

How We Know The Earth Is Old

by PAUL KRUGMAN • NOV. 20, 2012

One thing that kind of tickles me about Marco Rubio's age of the planet stuff is that it leads right to one of my favorite examples of science — the founding of modern geology by [James Hutton](#), part of the Scottish Enlightenment. (Another figure in that Enlightenment, David Hume, created what I consider the first [true economic model](#). Hume also wrote some philosophy, I hear — and was friends with a guy named Adam Smith).

Hutton was, for a time, a farmer — and in that occupation, observing the process of erosion and the laying down of deposits of various materials, he realized that the landscape he saw around him could be explained by the same forces operating over immense periods of time, as long as you posited that there were other forces uplifting ancient sediments to form today's geological features. How could he know whether this theory was right? He made predictions; in particular, that in places you would find “angular unconformities”, striated bodies of sedimentary rocks from different eras that were tilted relative to each other. And sure enough, as this photo from Wikipedia Commons shows, he found them:



And once you accepted that the landscape we see was created by the same processes we see every day, you also had to accept the notion of a very ancient planet.

Why do I like this story so much? I think because it's science of a kind everyone should be able to understand; it doesn't rely on exotic instruments or hard math (not that there's anything wrong with either of these), it just relies on keen observation and an open mind.

Too bad that such open minds are so rare in America today, at least on one side of the spectrum.

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