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James R. Henderson* (henderso@pitt.edu). *Progress in Mathematics: The Importance of Not Assuming Too Much.*

John Stuart Mill took mathematics to be just another natural science. Exploiting this point of view, one may give a Mill-style analysis of the progress in mathematics in light of the literature written on the progress of other natural sciences. There is no more influential work on the progress of science than Thomas Kuhn's *The Structure of Scientific Revolutions*. One of the planks in Kuhn's platform is that after a scientific revolution the new paradigm is incommensurable with the old one. In part this means the new theory is not simply a generalization of the old theory. Kuhn claims that this is due to the fact that the terms of the old theory are grandfathered into the new one, but some of them are used in different ways. I argue that at least some post-revolutionary mathematical theories are incommensurable with pre-revolutionary theories, but for a different reason – because important operating assumptions of the old paradigm are dropped. Mill would not have been surprised when physicist David Bohm observed that dropping assumptions was the key to scientific advancement, providing another parallel between mathematics and (other) natural sciences. (Received August 07, 2012)