

Not candy crush—scientists identify nature of candy sculpture

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A team of scientists has identified the complex process by which materials are shaped and ultimately dissolved by surrounding water currents. The study, conducted by researchers at NYU's Courant Institute of Mathematical Sciences and Florida State University, appears in the *Journal of Fluid Mechanics*.

"How flowing fluids generate unique shapes through erosion or dissolution is complex and fascinating," says Leif Ristroph, an assistant professor at NYU's Courant Institute and the paper's senior author.

The researchers studied this effect by immersing hard candy in a water current. They found that a peculiar but consistent shape emerges and then persists before eventually vanishing. This same 'sculpture' results regardless of the candy's initial form and the speed of the water flow.

The authors were also surprised to find that their work offers a long-sought answer to a question from childhood: How many licks does it take to reach the center of a lollipop? By formulating a theory for how flows cause dissolving and shrinking, the researchers calculated an estimate of about 1,000 licks.

But the work addresses some serious science, too. Understanding how materials dissolve is at the heart of the chemical and pharmaceutical industries—their products rely on the incorporation of solid compounds into solutions within reactors and within the human body.

The work also has relevance in geology—the research links the morphology of eroding and dissolving surfaces to the flows present, which could offer a way to explain the unusual but consistent shapes of landscapes and landforms.

Provided by New York University

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