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Theory Change in Science - Case Study on the Solar System Formation

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Philosophy of science today has been particularized, just like particular sciences themselves. Philosophy of earth (and planetary) sciences was active in the 1980s-1990s following the Plate Tectonics Revolution in the 1960s, but seems to be inactive these days. Recent anthology on philosophy of science (Curd & Psillos 2013) discusses biology, chemistry, cognitive science, economy, psychology, social sciences, etc. while making no references to earth sciences. The above-mentioned literature on Plate Tectonics Revolution was based on preliminary historical studies on the earth sciences in the 1960s. In contrast to this, the synthetic process of earth and planetary sciences is not yet documented in detail, so philosophy of earth and planetary sciences has to start with digging up interesting historical data.

This presentation, drawing on Brush(1996), overviews the theoretical developments on the origin and evolution of the solar system in the 20th century, and then discusses which model best explains this process.

Keywords: Philosophy of Science, History of Science, Science Studies