Often interpreted as ‘the present is the key to the past’, uniformitarianism has been an important concept influencing the development of Earth sciences since it was introduced in 1832. It is acknowledged as a stimulating paradigm influencing geomorphological thinking, but more recently has been critically reviewed, considered to be integral throughout science, and complemented by other concepts including actualism, gradualism and catastrophism.

RELEVANT ARTICLES IN PROGRESS IN PHYSICAL GEOGRAPHY:


UPDATES

Two further articles by Vic Baker elaborate pertinent issues. In the first he shows how the invention of geological hypotheses involves both inductive inferences of the type Gilbert termed ‘empiric classification’ and abductive inferences. The testing and corroboration of geological hypotheses relies less on the correspondence logic of theoretical/experimental sciences, like physics, and more on the logic of consistency, coherence, and consilience that characterizes the investigative and historical sciences of interpretation exemplified by geology, and also applies to geomorphology:

The second contends that if logic is viewed as a normative science of right reasoning, then various forms of uniformitarianism introduced in the late 18th and 19th centuries were logically flawed at their inception. He outlines how abductive (or retroductive) reasoning is both a methodologically useful and scientifically fruitful component for generating understanding that can be further elucidated by the deductive and inductive methods of Earth systems science:


It is argued that as the Anthropocene (see Chapter 16) proceeds limitations arise regarding the use of uniformitarianism as a principle by which to interpret Earth surface systems of the present and future so that all geoscientists need to critically reconsider whether the long-held assumptions of uniformitarianism are useful in the Anthropocene era: