

Energy as Abstract Social Nature: Climate Change as Labor Issue

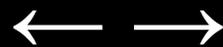
Binghamton
July 2015

STRATEGIC DIRECTION

Defending commons/territorios/buen vivir,
seeking post-petroleum civilization



Putting thermodynamic energy into
perspective as “abstract social nature”



Connecting the oil/energy issue more
closely with the politics of wage labor



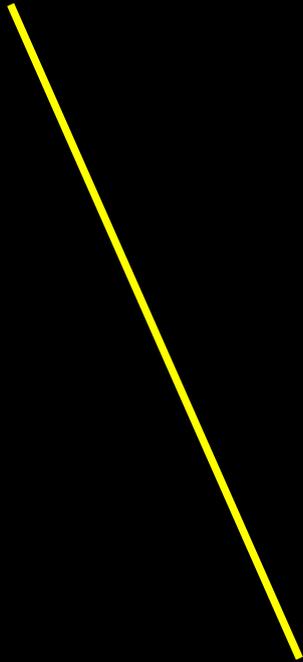
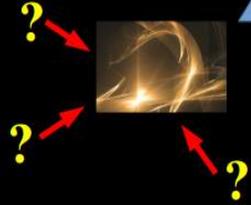
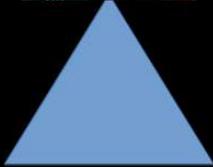
CAUTIONS

To problematize thermodynamic energy politically is more than to question its distribution, its “greenness”, etc. It is to question the practices that define energy.

This is not to doubt the truths of thermodynamics ... nor to deny its intellectual achievement.

Nor is it to say that the concept of thermodynamic energy cannot be used by progressive forces in a discussion ...

... but only to indicate that thermodynamics, like most legal codes, has certain capitalist, anti-commons, at times racist biases.





Mariarosa Dalla Costa

“How to build and impose on expropriated men and women the discipline of the wage labour system (with the unwaged labour it presupposes) was the problem posed five centuries ago in initiating the process of capitalist accumulation. It is **still** the problem **today** for the **continuation** of this mode of production and its combined strategies of development and underdevelopment.”

But this is possible only by
creating and continually recreating
new kinds of human being ...

... and overcoming contradictions
in and resistance to the process.

E.g., dealing with ...

LABOR STRUGGLES



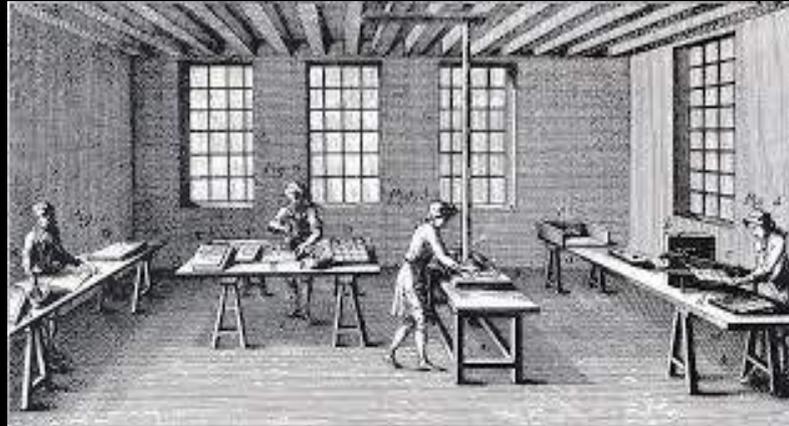
Refusal of capitalist work



Negotiations and resistance
regarding wages, conditions, health ...



Precarious, continuous processes: human activity → productive wage labor



1500: *waged labor still seen more or less as slavery*

1600: *waged labor becomes part of the meaning of the English word “work”*

1700: *uncoerced wage labor market emerges*

1750: *“work” becomes an abstract noun rather than one referring to specific jobs*

งาน

“ceremony/
party”

“work”

“energy”

งานศพ

งานจ้าง

พลังงาน

งานแต่งงาน

แรงงาน

งานฉลองปีใหม่

สุขภาพแรงงาน

Ability to refuse ← → Ability to defend
commons/*territorios* relationships

Fundamental form of labor struggle: struggle
to defend commons/*territorios*/etc.

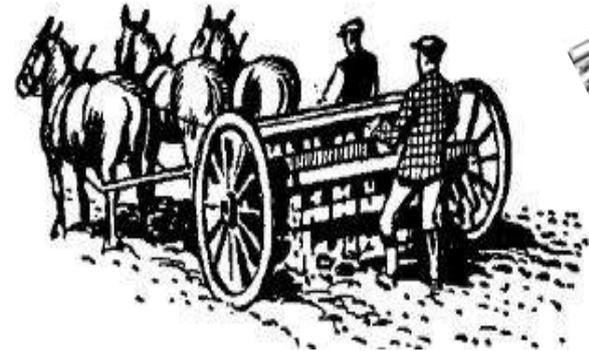
Capital's fundamental
obstacle and challenge
(but also wellspring of
value):
commoning/*sumak*
kawsay/etc.



Human beings and animals can be “reformatted” only if extrahuman “natures” are also “reformatted”.







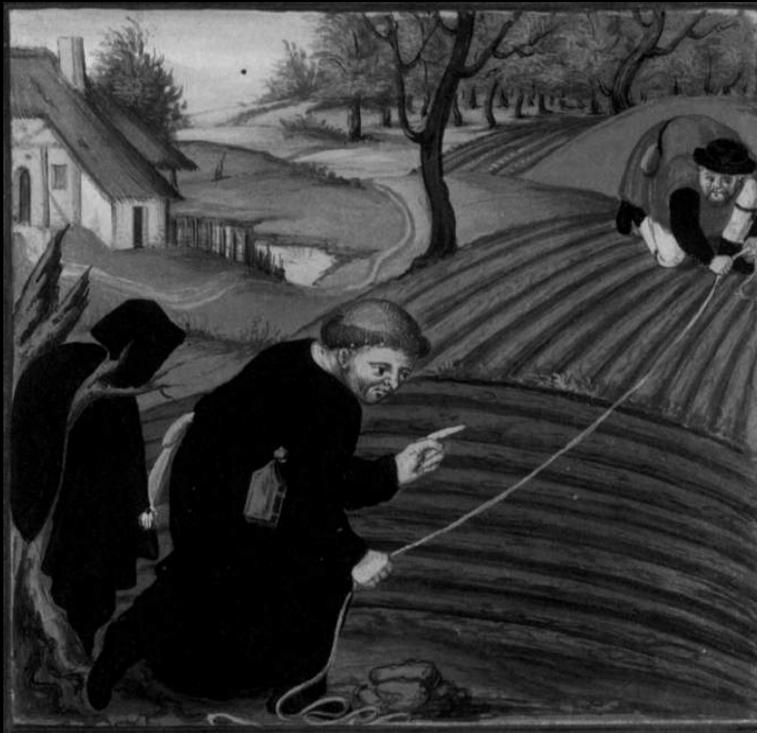
There is a lot more to this than just “blood and fire.”



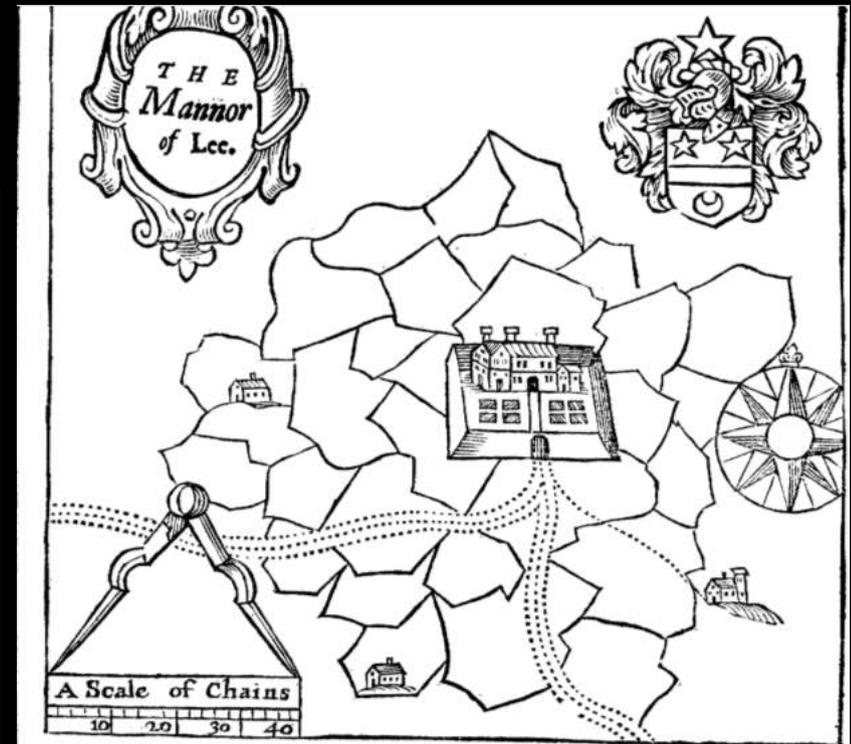
Land



surveyed private property

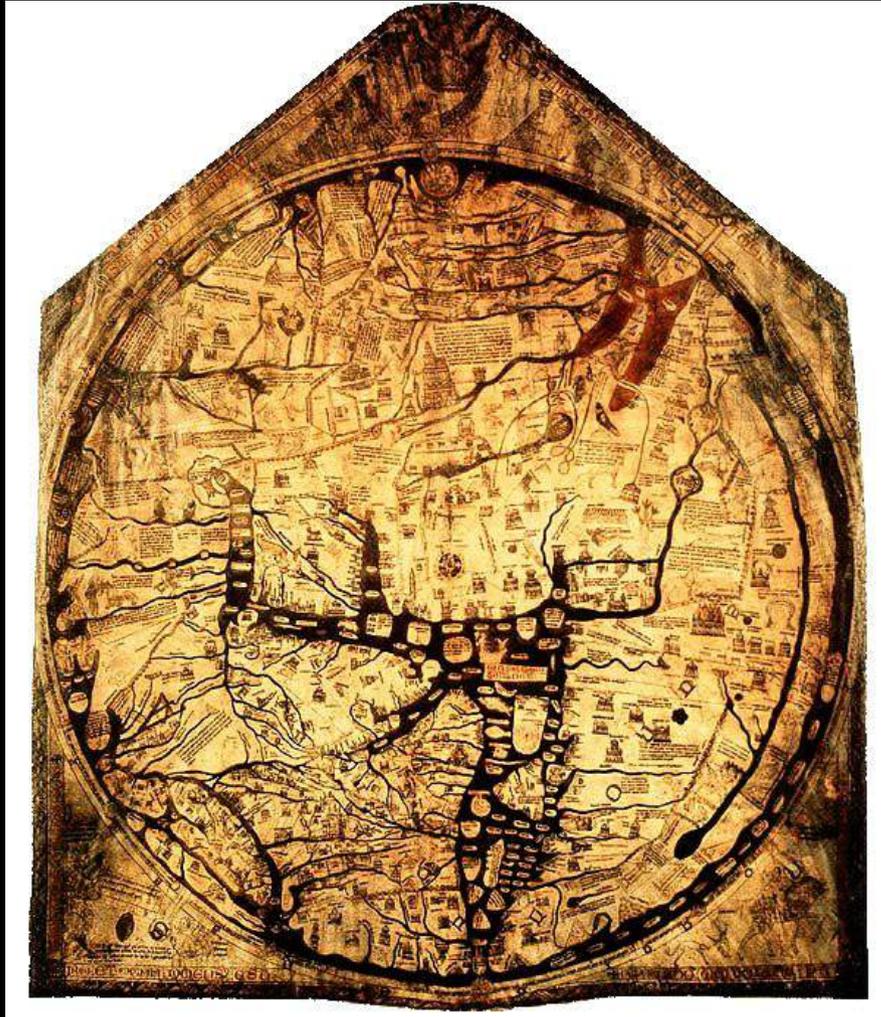


Propter iniquitatem auaritia eius iratus sum, et percussi eum:



These things being well performed, your plot will be a neat Ornament for the Lord of the Mannor to hang in his Study, or other private place, so that at pleasure he may see his Land before him, and the quantity of all or every parcell thereof without any further trouble.

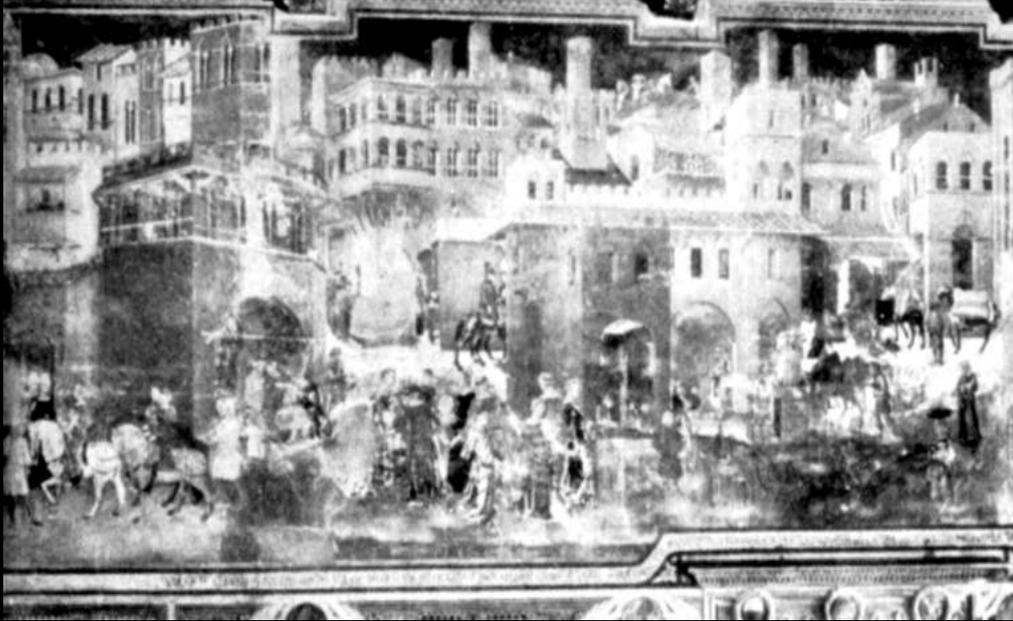
Mappa



Mercator



Perspective



Commons/*territorios*



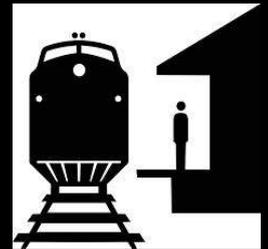
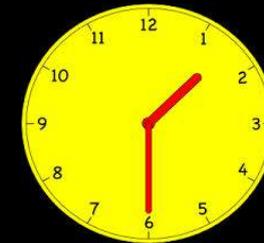
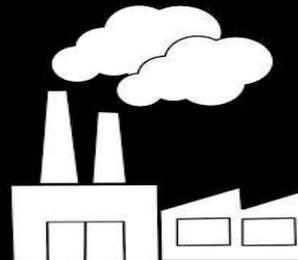
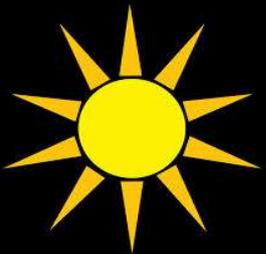
resources



Commons time

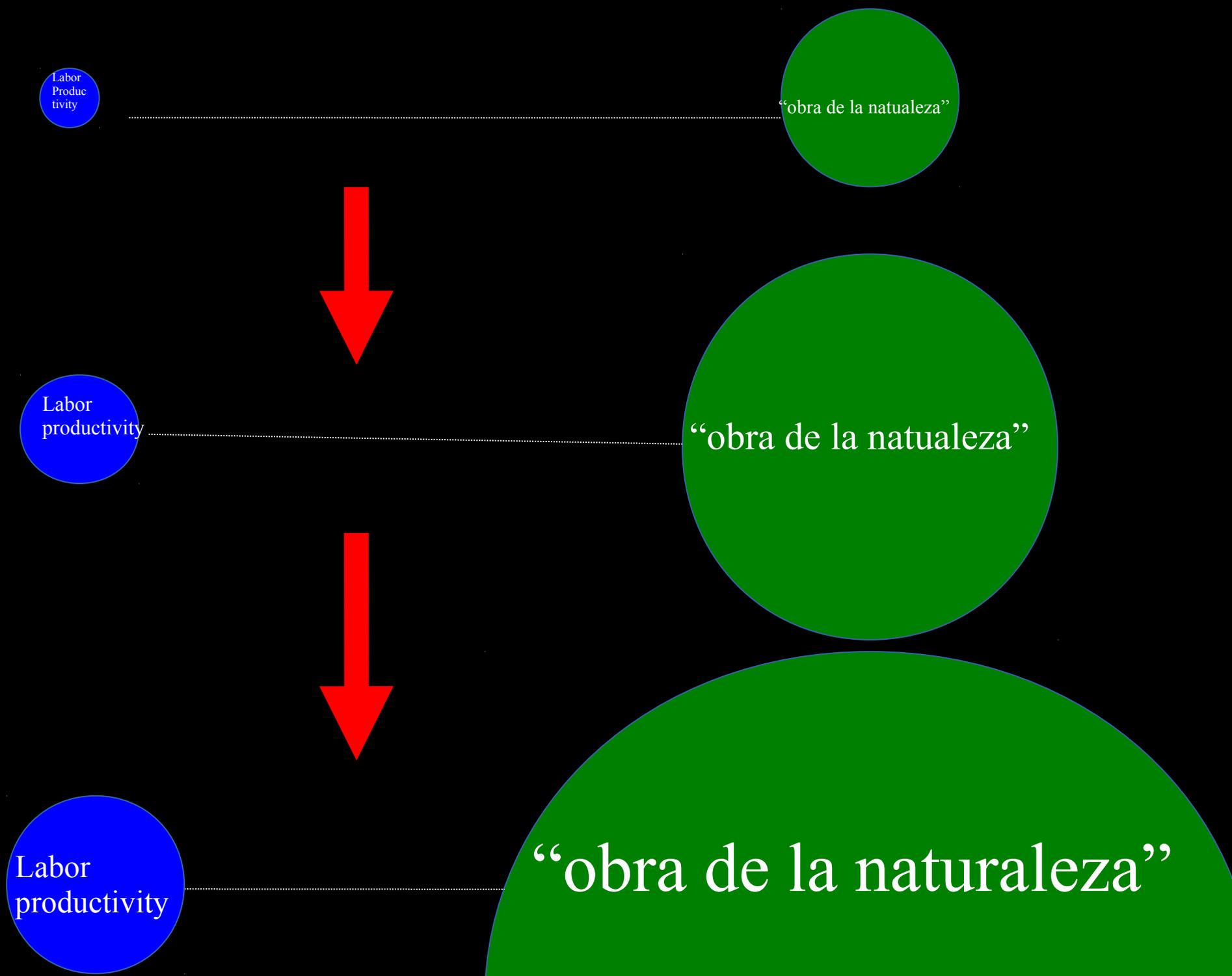


Newtonian time

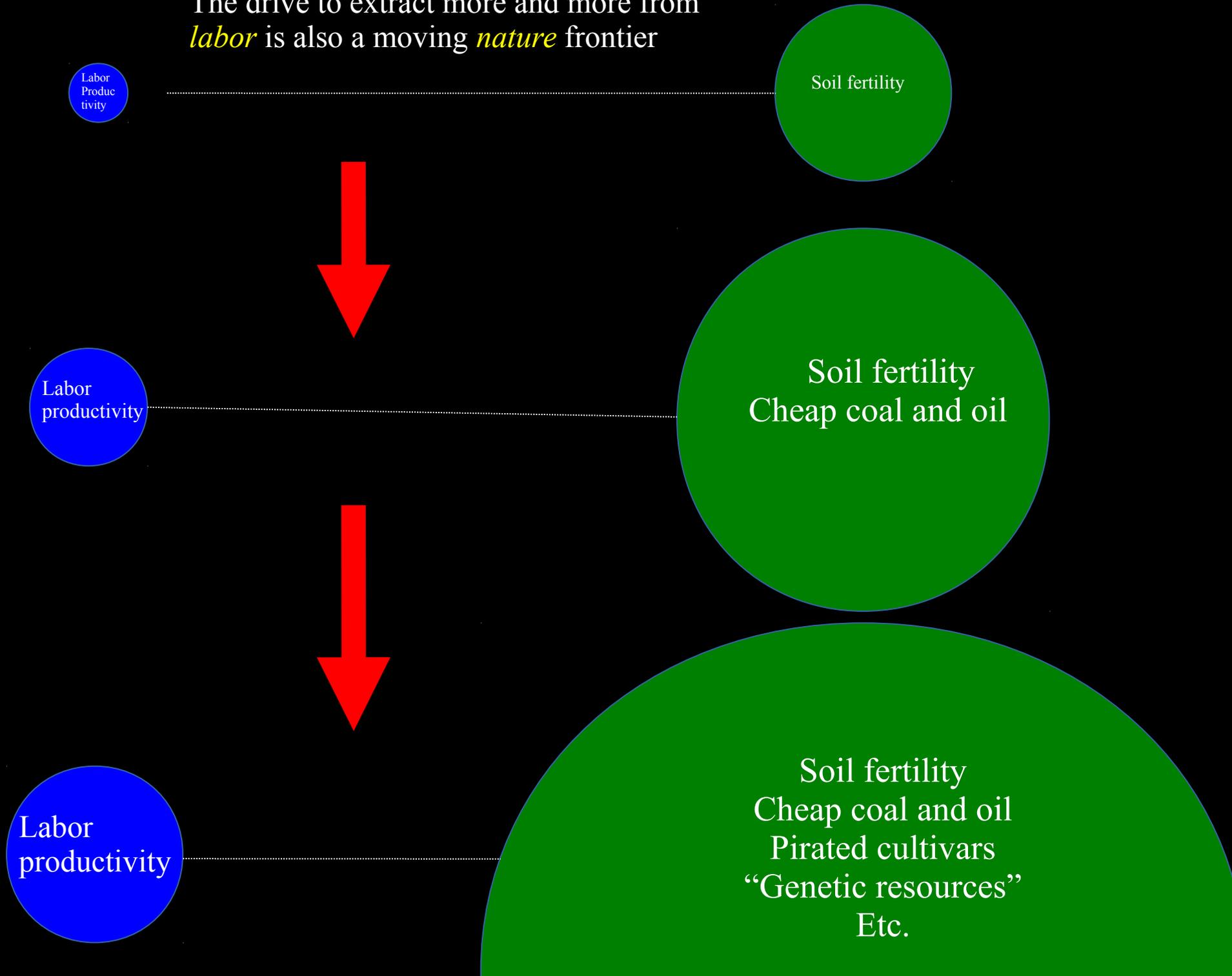


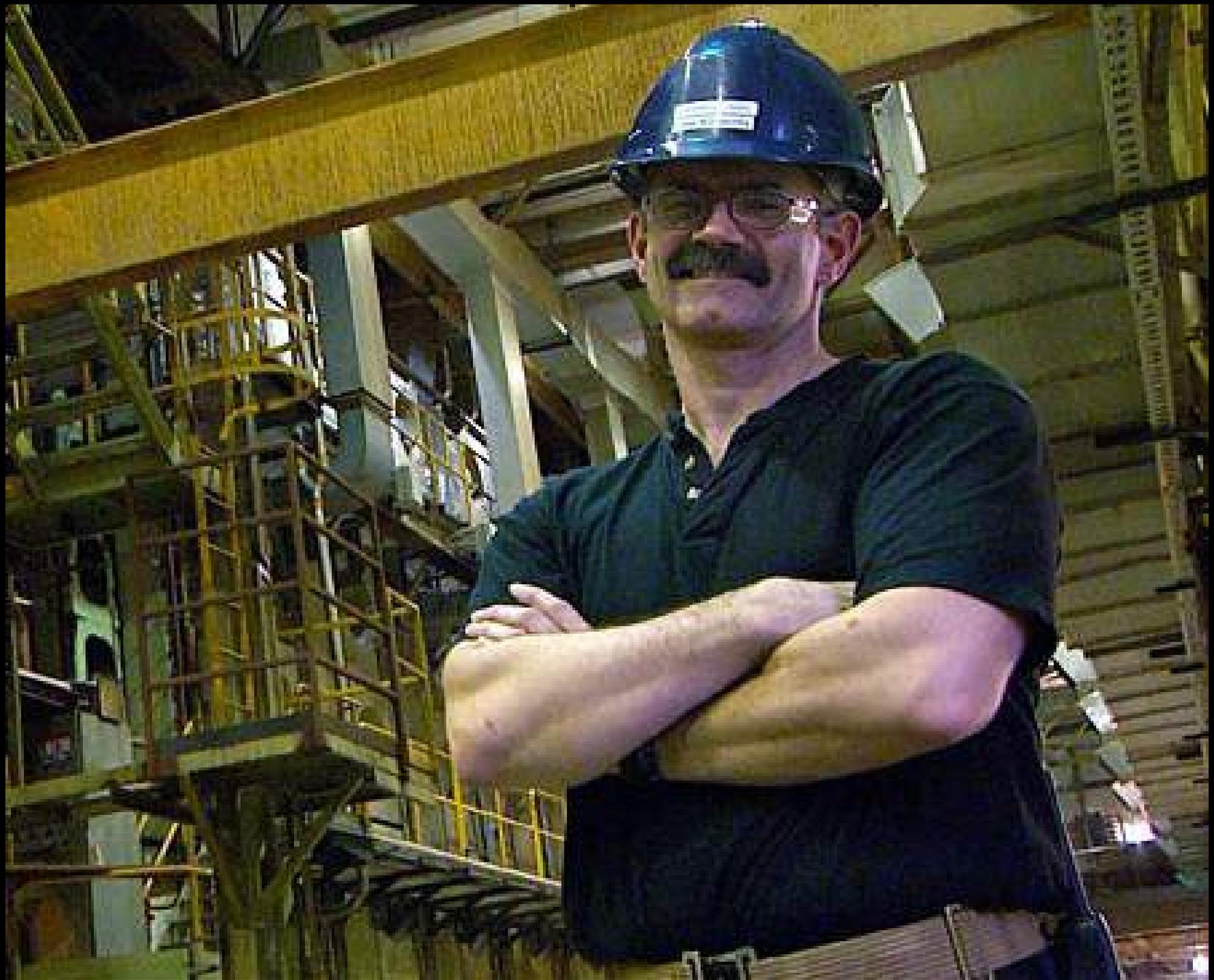
Imperial botanical collections

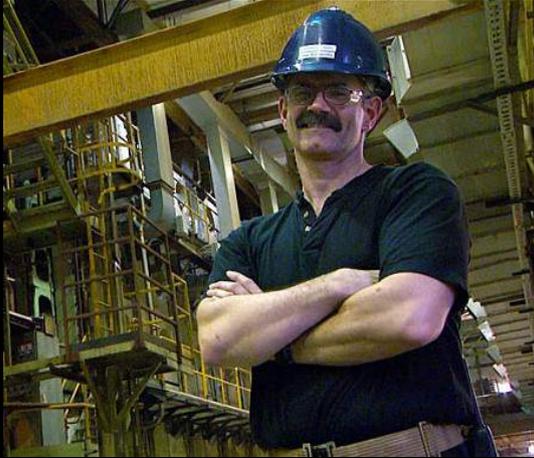




The drive to extract more and more from *labor* is also a moving *nature* frontier

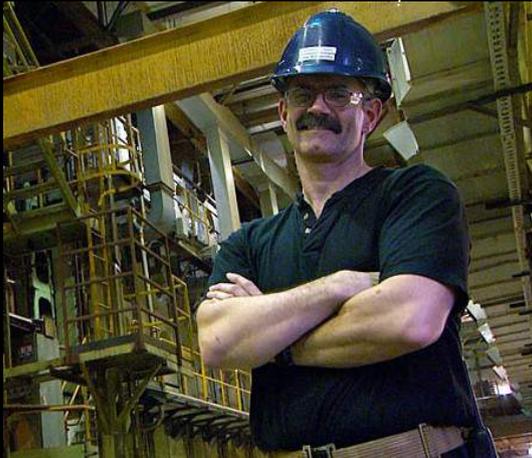


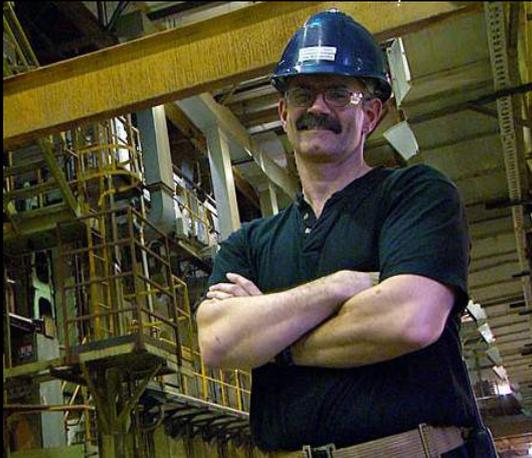


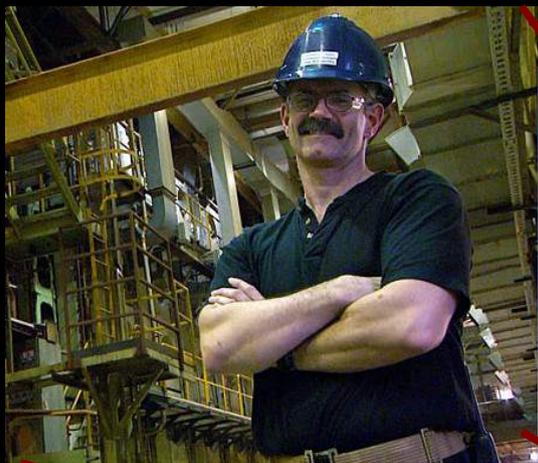














Energy is one of the most important (and one of the newer) aspects of “abstract”, capitalist nature.

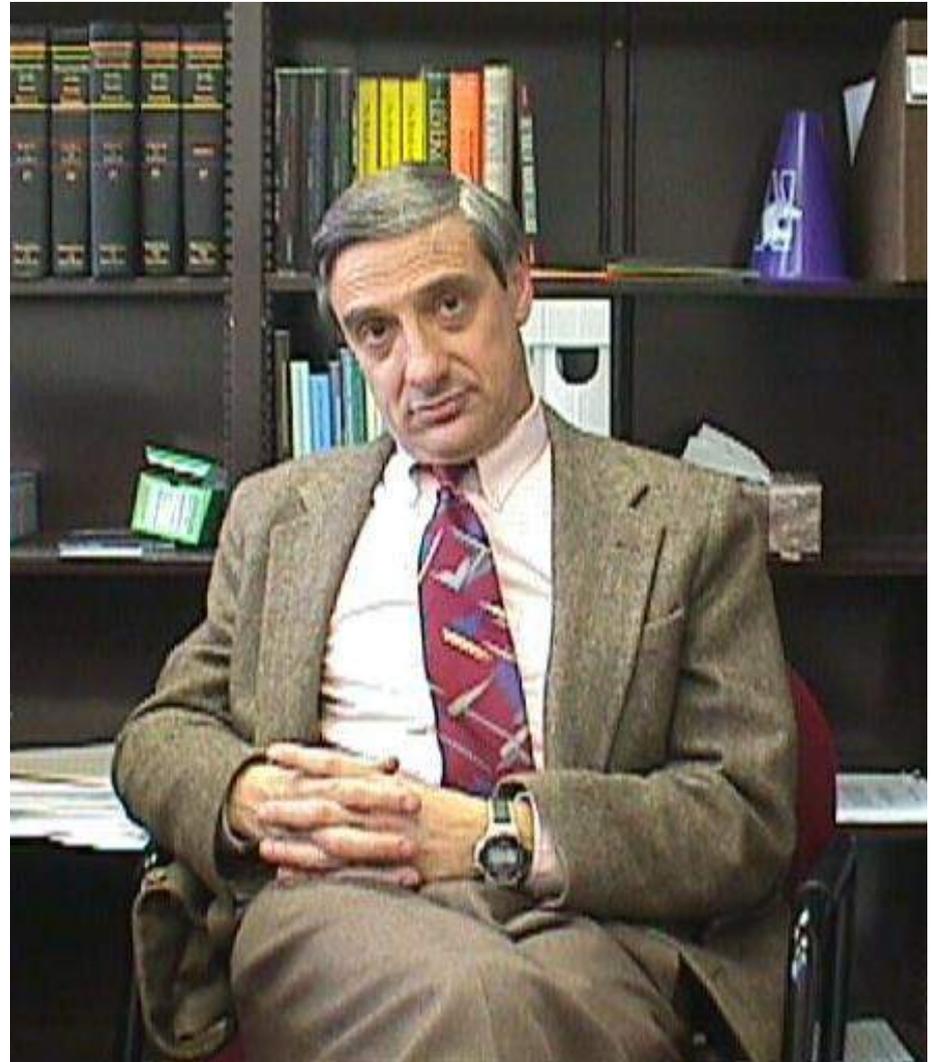


Before 1800, no one talked about energy. Energy was not a part of nature. But by 1870, that had changed.

Before 1800 ...

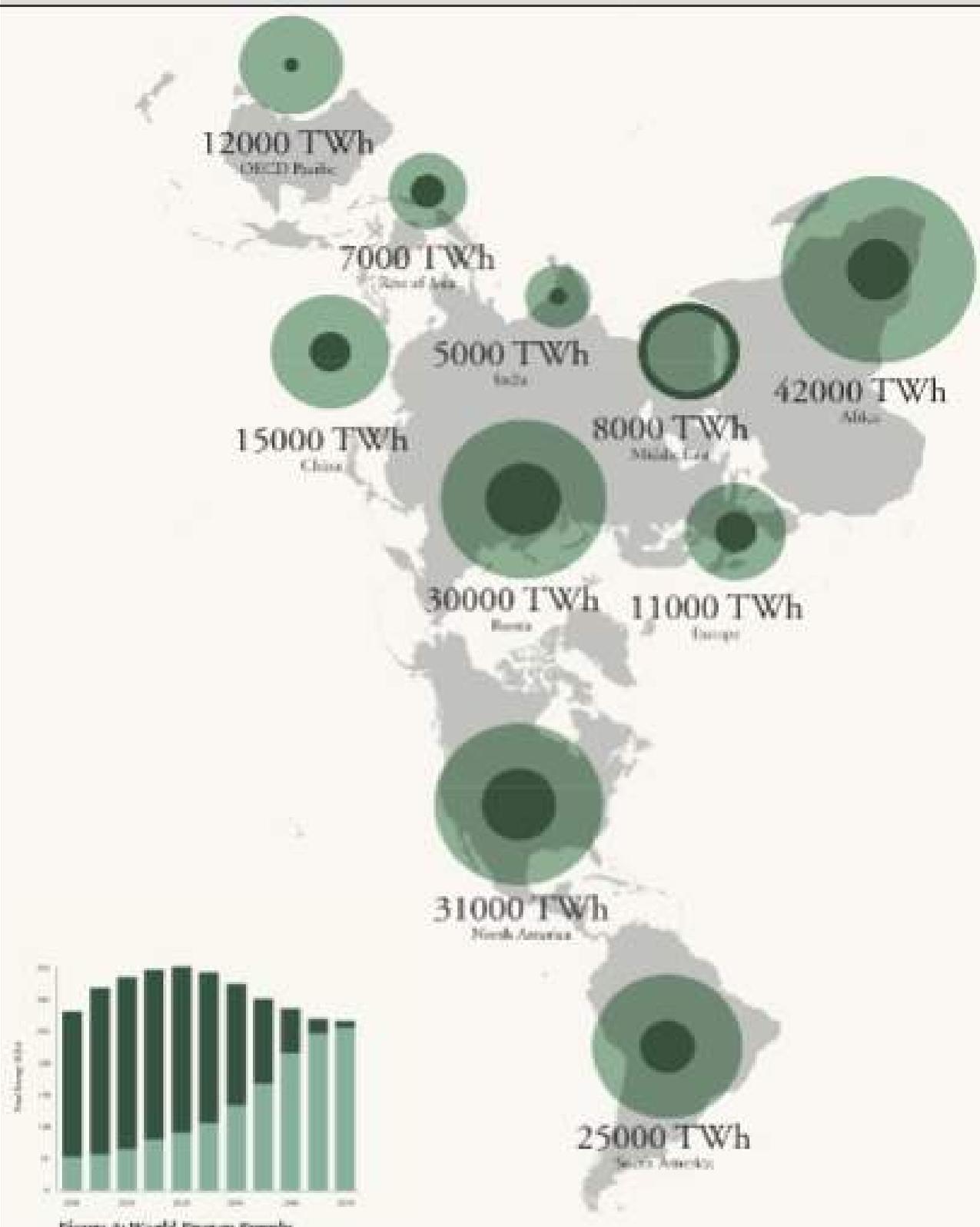
“The equivalence of [heat and mechanical energy] was not suspected by people in the eighteenth century; the notion that a horse pulling a treadmill and a coal fire heating a lime kiln were in some sense doing the same thing would have appeared absurd to them.”

Joel Mokyr

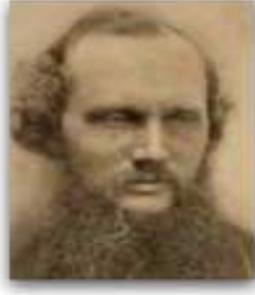


Today ...

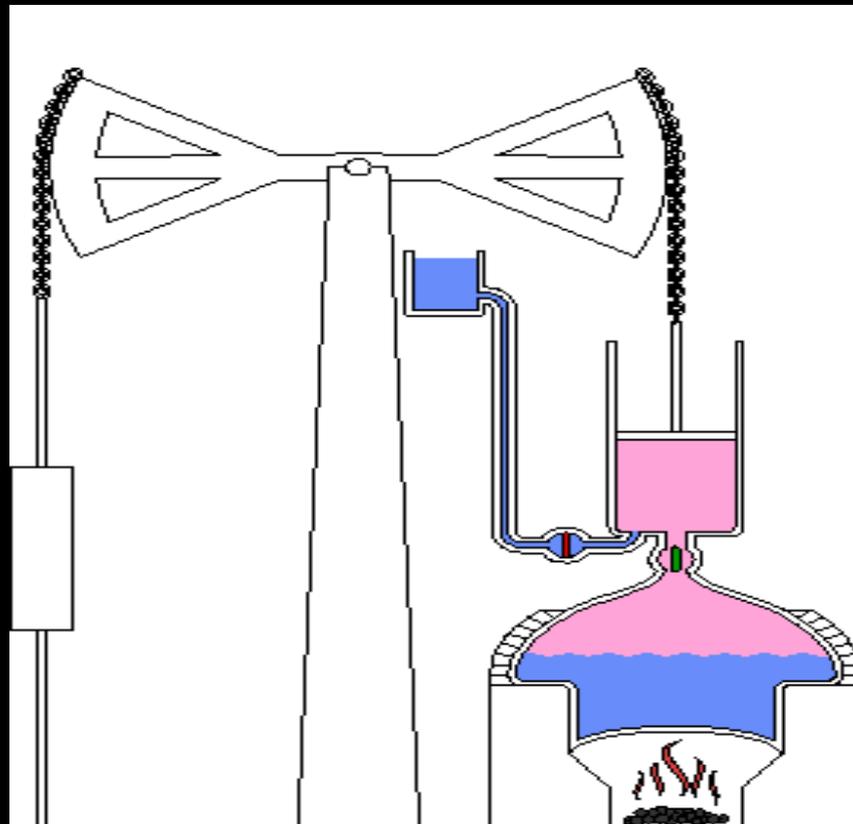
- mobilizable
- external
- scarce
- Terawatt-hour units of Big-E (thermodynamic) Energy
- scattered in Newtonian space

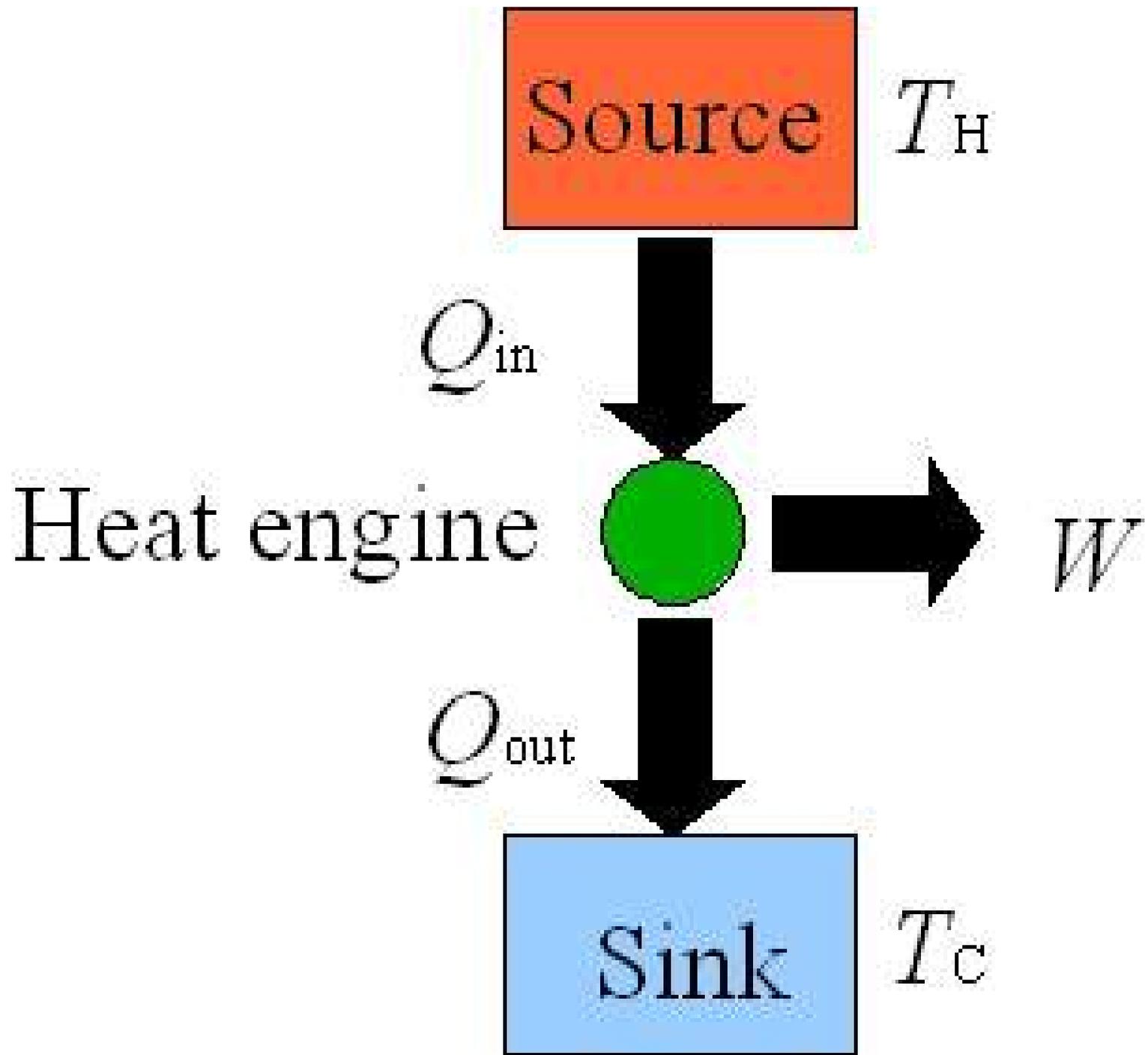


This “**Big-E Energy**” of the thermodynamicists ...

<u>École Polytechnique</u>	<u>Glasgow school</u>	<u>Berlin school</u>	<u>Edinburgh school</u>
			
<u>Sadi Carnot</u> (1796-1832)	<u>William Thomson</u> (1824-1907)	<u>Rudolf Clausius</u> (1822-1888)	<u>James Maxwell</u> (1831-1879)
<u>Vienna school</u>	<u>Gibbsian school</u>	<u>Dresden school</u>	<u>Dutch school</u>
			
<u>Ludwig Boltzmann</u> (1844-1906)	<u>Willard Gibbs</u> (1839-1903)	<u>Gustav Zeuner</u> (1828-1907)	<u>Johannes der Waals</u> (1837-1923)

... was above all the **theory of fossil-fuelled steam engines** and how to make them work better.



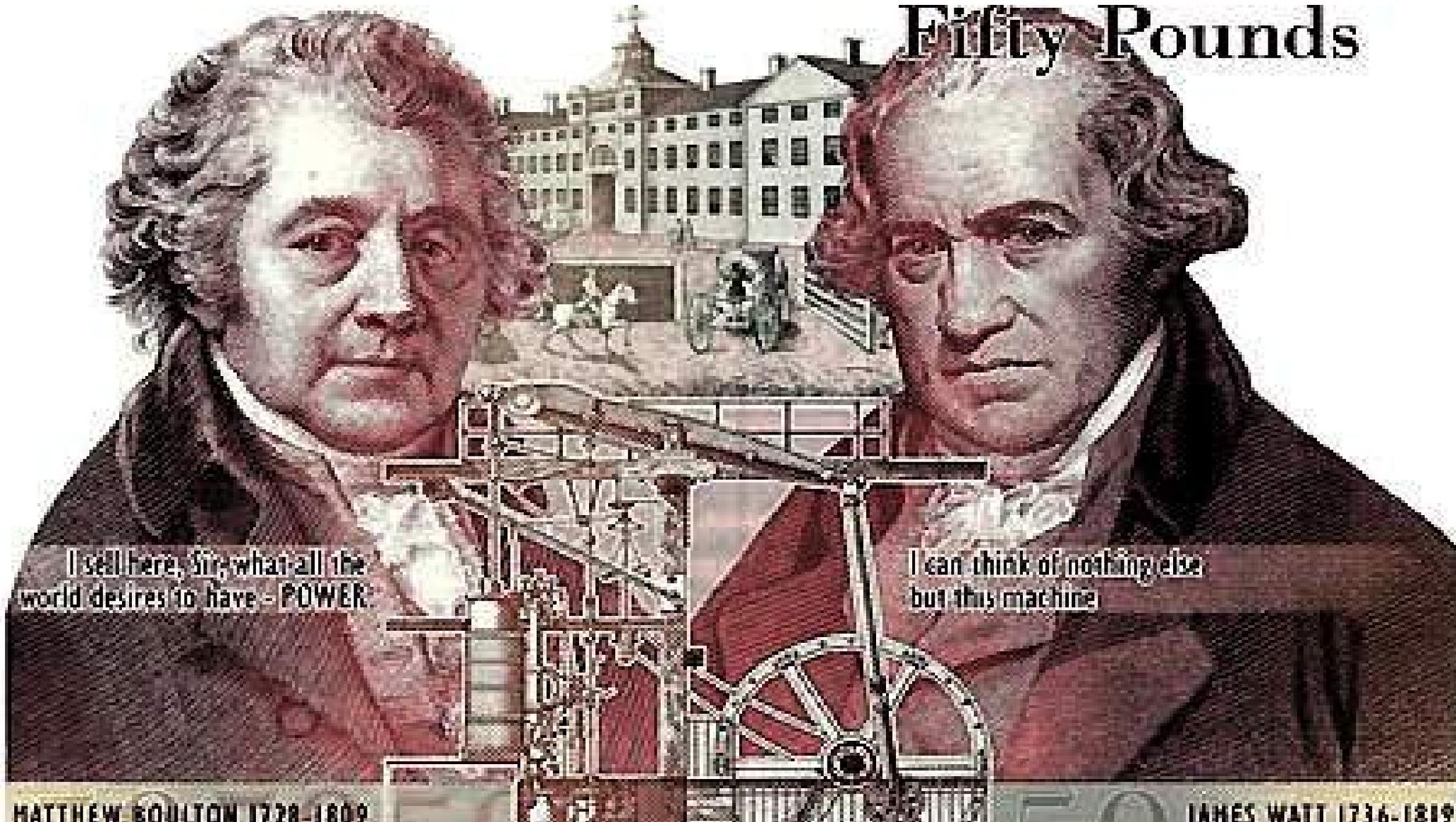




“An *economic* point of view formed the root of thermodynamics ... Economic and physical ideas grew up together, sharing a common context.”

Theodore Porter

Fifty Rounds



I sell here, Sir, what all the world desires to have - POWER.

I can think of nothing else but this machine.

MATTHEW BOULTON 1728-1809

JAMES WATT 1736-1819

Thermodynamics articulated a new set of socionatural relationships (sometimes briefly notatable as “equivalences” like $\Delta U = Q - W$) that were also being embodied in the engines and technological networks of the fossil-fuelled age.

1830s

Electricity \rightarrow mechanical force



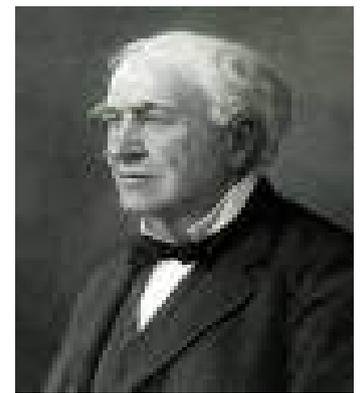
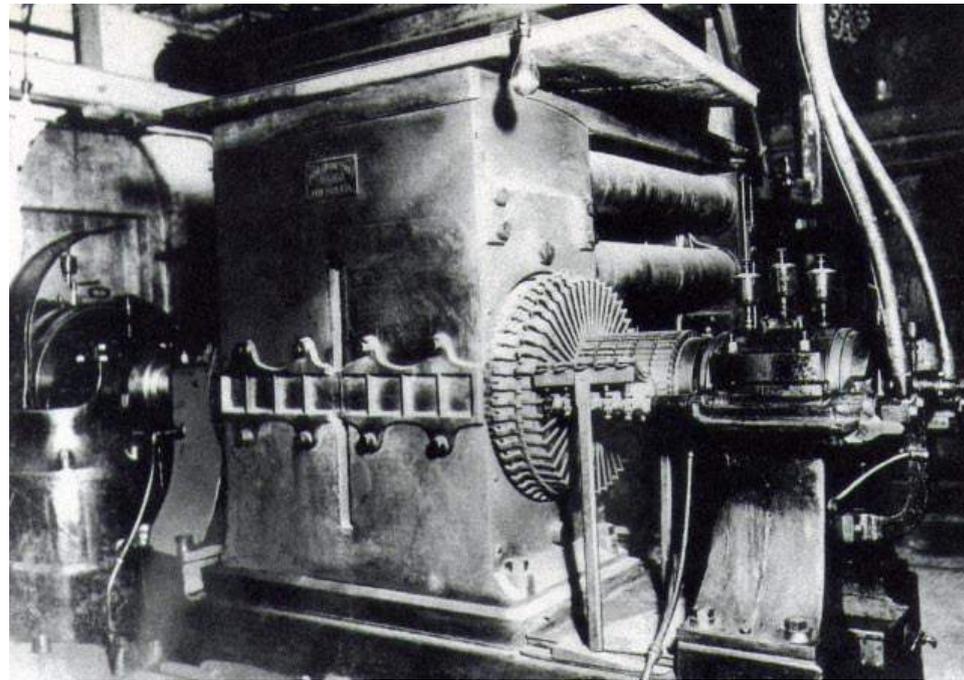
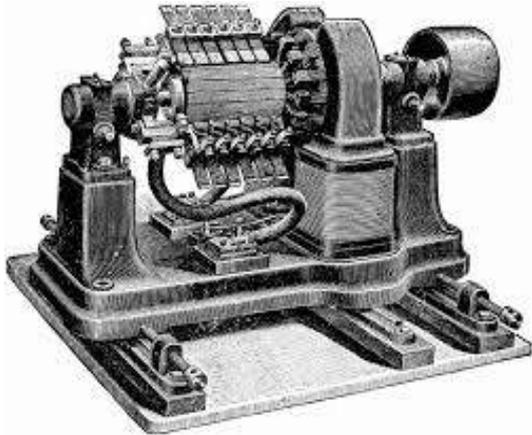
1840s

“The mechanical *equivalent* of heat.”

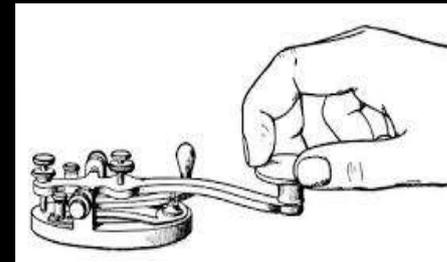
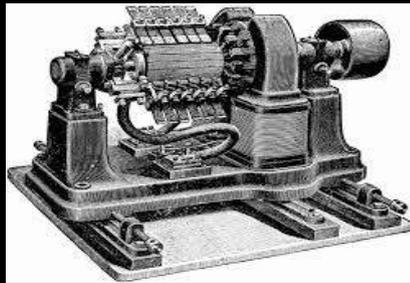
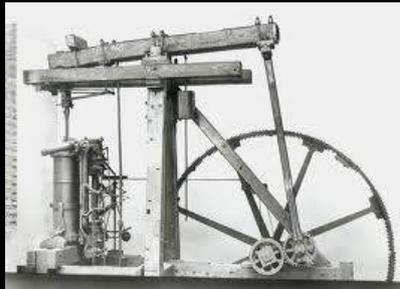


1867-1882

Mechanical force \rightarrow electricity



Longer and longer chains of equivalences became embodied in industrial practice and theorized as “energy” ...



Thermal → mechanical → electric → magnetic → mechanical



thermonuclear → electromagnetic →



→ biochemical → thermal →



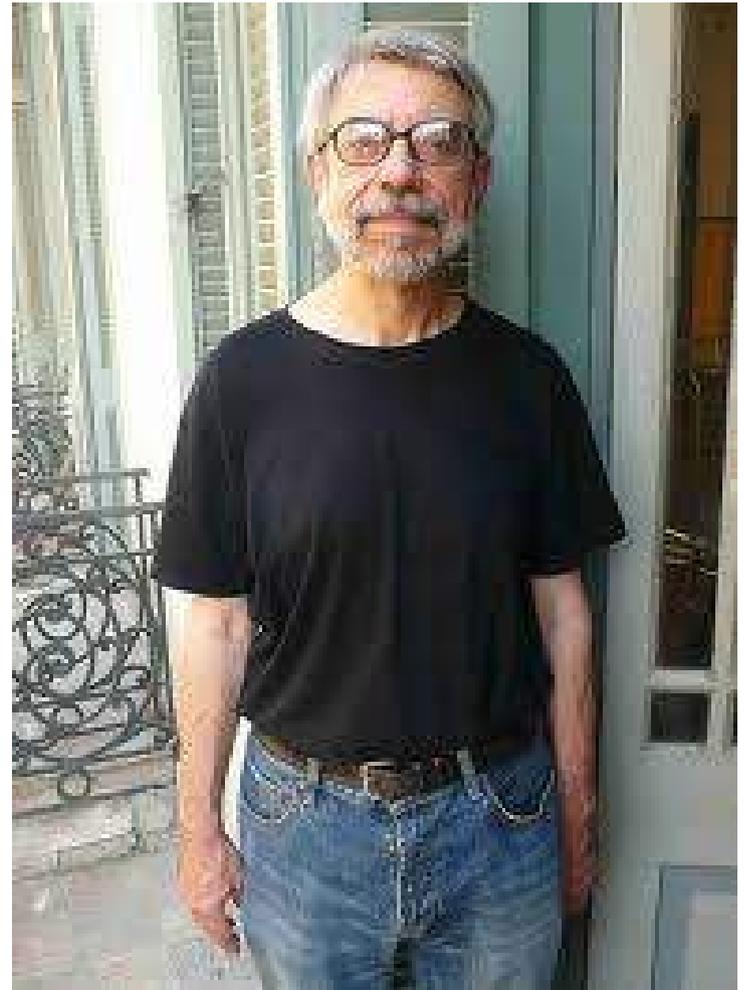
→ mechanical → electric →



→ electromagnetic → kinetic →

“The infinite multiplicity of energetic forms inspired a tremendous optimism in capital's search for new workforces.”

George Caffentzis



The “historical emergence of the social relation of wage labor” is “part and parcel of the ‘energy shift’ in the productive forces from biological to inanimate (fossil) sources of energy”.

Matthew Huber





One function of fossil fuels is to increase productivity and discipline in zones where work has been commodified.

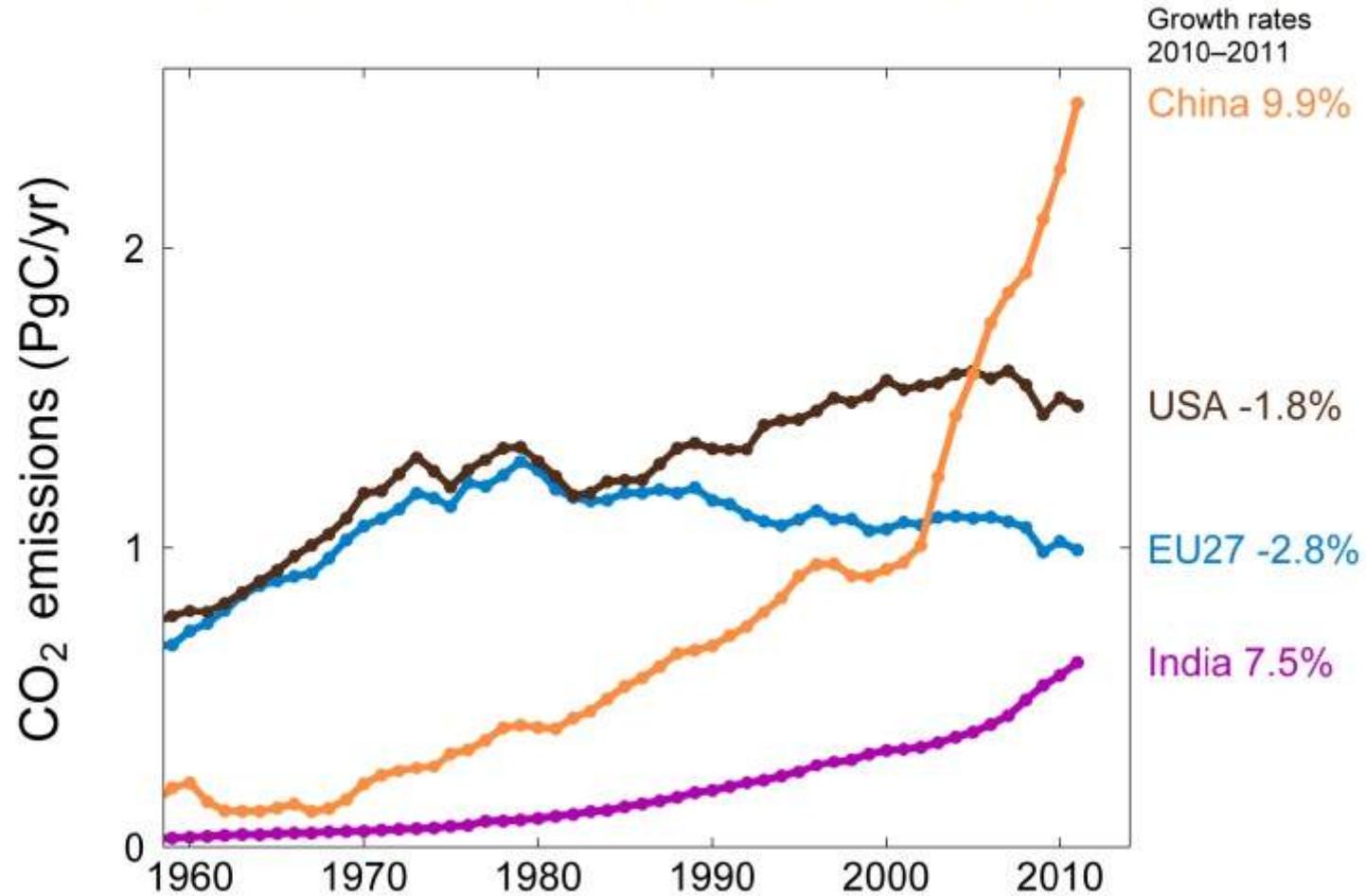


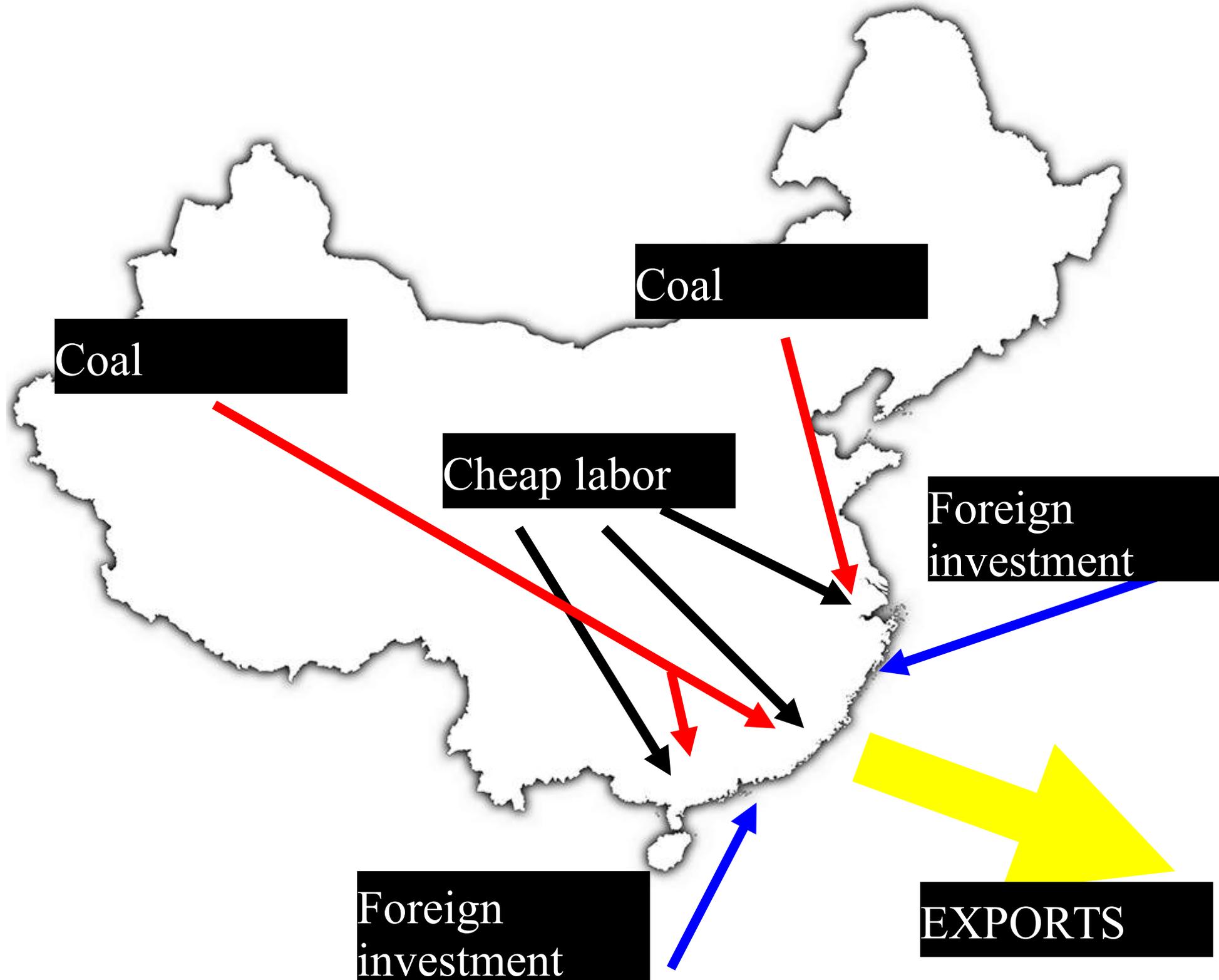
“From the very beginning, there was an intimate relation between the rise of the fossil economy and the quest for cheap and disciplined labor power.”

Andreas Malm
Lund University

Top Fossil Fuel Emitters (Absolute)

Top four emitters in 2011 covered 62% of global emissions
China (28%), United States (16%), EU27 (11%), India (7%)





Coal

Coal

Cheap labor

Foreign investment

Foreign investment

EXPORTS

The new human-nonhuman webs of relationships embodied in thermodynamic energy are often summarized not only as new **equivalences** and **commensurabilities** but also as

- New “**homogeneities**”
- New (exchangeable) “**units**”
- A new “**externality**” to “nature” and to the experts defining it
- A new “**abstraction**” to nature
- New “**scarcities**”
- New “**reductions**”
- New “**simplifications**”
- New “**disentanglements**”

However, all these expressions are crude **synecdoches** for complex and far-reaching shifts in concrete relationships and as such risk obscuring the incompletenesses, contradictions, resistance and political conflicts present at every level.

The quantifiable “unit” so critical to capital accumulation is in fact “neither unit nor thing as such, but a highly volatile set of social relations and processes” ... indeed, in some sense the “source of the political.”

George Henderson

**UNITS OF THE 19th-
CENTURY “NATURE” OF
THERMODYNAMIC
ENERGY**

**UNITS OF THE 21st-
CENTURY “NATURE” OF
ECOSYSTEM SERVICES
(mitigation, “functional lift”, etc.)**

Terawatt-hours

CO₂-equivalent molecules (e.g.,
0.003 CO₂ /0.114 CH₄ /1.000 NO₂ /
17.953 CFC-11 in a hybrid
actual/counterfactual colonial space)

Barrels of oil-equivalent

Species-equivalents

To gain an understanding of this political complexity of the “unit”, it's helpful in the energy case to look carefully at the “little-e energies” of the commons that have always opposed themselves to thermodynamic or “Big-E Energy”.

For a cook using wood, the idea is to use as *little* energy as is needed to get the job done. These “little-energies” are not tied to the indefinite expansion of the productivity of labor. They depend not on the privatization of commons and territories, but on their defense.



But for the planner of a national economy, a world economy or a “green economy”, the idea is to supply an ever-increasing amount of Big-E thermodynamic Energy. For him, there can never be enough energy, because economic growth and “human needs” are infinite ... and the Second Law of Thermodynamics limits the “useful work” it can do and the “order” it can produce. Commons and *territorios* must continually be taken over to provide it.





Neither can offer an “alternative” to the other, but they are in a constant dialectical relationship.

VS.

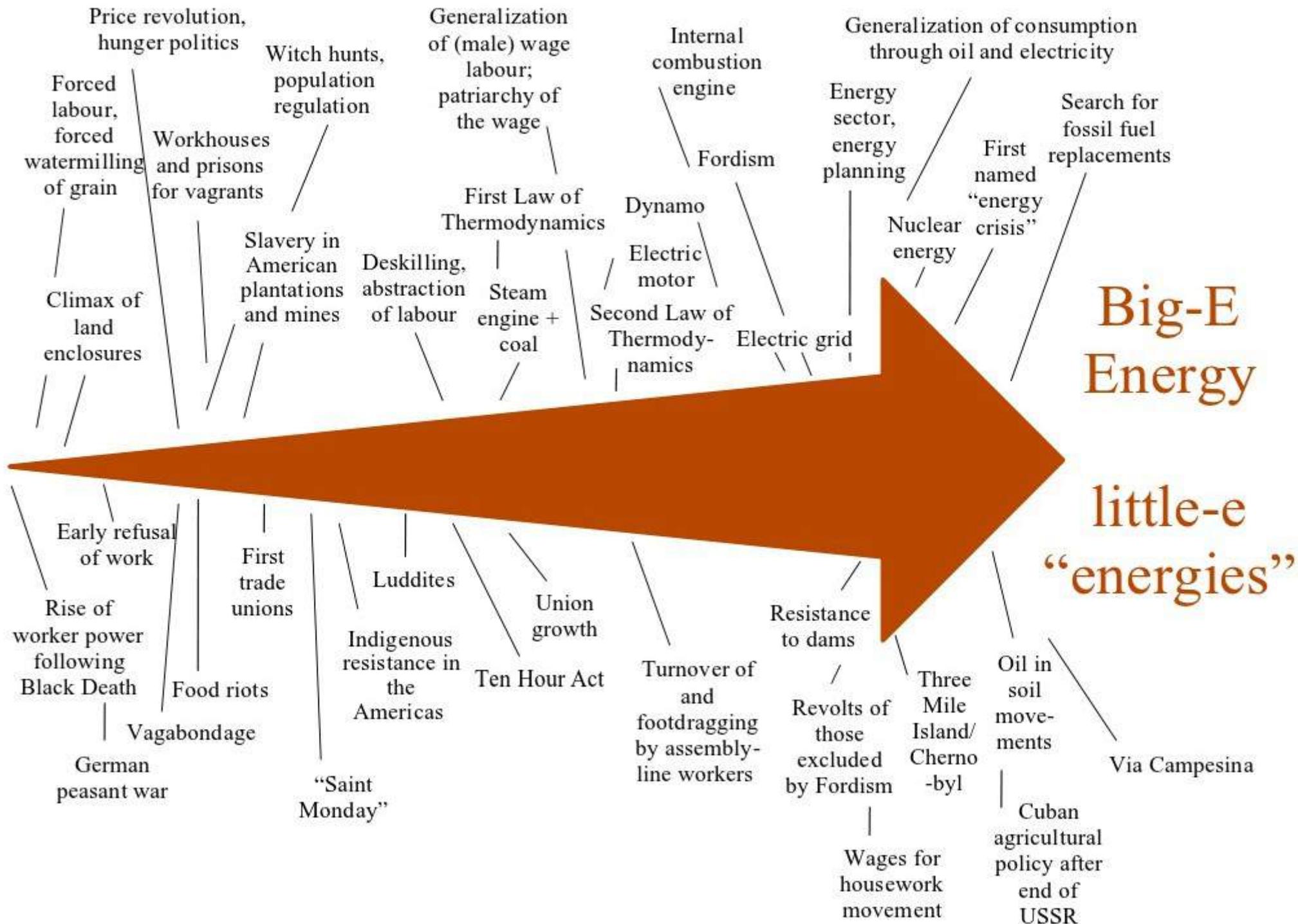


“Energy” is thus a problematic concept for popular democratic movements to use.

It is also problematic for “post petroleum” movements to use, because it assumes the “normality” of using something similar to fossil fuels in energy converters boosting the exploitation of labor.



... Really?



Struggles against oil extraction ...

Struggles in defense of commons or indigenous “territories” ...

Struggles against climate change ...

Struggles for alternative energy ...

... all, in a sense, labor struggles.



