

A Radial Model of Experimental Development— Reconstructing the History of Early Electrical Experiments

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Abstract

This paper proposes a radial model of scientific experimental development. I shall support the model with reference to the history of modern electrical experiments in the 18th century. After a brief review of the literature on experimentation, I first analyze the typical structure of experimentation, which consists of the background ideas of experiment, the experimental model and the material realization of the model. Next, I specify “the prototypical experiment” and “the descended experiment” and explore the descendent phenomena by juxtapositioning the structure of the prototypical experiment against that of the descended one. Then, I discern eight types of descendent relations. Different relations between a prototypical experiment and different descended experiments cause the developmental pattern of experiments to appear radial. Finally, I show that the history of modern electrical experiments fits very well the radial model.

Key Words: Scientific Experiment, Structure of Experimentation,
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