And thanks to my co-authors :

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