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## **The Humanosphere-sustainable Path of Development in Global History**

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This paper discusses the evolution of the humanosphere, the environment in which humans live, over the long run, with special attention to the increased use of fossil fuels and its consequences in the last two centuries. Before 1800 most of the energy humans used came from biomass, humans, animals, water and wind. The use of steam engines and the development of railways and steamships dramatically increased the ability of human society to exploit natural resources and transport them to the centres of industrial production. The emergence of the fossil-fuel-based world economy demolished geographical and environmental barriers to trade, and plantations and mines were opened up worldwide. Thus the relative autonomy of the local environment, on which local society had depended for its resources, progressively diminished. As world population and GDP grew, this trend persisted, causing deforestation, environmental degradation and climate change.

Yet, set against the sustainability of the environment of the earth as a whole, the magnitude of this change is rather limited. We define the humanosphere as an integrated whole of geosphere, biosphere and human society, and examine the degree to which humans managed to expand their control over each sphere.

First, the earth, especially the tropics, gets the heat energy from the sun, and circulates it to the rest of the earth through atmospheric and hydrologic circulation. The basic logic of geosphere, which drives this distribution, is unaltered by human intervention. Climate change is perhaps the most obvious man-made disturbance, but its impact has primarily been on biosphere and human society, rather than on the logic of geosphere itself. Second, the logic of biosphere, centred around the protection of life and species and their reproduction, is also at work, as an essential ingredient of the sustainability of humanosphere. Reflecting the distribution of solar energy, a large amount of biomass is stored in tropical rainforests, which house a rich variety of species. This biodiversity has been increasingly threatened by globalisation, but remains the basis of global food chains, on which humans depend for their subsistence. Finally, the logic of human society, which supported its massive expansion by developing the idea that members of society respect and care about each other, has persisted throughout history, in spite of war, violence and other interventions from the

public sphere. It is expressed in humans' ability to hold a large population within specific resource constraints, and to create the environment in which people have access to all kinds of care (from children to the old and the sick, from physical to mental and social), especially (but not exclusively) through the formation and reproduction of the household. To some extent, the modern welfare state is a substitute of this arrangement. The public sphere values, such as democracy and work ethic, function well when people are connected through the network of care, or an innovative interpretation of respecting the value of life.

The paper suggests that these basic logics of humansphere should be the guiding principle on which to interpret and build the long-term path of global development. It considers the historical evolution of the use of fossil fuels, resource-intensive technology and the regime of private property rights, over the last two centuries, and argues that the emergence of a fossil-fuel-based world economy was indeed a "great divergence" from the general trend of human history.