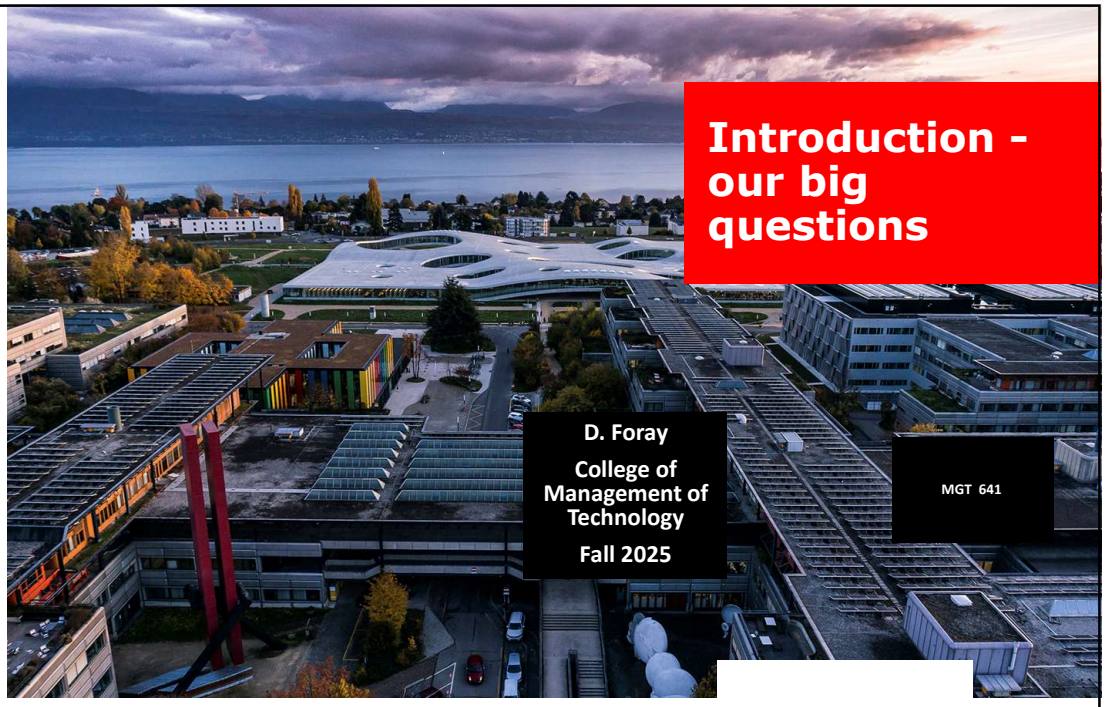

Introduction - our big questions

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Synopsis

EPFL

Innovation revolution (1850..present)
XX° century innovation style…

→

…Incredible transformations of the economy and society
Quantitative
Qualitative

↓

..but also great problems
Climate/biodiversity - healthcare crisis
Inequalities
Jobs
Bad innovations

←

How to transform « systems »; how to govern innovation?

Garbage recycling and degradation in Africa
Governing AI – maximizing benefits, minimizing risks
Air transportation domestic flight
Antibiotic resistance
Mental health

A story between aggressive planning and *laisser-faire*

The fundamental question posed by the book is therefore whether we can impose a degree of societal control over innovation, without losing its dynamism. This is not an easy question, since innovation cannot be planned, and its dynamism is linked to values and institutions that seem to oppose control, such as the freedom to experiment, the autonomy of innovators, market mechanisms and competition.

Three problems (among many!)

EPFL

- Between aggressive planning and laisser faire
- What is good, what is bad?
- To achieve a mission, tech inn is not enough, sometimes not essential

Aggressive planning

- Different forms of ''aggressive planning''
- A top down plan
  - Innovation can't be planned: ''*no person, or group of persons, is clever enough to plan the outcome of the search process, in the sense of identifying a particular innovation target and moving in a predetermined way to its realization*''
  - This does not mean an industrial or innovation policy will not work
- More subtle forms (which look ''democratic'')

Agressive planning – an article in Le Monde (25/11/2024)

In a world where energy will become increasingly scarce, it seems wise to prioritize activities that are considered useful to society.

How can we sort innovations into those that are useful and those that are futile, or even harmful?
Is a jet ski more useful than a pedal boat? Is a motocross bike more useful than a mountain bike?
How can we avoid "futile CO2"?

- Imagine a new form of direct and participatory democracy to regulate freedom to innovate: companies would present their projects to a committee for evaluation of the usefulness of the proposed service or product, thus avoiding the allocation of resources to futile activities and the generation of greenhouse gas emissions.
- This committee of randomly selected (and trained) citizens could issue a negative opinion in the event of excessive environmental impact, and could consider the possibility of a low-tech equivalent (pedal boat vs. jet ski).Companies deemed insufficiently "useful" would be given a deadline to redirect or transform their activities, failing which they would be forced to cease operation

- Agressive planning does not work
- Innovation is based on « modern values »: freedom to experiment, autonomy, liberty (Mc Closkey, Phelps)
  - You can't tell a young entrepreneur about what she should do (not a jet ski but a pedal boat!)

Laisser faire

- « *Letting people have a go to implement ideas for commercially tested betterment is the crux. It comes, in turn, from liberalism…Liberalism permitted, encouraged and honored an ideology of "innovism"* » Deirdre MC Closkey
- « *The freedom to conduct experiment required not only a high degree of autonomy; it also required a large number of decision makers, as opposed to a high degree of centralization and/or hierarchy* » Nathan Rosenberg
- « *Economic freedom were of key importance in enabling processes of innovation….Similarly, innovation in a nation's economy will tend to be more widespread if potential providers of inventive ideas are free to open new companies in existing industries…Also, innovation is more widespread when established firms are free to offer new products or conduct their business in new ways* ». Edmund Phelps

Laisser faire was a great step forward for innovators

- Freedom to experiment and autonomy were not taken for granted

- Corporations controled innovation and impeded new talents to enter an industry
- Privilege granted to one (only one individual can print books in the city)
- Influence of political power on inventors

- But freedom to experiment and inventor's autonomy are crucial (previous slide)
- Modern values were key to trigger an innovation revolution (1850s) which drove the great enrichment
- However *laisser faire* does not help to govern/control innovations

« *A man invented unbreakable glass and demonstrated it to Tiberius in anticipation of a great reward. The emperor asked the inventor whether anyone shared his secret and was assured that there was no one else; whereupon his head was promptly removed.* »
The most interesting point is that the inventor turned to the emperor for a reward, instead of turning to an investor for capital with which to put his invention into production

- Between agressive planning and *laisser faire*, a need for some ''command-control'' policy logics

- How to influence the direction of innovation to solve grand challenges while not impairing freedom to experiment and inventor's autonomy?
- The course will provide a collection of approaches and tools to do that
- However comes the second question

Three problems (among many!)

- Between aggressive planning and laisser faire
- What is good, what is bad? (If we want to control, we need to know)
- To achieve a mission, tech inn is not enough, sometimes not essential

A thought experiment – low cost flight

Admirable innovation (business model innovation)

Has transformed a mobility experience that was rare and valued luxury – only available to a rich few at great expense – into features of modern life that we take so much for granted Democratisation

Very large social surplus =
[willingness to pay – price] x N users

Strong complementarities with other growth enhancing activities (tourism, culture, etc..)

Not just ''cheap'' – this is about simplification, focus on the essential function and get rid off all elements of the sale proposition which are not essential

''*The best innovations generate so massive decrease in costs that they transform the world*'' (Riddley)

Consterning innovation

Emissions and pollution – not sustainable

What should we do?

Should we give up?
Should we just continue the same model of production and consumption?
Should we keep it but make sustainable? How?

Other cases

- Self-checkout kiosks (so so automation)
- Vocal or face recognition system
- Generative AI

- A big difference between:
- situations where bads and goods can be easily differentiated (e.g. fossil fuel versus clean energy; non addictive versus addictive social networks) and..
- situations where the allocation of an innovation to one of the two categories is not obvious, perhaps impossible (low cost flight, face recognition system, generative AI, Uber, Airbnb, on line shopping)

Goods or bads?

- In many cases the problem is not in the invention but how it is deployed, adopted and used (how it becomes an innovation)
- Most inventions are neither good nor bad *per se*: there is no predetermined ‘’script’’ about their influence on social organizations and well-being
- This is the use, the mode of «socialisation » of the invention which will make it good or bad
  - What is bad? the car? Or the Fordian business model? « *My goal is that everyone will be able to acquire a car* ».
  - This is not the invention of the car which transforms our society but the business model
  - And was this business model so bad?

Three problems (among many!)

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Transformative Innovation Policy (TIP)

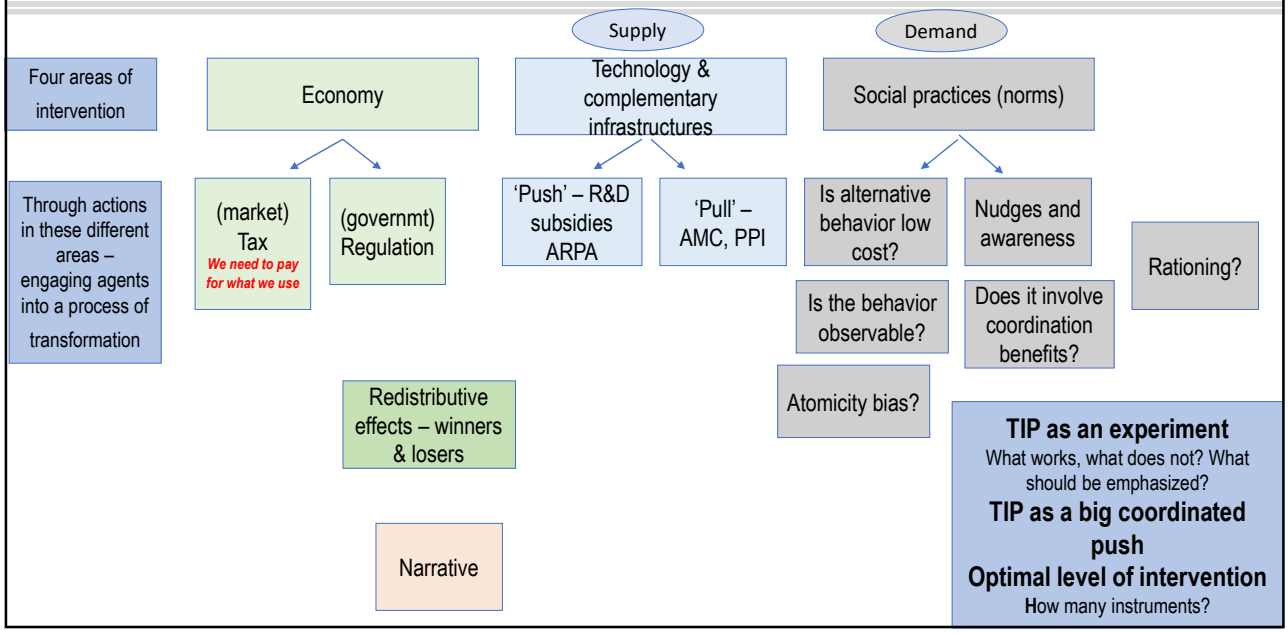
TIP is a policy to support system's transformation

The public sector plays a central role not only as funder but also as coordinator

Mobility on demand in California to shift the mobility model from the individual use of private cars to a model including collective transportation, multimodal networks and sustainable mobility

Many actions: public infrastructure, last mile solution, car pooling incentives, app to integrate all suppliers, employers involvement, mobility and social practices

Framework – multiple areas of intervention, social experiment, coordination



- What regulation and policy can help society to have a certain control on the direction of innovation – while not impairing freedom to experiment, autonomy of inventors?
- How to know what is good, what is bad? In a few cases it is pretty clear, in many cases it is not – the need for experimenting innovation
  - AI case
- TIP involves social experiments (to discover what works and the willingness to change of stakeholders) and coordination of interventions in multiple areas
  - Garbage recycling in Africa
  - Air transportation traffic
  - Antibiotic resistance
  - Mental health

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