

Evidence of self-forming waterfalls reported

14 March 2019, by Bob Yirka



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A trio of researchers with the University of Nevada, Reno, the California Institute of Technology and GFZ German Research Centre for Geosciences reports evidence that suggests some waterfalls self-form in the absence of external influences. In their paper published in the journal *Nature*, Joel Scheingross, Michael Lamb and Brian Fuller describe experiments they carried out in their lab with artificial streams and what they learned from them.

Up until now, most scientists have believed that waterfalls originate via external influences on existing rivers or streams. Some may result from an earthquake changing the elevation of part of a river, for example, and others may come about due to glacial movement. And some may be result from differences in the land beneath the flowing [water](#)—if a stretch is more easily eroded, it would wear down faster, allowing water to fall into it. In this new effort, the researchers suggest another way it could happen that does not involve such external influences.

To learn more about waterfall formation, the researchers built a small stream bed in their lab out of [polyurethane foam](#) and then poured water

through it to simulate natural water flow. But they also added small pebbles to the stream. By monitoring the water flowing down the artificial stream, the researchers were able to see that the pebbles could actually dig out enough of the bed to form a waterfall. They noted that as the pebbles dropped down into the deepest parts of the bottom of the stream, they dislodged bits of the polyurethane foam, allowing them to break free. Over time, they dug out enough of the stream bottom to form sites where the water fell to a lower elevation as it moved downstream—a self-forming waterfall.

The researchers note their findings could have implications for studying the history of the planet—many theories about current geology are built on the idea that rivers and streams were created by glaciers, for example. If some or all of such rivers and [streams](#) were actually self-formed, scientists would have to reconsider whether glaciers had even been present in these areas.

More information: Joel S. Scheingross et al. Self-formed bedrock waterfalls, *Nature* (2019). [DOI: 10.1038/s41586-019-0991-z](https://doi.org/10.1038/s41586-019-0991-z)

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