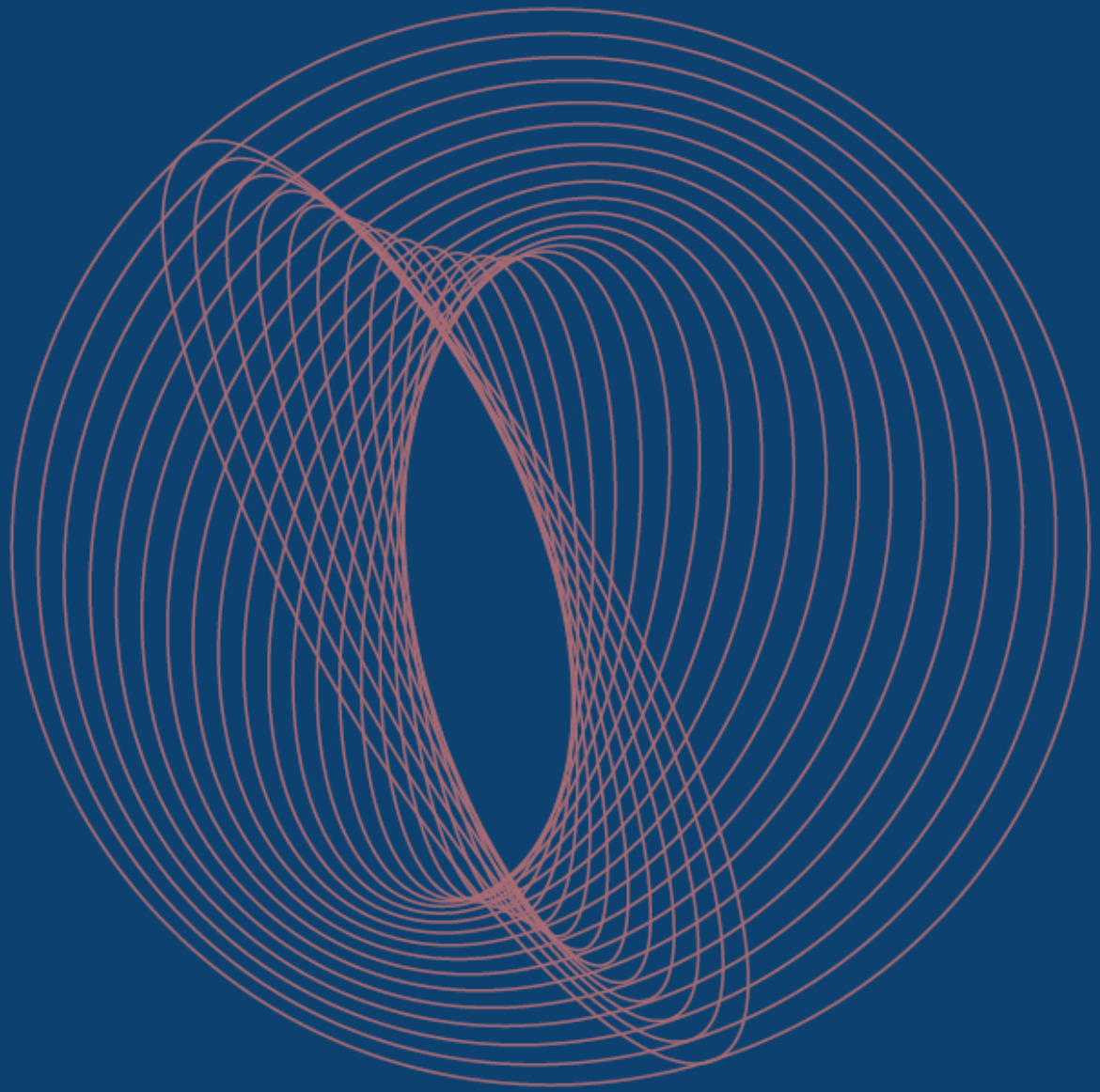
Technology and Society

From determinism to data and AI



From means to an end to determinism

People shape tools ⟷ **Tools shape people**

Instrumental view

Last lecture

Technology is a neutral means to an end.

People decide what a tool is for, and the tool simply serves.

Artefacts have politics

Winner, between the two

Moses built the Long Island parkway bridges too low for buses.

The design kept bus riders off the beaches: the tool carried its builder's choices.

Technological determinism

Today: Comte, Marx

Technology steers society rather than serving it.

“The hand-mill gives you society with the feudal lord; the steam-mill, society with the industrial capitalist.”

Positivism: linear progress

- Auguste Comte (1798–1857). The idea of linear progress in well defined stages.
- Theological, Metaphysical, Scientific.
- Theological. Supernatural forces explain events like thunder or drought.
- Metaphysical. Explanations in unobservable phenomenon.
- Scientific. Proper goal of science is simply the prediction of phenomena.

Marx

- Marx adapted Hegel's dialectic to history: change comes through conflict and its resolution, driven by material conditions rather than ideas.
- History is determined by the struggles between those who rule the modes of production and those who are under that rule.
- On this basis it is possible to predict the course of history.

Determinism

- Determinism: Determinism is true of the *world* if and only if, given a specified *way things are at a time t*, the way things go *thereafter* is *fixed* as a matter of *natural law*.

- We ought to regard the present state of the universe as the effect of its antecedent state and as the cause of the state that is to follow. An intelligence knowing all the forces acting in nature at a given instant, as well as the momentary positions of all things in the universe, would be able to comprehend in one single formula the motions of the largest bodies as well as the lightest atoms in the world, provided that its intellect were sufficiently powerful to subject all data to analysis; to it nothing would be uncertain, the future as well as the past would be present to its eyes. The perfection that the human mind has been able to give to astronomy affords but a feeble outline of such an intelligence. (Laplace 1820)

Technological Determinism

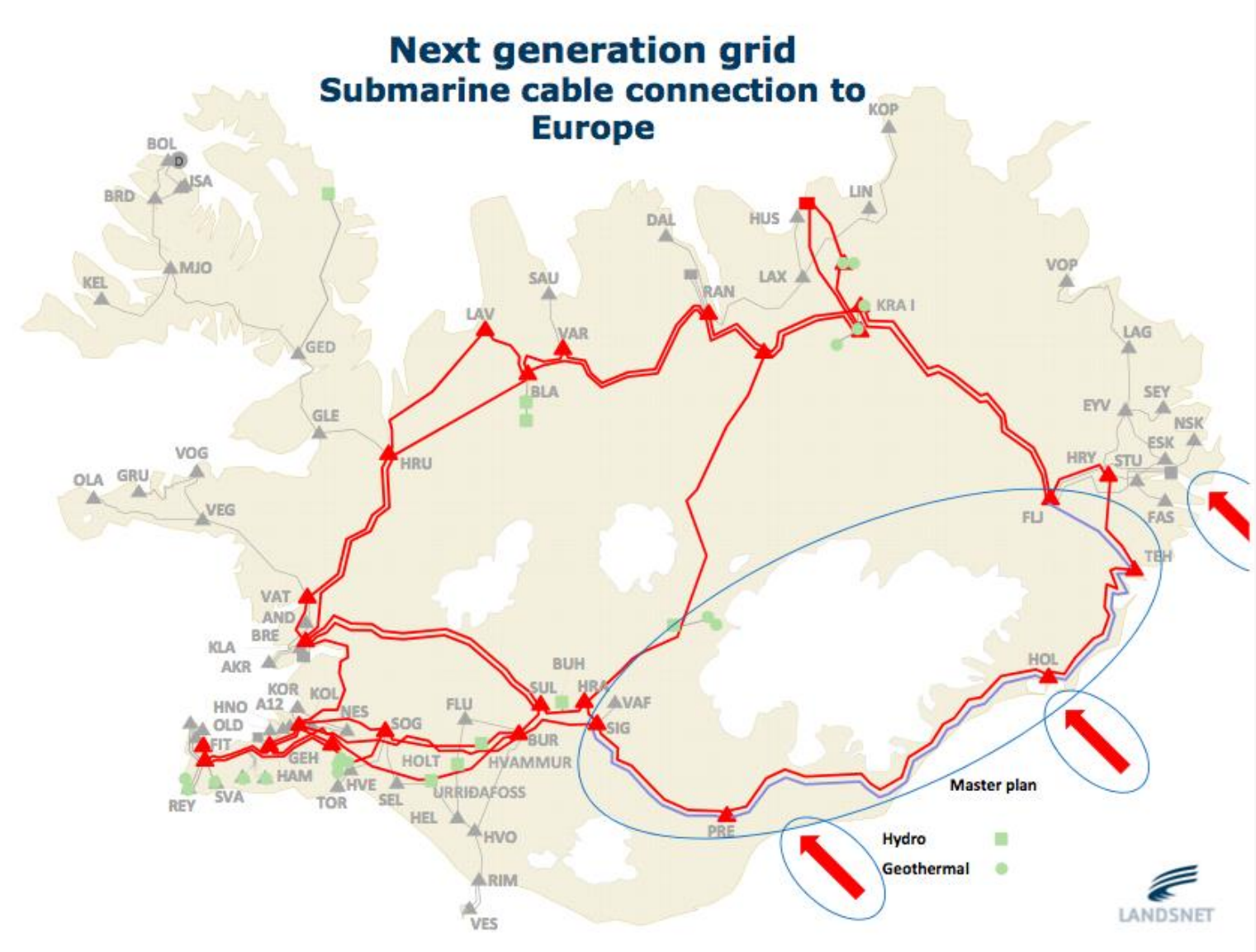
- Technology shapes how we as individuals in a society think, feel, act, and how our society operates as we move from one technological age to another.
- Kuhn (1962): science does not grow steadily; it moves through paradigms, shared frameworks that are overturned in revolutions. Technological determinism reads history the same way, as a series of technological ages.
- Technology defines history.
- ”The hand-mill gives you society with the feudal lord; the steammill, society with the industrial capitalist.” Marx, The Poverty of Philosophy

Themes

- The Simultaneity of Invention (Schickard 1623 vs Pascal 1642; Tesla vs Edison)
- The Absence of Technological Leaps (uniformitarianism vs catastrophism)
- The Predictability of Technology
  - ”To make a steam engine, for example, requires not only some knowledge of the elastic properties of steam but the ability to cast iron cylinders of considerable dimensions with tolerable accuracy.” (Heilbroner, 339)
- The invention and getting to the market.

Electricity

Technological systems



Phones

In 1915, a three-minute daytime phone call from New York City to San Francisco cost 20 dollars



Qwerty

The case of brilliant invention and race to market.



Gutenberg press

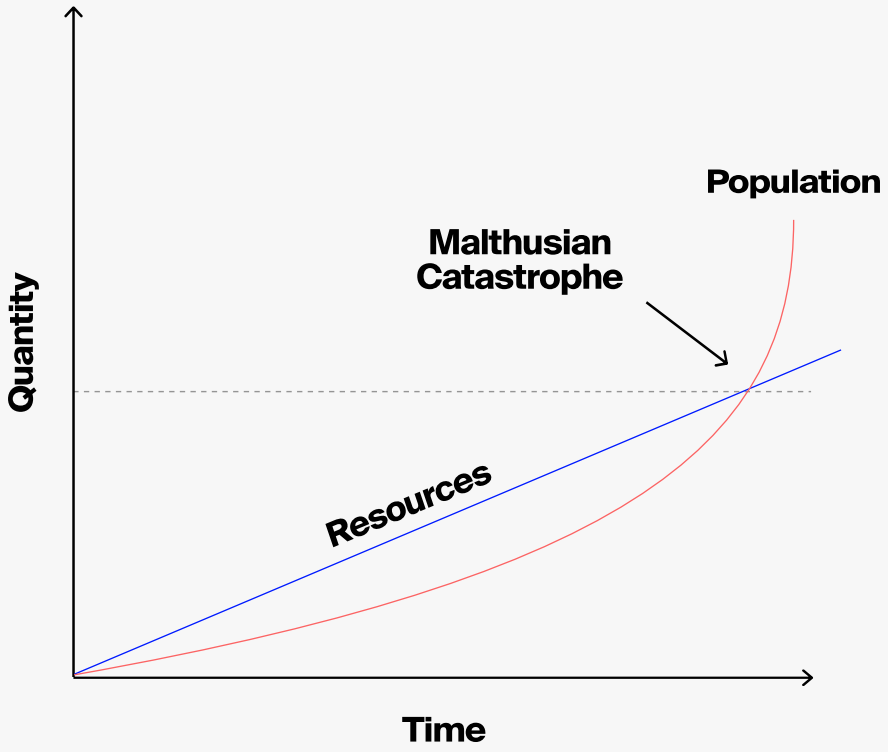
- 1440 Gutenberg in Germany his invention drastically changed society.
- The establishment of the printer strengthened certain crafts such as copyists, book binders, gold- smiths, rubricators, illuminators, and miniature painters.
- Printing offered a revolutionary way to publish.



Impact on history

- When Luther made his first public appearance in 1517, the art of book printing had been in existence for over half a century.
- Catholic vs Lutheran.
- Already in the years from 1517-1520, Luther was the most widely read and most influential writer on religious subjects in Germany.
- One-third of a million copies of his works were spread throughout Germany between 1517 and 1520.

Malthusian Catastrophe



Precedent

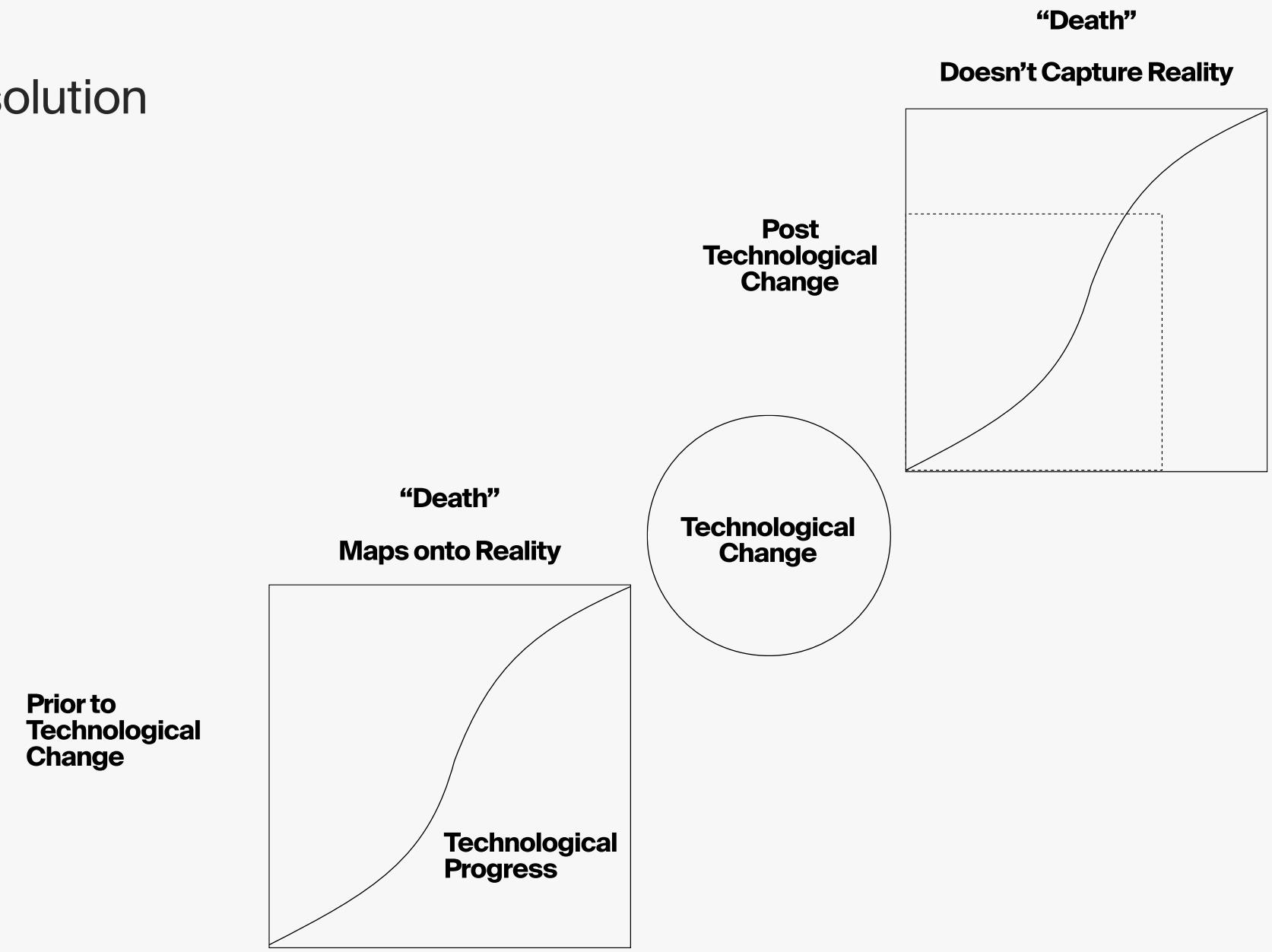
“Death”

- We need to reconceptualize the tools we have traditionally used to relieve the tension between technology and ethical concerns.
- “Re-engineered” the concept of death in light of technological developments.
- Required more precision.

“In recent years, there has been much discussion about the definition of death in neighboring countries. The reason for this is, among other things, that with increased technology in medicine, not least with the advent of respirators, it is possible to maintain the respiration and heartbeat of a patient even though brain activity has truly and finally ceased. This has called for a broader definition of death than the traditional one, which assumes that a person is dead when his heart stops beating and his respiration stops. Further evidence of death has been signs of death such as livor mortis.

Many countries have for these reasons redefined the concept of death in such a way that a person is considered dead if his brain activity has ceased and it is clear that brain activity cannot resume. The Danes and Icelanders are the only peoples in Western Europe who have not reviewed the concept of death in this way. It has long been clear that there was a need to investigate whether there was reason to follow the precedent of other nations”. (Alþingi 1990).

Tension resolution

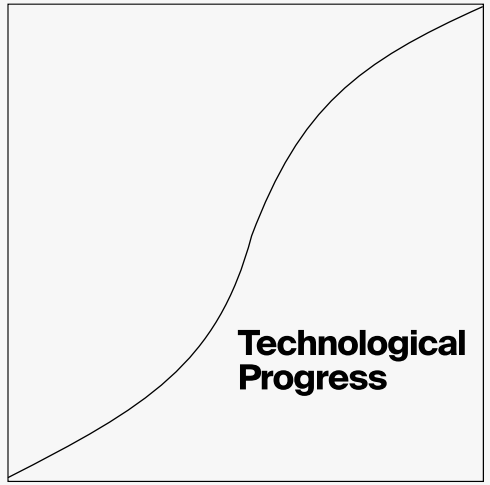


Tension resolution

Prior to Technological Change

Concept

Maps onto Reality

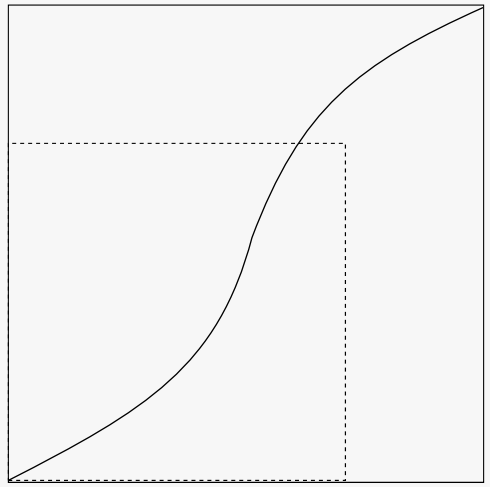


Technological Change

Post Technological Change

Concept

Doesn’t Capture Reality



“Data”

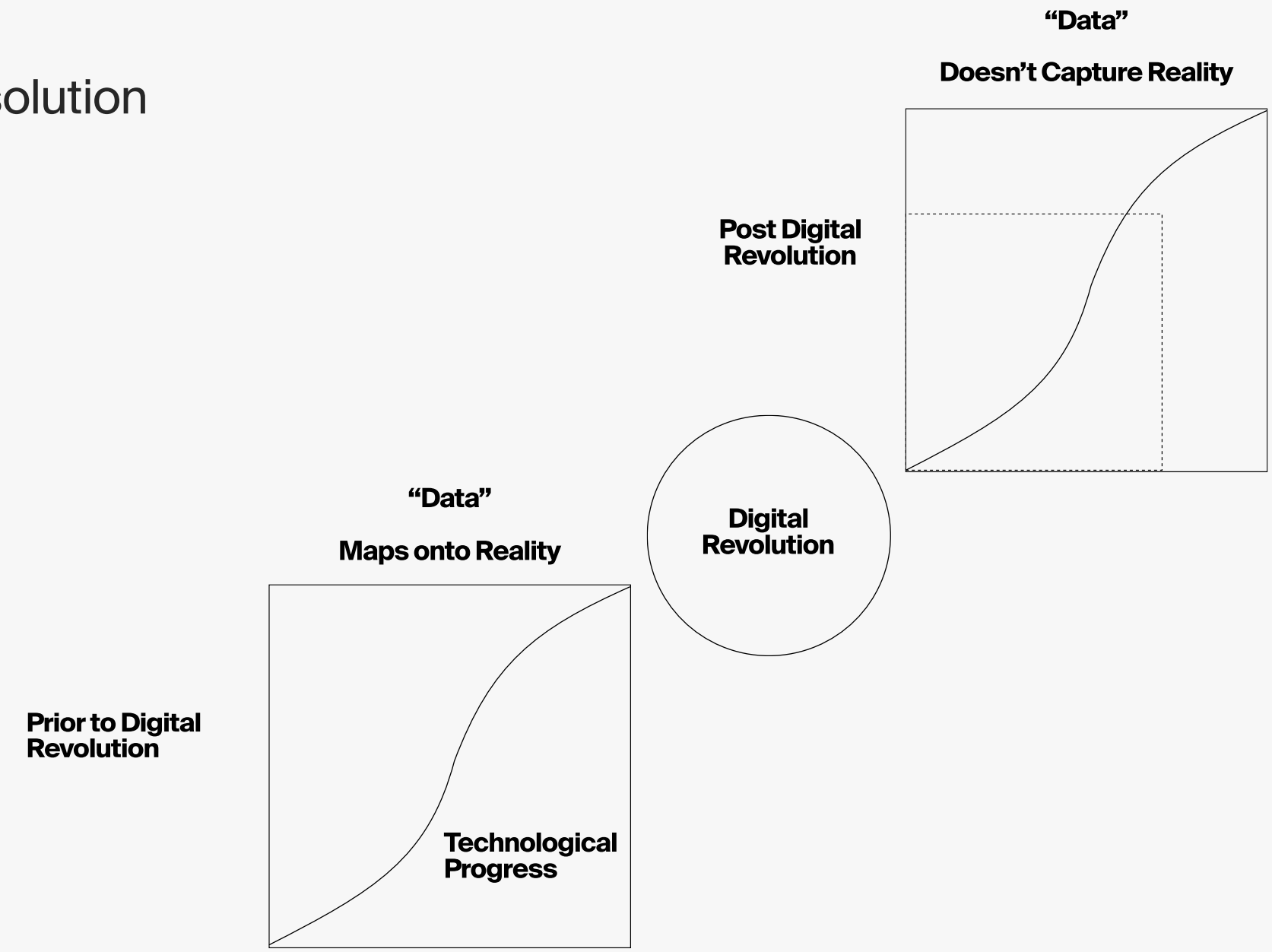
- Before the digital revolution, data meant paper: filing cabinets, archives and card indexes.
- Access was slow, local and costly, which protected people by default.
- Digitisation made records searchable, copyable and combinable at almost no cost.
- The concept of “data” needs re-engineering, as “death” did.

“Plainly there is a vast difference between the public records that might be found after a diligent search of courthouse files, county archives, and local police stations throughout the country and a computerized summary located in a single clearinghouse of information.” (US Supreme Court, 1989)

The Court called this protection “practical obscurity”: the records were public, but scattered and slow to compile. Once the same records sit in one searchable database, that protection is gone, even though no law has changed.

Source: US Dept. of Justice v. Reporters Committee for Freedom of the Press, 489 U.S. 749 (1989)

Tension resolution



Autonomy and surveillance

- The idea of autonomy in the age of the internet and social media.
- Data collection and algorithms.
- The processing of information about people and the use of AI.





Standing-reserve: nature and people as stock to be used

The river

Dammed and stored, the river becomes power on demand

The user

Logged and stored, behaviour becomes data to be mined, predicted and optimised