

## **The Appropriation of Energy and Embodied Land through History: Environmental and Cosmological Consequences**

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What we variously understand as ‘civilizations’, ‘empires’, ‘world-system cores’, or ‘regions of economic growth’ invariably rely on the appropriation of energy and land resources from extensive areas of the world’s surface. What have varied through history are the strategies or means by which such appropriation is conducted, related to the kinds of technological infrastructures being accumulated in core areas, and their environmental consequences. For instance, the accumulation of urban architecture as well as landesque capital in imperial Rome relied on imports of slaves and grain from around the Mediterranean area, whereas the accumulation of industrial machinery in colonial Britain relied on imports e.g. of cotton fiber embodying inputs of slave labor and agricultural land overseas. Both these strategies represent a displacement of environmental degradation to the periphery. Another aspect that needs to be studied case by case is the relation between energy and land requirements. Up until the Industrial Revolution, energy and land were one and the same, converging in the production of food for human labour and fodder for draft animals. For two centuries now, the age of fossil fuels has kept land requirements and energy requirements distinct from each other, providing a foundation for the modern science of economics, according to which land is a substitutable factor of production. But as we are currently contemplating that peak oil and climate change may prompt us to turn to agrofuels, we are in fact imagining a future where land requirements and energy requirements will once again coincide. Once again, it seems, it will be possible to calculate the costs of transport distances in terms of eco-productive space. In such a future, also, ecologically unequal exchange will again involve concerns with *both* energy *and* embodied land. In terms of economic theory for understanding the course of history, this would amount to the bankruptcy of both Ricardian and Marxian concepts of labour value in favour of a cosmology more akin to pre-industrial Physiocracy. A scenario in which European technology is maintained through imports of sugarcane ethanol from South America and Africa is merely a new version of a theme that can be traced at least to ancient Rome.