A

General Issues: Concepts and Principles
The Transcendental Domain of Physics

Rom Harré

Abstract The physical sciences display the world as a hierarchy of regresses, in which epistemological levels, observables and unobservables, are integrated with ontological levels, such as part-whole. Homogeneous regresses preserve generic ontologies, while heterogeneous regresses involve radical ontological transitions. Causal explanations map onto these regresses, transcending reference to causal mechanisms by hypothesizing causal powers. Faraday’s physics can be adapted as the basis of a transcendental argument to support the necessity of supposing that the world consists of causal powers. The subject of causal powers attributions can not be the world but the world indissolubly linked to apparatus.

1 Regresses in the Sciences

The sciences have developed by sustaining one level or layer of reality by or on another, and that on yet another and so on. At least that is how the development of the sciences looks to a Realist. Diseases, as displays of symptoms are sustained in being by the activities of bacteria and viruses. The aurora borealis as a visible phenomenon is sustained in being by the solar wind passing through the rarefied gases of the upper atmosphere. Chemical phenomena, like the evolution of hydrogen and oxygen during the electrolysis of water are sustained in being by a flow of ions under a potential gradient. These are familiar regresses. They display relations such as ‘Whole/Part’; ‘Effect/Cause’ and so on. In the preliminary scene-setting stage of this discussion scientific regresses will be examined ontologically, that is in terms of the categories of beings arranged according to the above relations and exemplified in cases like those sketched above.

It usually happens that the first stage of a regress transcends the boundary of unaided perception, though preserving the kinds and at least some of the determinables

R. Harré
Linacre College, Oxford and Georgetown University, Washington D.C.