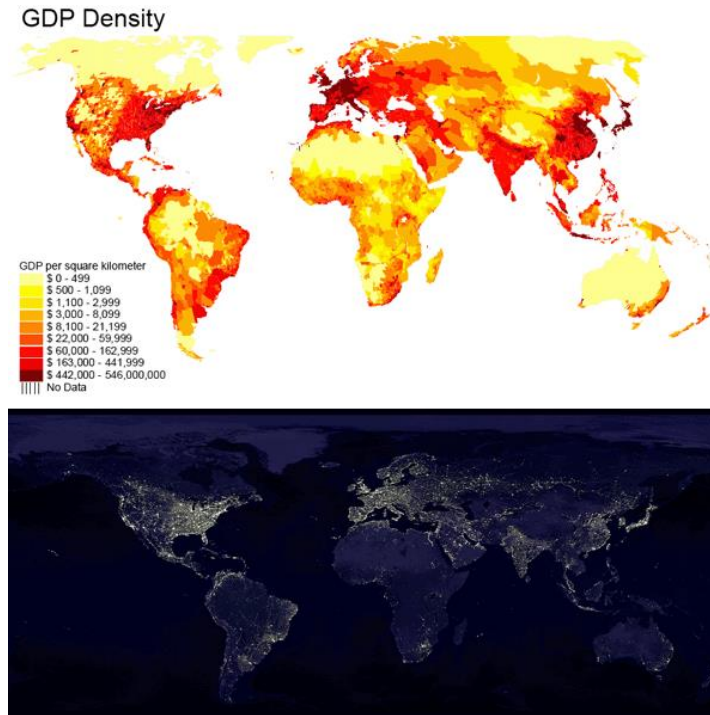


Neocolonialism and Ecological Marxism

Alf Hornborg

'Development'?

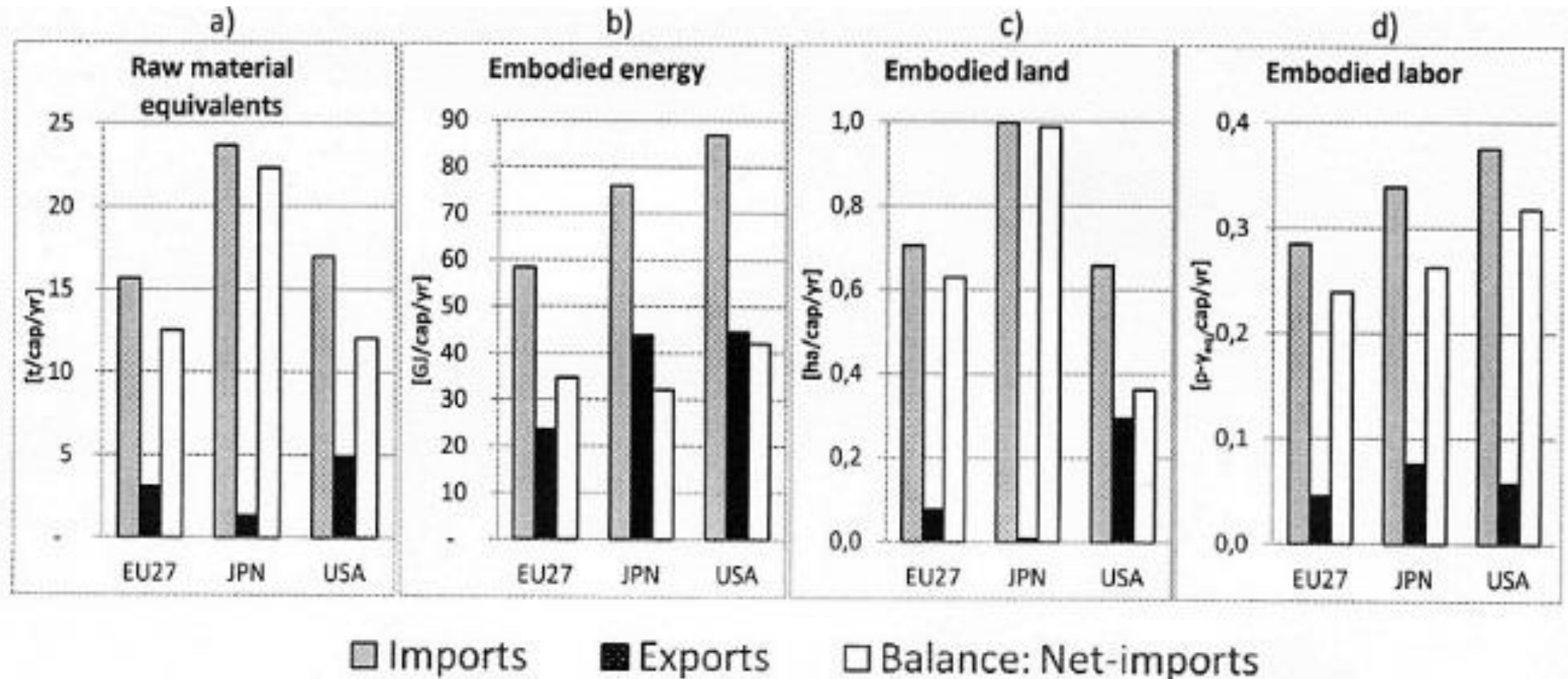
The geographies of money and technology



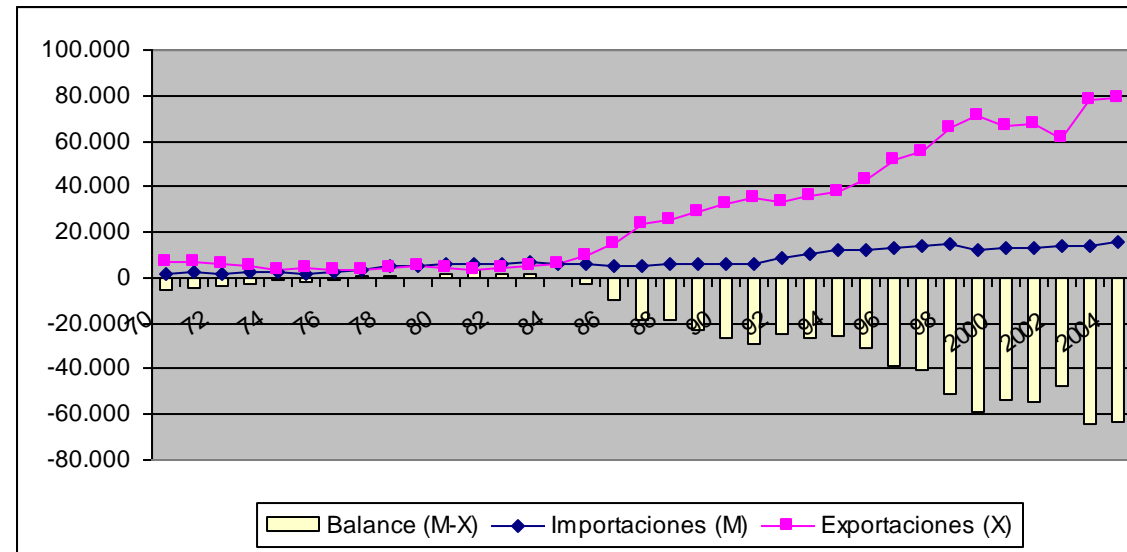
Net imports of embodied resources to world-system cores in 2007
(data compiled by C. Dorninger)

Resource	USA	EU	JAPAN
Raw material equivalents	3,7 gigatons	6,1 gigatons	2,9 gigatons
Embodied energy	10,6 exajoules	17 exajoules	4 exajoules
Embodied land (space)	1,1 mill. sq. km	3,1 mill. sq. km	1,3 mill. sq. km
Embodied labor (time)	96 mill. person-yrs	120 mill. person-yrs	35 mill. person-yrs

Per capita net imports of biophysical resources to the EU, Japan and USA in 2007 (diagrams compiled by C. Dorninger)



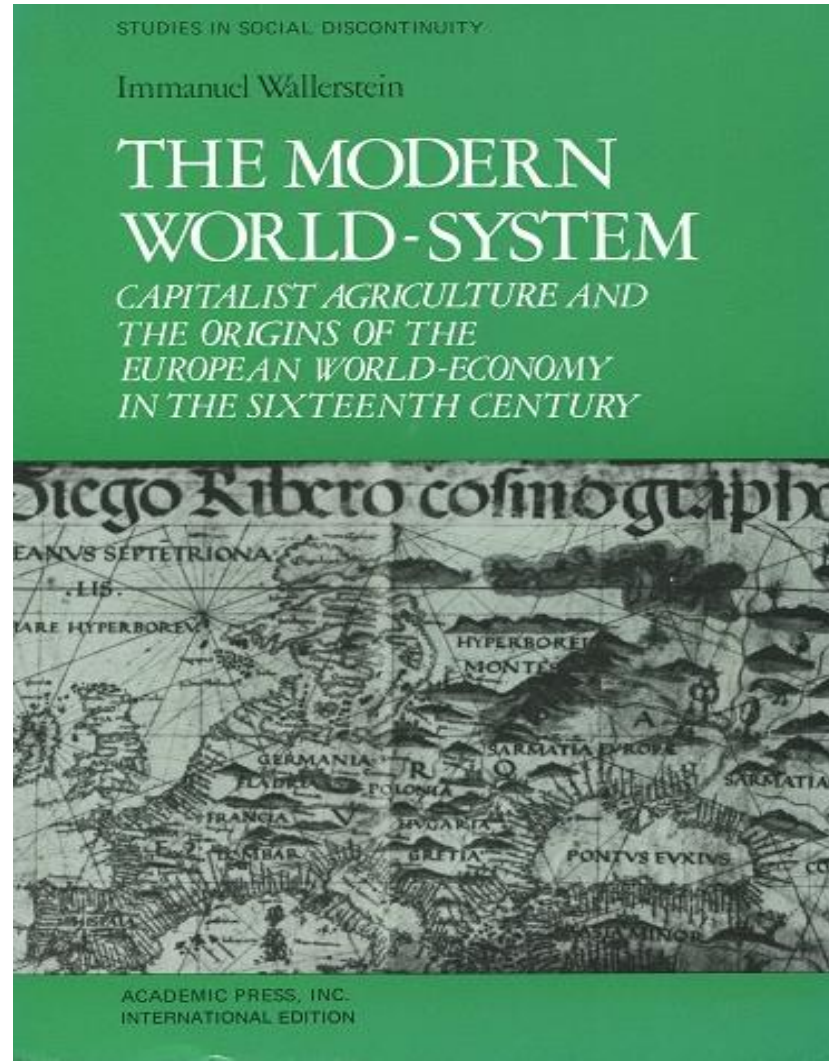
Material flow analysis: The *physical* trade balance of Colombia 1970-2004



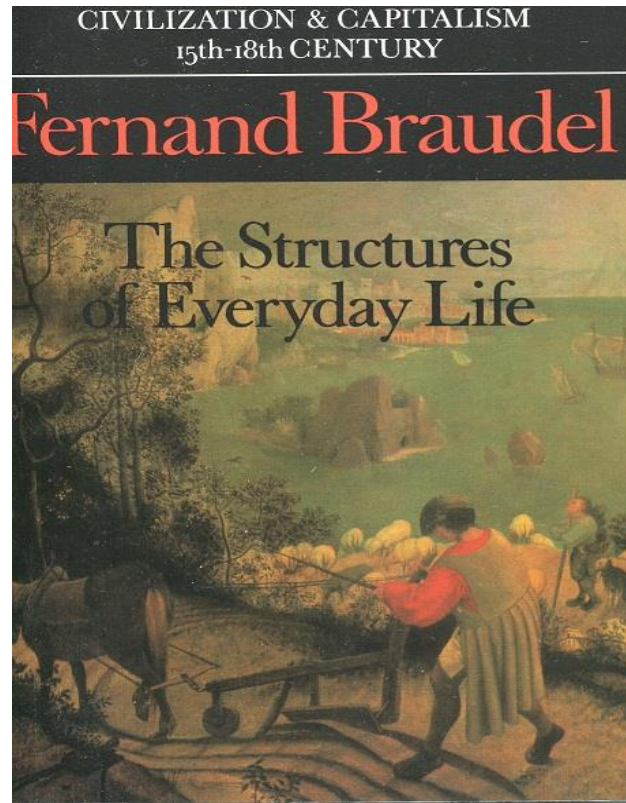
Embodied labor



Immanuel Wallerstein: *The Modern World-System*



Fernand Braudel: *Civilization and Capitalism*



Rethinking 'technology' as displacement of work and environmental burdens

- Fernand Braudel (1979): *"There have always been a number of privileged persons (of various kinds) who have managed to heap on to other shoulders the wearisome tasks necessary for the life of all..."*
- Human history as the appropriation of other people's labor through slavery, serfdom, wage labor...and 'technological development'?

What is 'unequal exchange'?

- The concept of 'unequal exchange' became meaningless in neoclassical economic theory focusing on market equilibrium (e.g., Leon Walras, Alfred Marshall), except in the sense of *monopoly* (market power)
- The mainstream detachment from questions of materiality *and* morality are *interconnected*: by making the asymmetric exchange of physical resources invisible, the focus on free market trade did not need to be concerned with morality

Ecological Marxism?

What is a 'Marxist' perspective on global ecology?

It should focus on the fact that regular market exchange conceals asymmetric transfers of resources that contribute to the accumulation of capital in the hands of some individuals and groups, at the expense of other market actors.

The Marxian theory of unequal exchange of embodied labor

- Arghiri Emmanuel: *Unequal Exchange: A Study of the Imperialism of Trade* (1972)
- Low-wage countries export more (labor) 'value' to high-wage countries
- But do we need the notion of 'value' here?
- Emmanuel could simply have said that low-wage countries export more *embodied labor* to high-wage countries (an undisputable fact)
- In Marxist value theory, monetary price is *not* equal to value: in this approach, labor is viewed as 'underpaid'

Does the concept of 'value' refer to resources or money?

- If value is *equivalent* to monetary price, then labor and energy theories of value are wrong, because they emphasize the *difference* between value and price
- If we argue that value is *not* equivalent to price, we are claiming that a commodity has an objective value that can be compared to its price – and that can be measured in money
- The very *concept* of 'value' as objectively quantifiable *derives* from the idea of (general-purpose) money

The role of the concept of 'value' in different schools of thought

	EMBODIED BIOPHYSICAL RESOURCES ('NATURE')	VALUE	MONETARY MARKET PRICE ('SOCIETY')
Neoclassical economics	(IRRELEVANT)	VALUE (UTILITY) $=$	PRICE
Marxist economics (Marx)	EMBODIED LABOR $=$	VALUE \neq	PRICE
Ecological economics (Odum)	EMBODIED ENERGY $=$	VALUE \neq	PRICE
The theory of ecologically unequal exchange	EMBODIED RESOURCES \neq	PRICE	

Conceptual problems for an ecological Marxism

- If the substance of exploitation is surplus value, can it be measured (and conceptualized) in other terms than money?
- If labor is the only source of surplus value (profit), how would Marxism conceptualize the exploitation of nature?
- If labor-power is a kind of energy, how does the Marxist labor theory of value differ from an energy theory of value?
- What does 'historical materialism' mean – an approach based on economics/value or on physics?
- Does the Marxist argument on exploitation need thermodynamics, or is it a purely economic argument?

Neither labor nor energy are 'values'

- Neither labor nor energy has intrinsic 'value' but are biophysical resources appropriated by capitalists in their creation of profits (surplus value)
- The increase in (*cultural*) utility implies a (*material*) dissipation of energy (i.e., increase in entropy)
- But exchange value cannot be analytically derived from labor or energy (to claim to do so is a confusion of analytical levels: economics vs. physics)

Market prices as illusory reciprocity

- Are voluntary market transactions by definition equal and fair?
- Maurice Godelier: unequal exchange in all hierarchical societies tends to be *represented* as a reciprocal exchange
- There are measurable material asymmetries in net flows of biophysical resources, which only become *visible* if we apply other metrics than money, e.g. energy, matter, embodied land, embodied labor, etc.

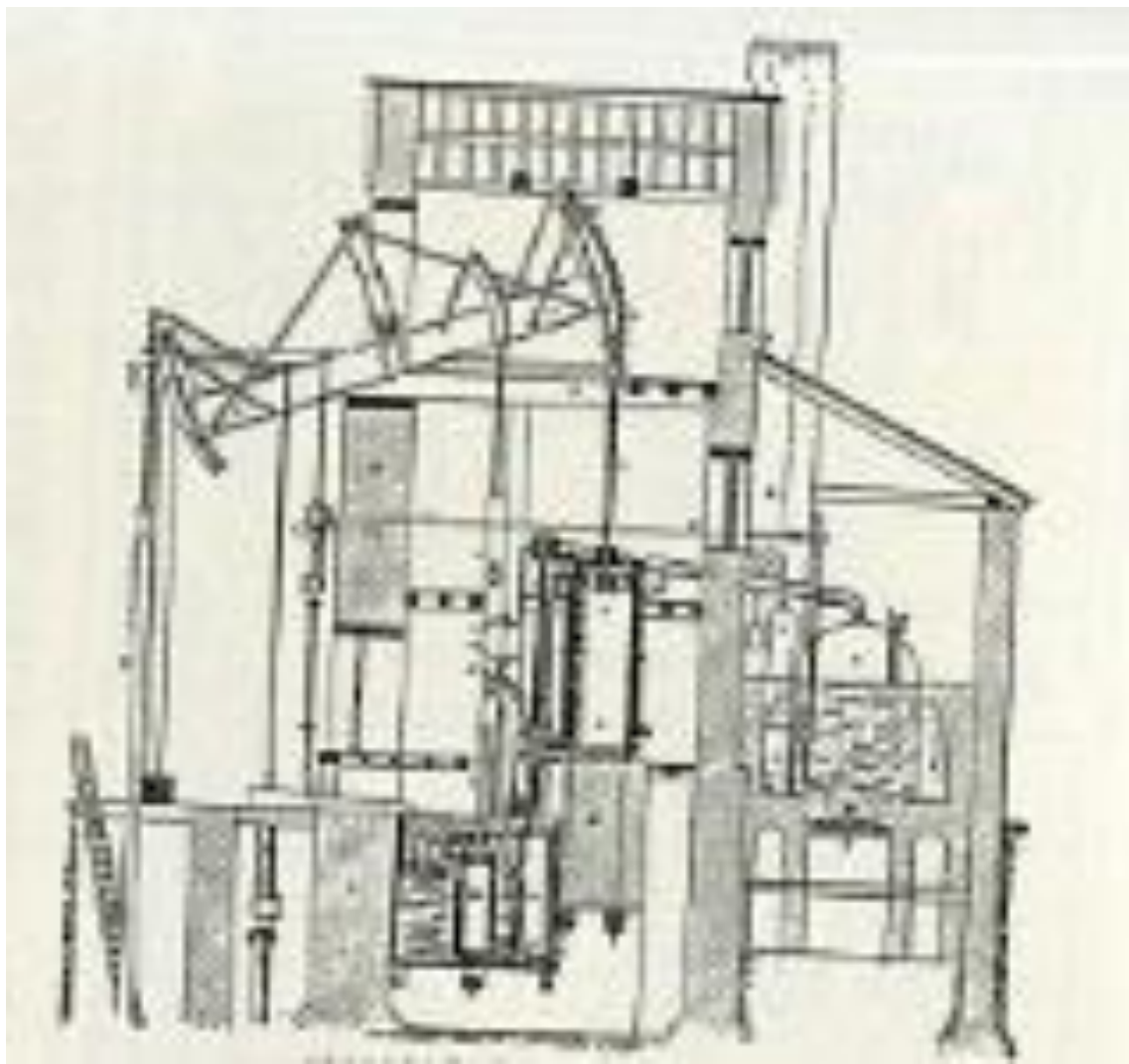
What is the 'rationale' of modern technology?

- To save *time* and *space* (for those who can afford it)...
- ...at the expense of *time* and *space* (for those who cannot)
- It presupposes differences in the *price* of labor (*time*) and land (*space*) in different parts of the world-system

The Industrial Revolution as time-space appropriation

<i>Commodity</i>	<i>Volume for £1000 in 1850</i>	<i>Embodied labor</i>	<i>Embodied land</i>
Raw cotton	11.84 tons	20,874 h	58.6 ha
Cotton cloth	3.41 tons	14,233 h	c.1 ha

James Watt's steam engine in 1788



The global context of the steam engine: cotton harvest in a slave plantation



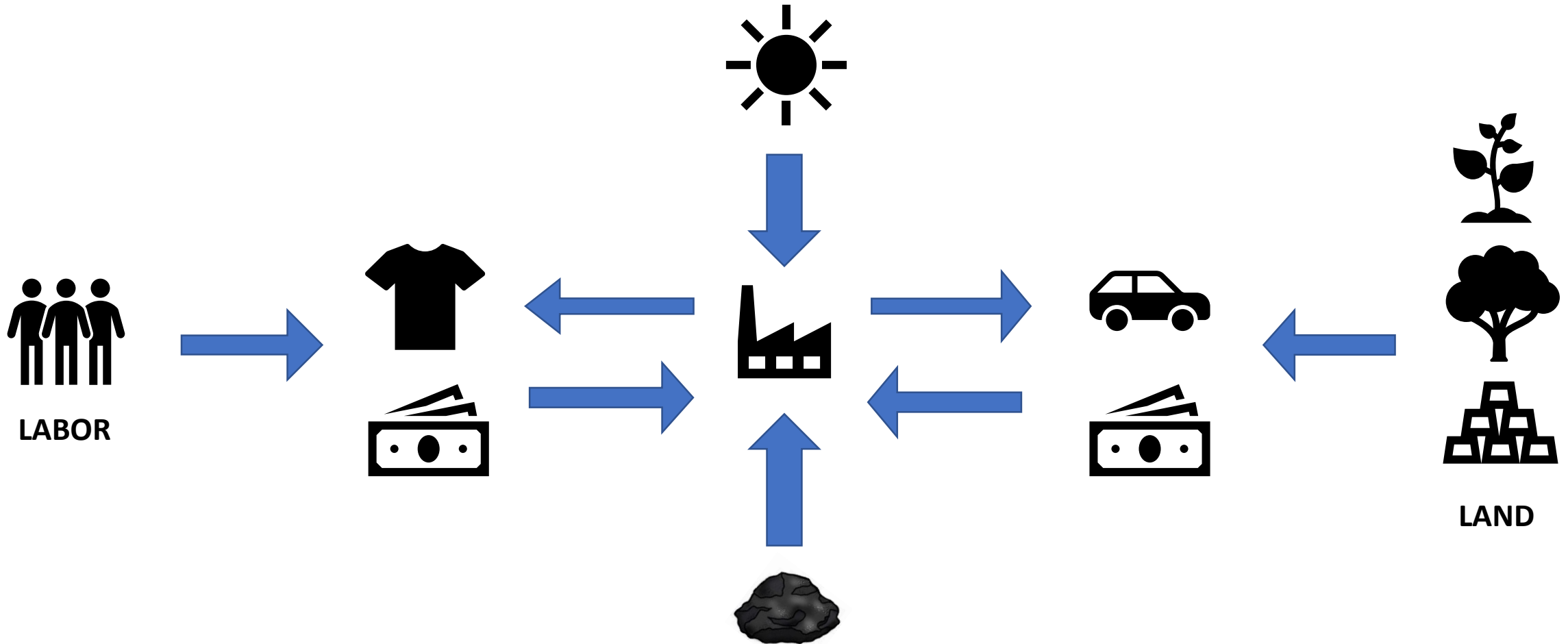
'Technological progress' and unequal exchange are
two sides of the same coin

- We know that the Industrial Revolution required vast extractive areas, including colonial cotton plantations, but *why doesn't it affect our image of technology?*
- Without the triangular Atlantic trade, the conditions for British industrialization would have been very different
- Why is technology perceived as pure ingenuity, distinct from unequal relations of exchange?

Nature and society: an analytical distinction of *aspects* turned into ontological dualism

Analytical aspects (logical distinction)	SOCIETY/CULTURE Immaterial Mind/consciousness Subjective Semiotic	NATURE Material Body Objective Metabolic
Cultural categories (dualism)	[Ecological economics] "ECONOMY" ←	
	[Critique of technology] "TECHNOLOGY" → Engineering	

Industrial technology as capital accumulation:
the focus on energy sources (*vertical arrows*) obscure
social exchange relations (*horizontal arrows*)



What *is* modern 'technology,' viewed from a global perspective: emancipation or enslavement?

- Paradoxically, to Marx, technology was a form of capital accumulation (based on exploitation of labor), yet represented the utopian future of the global proletariat
- In the modern worldview, once classified as 'object', technology tends to be immune to political critique
- The fetishism of technology has become a specific mode of *mystifying unequal exchange*

Three 'take home' messages

- 1. The rationale of modern technology is to save time and space for those who can afford it – at the expense of those who cannot
- 2. Technological 'development' is based on net transfers of biophysical resources (embodied land, labor, energy, and materials) from other areas that are invisible to mainstream economics
- 3. The modern categories of 'economy' and 'technology' are mirror images of each other: the first appears to need no knowledge of nature, the second no knowledge of world society