

Saturday Citations: Hope for golden retrievers and humans. Plus: Cosmologists constrain the entire universe

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Credit: Pixabay/CC0 Public Domain

This week, we reported on the totality of the universe. We reported on

some other subjects, as well, but since they're obviously encompassed by that first thing, enough said.

Object occluded

People across the western U.S. last Saturday reported that [one thing temporarily blocked another thing from view](#). The larger and more distant thing, normally visible in the sky, was briefly obscured by the smaller and closer thing. To better understand this phenomenon, hold an object in your hand at arm's length at an angle that obscures a more distant object across the room.

Totality comprehended

Researchers at The Australian National University produced what they call [the most comprehensive view of the universe ever created](#). Their Zillow floor plan of all reality is a fairly simple chart depicting two plots: The first shows the temperature and density of the universe as it expanded and cooled; the second shows the possible mass and size of all objects in the universe.

The chart includes no-go zones, one where general relativity prohibits objects from becoming denser than [black holes](#). Another is a zone in which matter enters a fuzzy state of quantum uncertainty and objects can't be defined. So basically, it's just a set of constraints. But I can see how placing constraints on the *entire universe* might make a cosmologist feel pretty big and strut around like a big shot.

The paper discusses Planck-mass instantons, the smallest mass a black hole can have without entering the zone of quantum uncertainty. They write, "The Hawking temperature of an instanton is the Planck temperature. Thus, we have assumed that the initial conditions of the

universe are that of an instanton. Instantons seem to be an essential ingredient for quantum cosmology, and their study is an active field of research that is beyond the scope of this paper."

Bludgeon immortalized

Five hundred millennia ago, [human ancestors](#) developed a tool now called an Acheulean handaxe for cutting meat, chopping wood and digging. Jagged, ovular stones, they are shaped first by hard hammerstones, which broke off large flakes from the rock core, followed by the removal of smaller flakes. Variants have been found worldwide, wherever Homo erectus hung out and bashed things.

Prior to the Enlightenment, people thought they were formed naturally, and the earliest textual references to them date to the 1500s. But researchers at Dartmouth and the University of Cambridge have [identified](#) one of these sweet babies in an oil painting from 1455.

"The Melun Diptych," painted by Jean Fouquet, comprises two panels: On the left are two guys, and on the right, the Virgin Mary and her child surrounded by angels. The handaxe is depicted in the left panel, resting on a New Testament in the arm of Saint Stephen, representing his death by stoning.

It had never been previously identified as an Acheulean handaxe, but in 2021, Steven Kangas, a senior lecturer in the Department of Art History at Dartmouth, had the opportunity to show two anthropologists an image of the left panel and they agreed that it resembled a handaxe, ultimately confirming it via three analyses.

Boy good

If you're ranking dog breeds, golden retrievers have to be in the top five in terms of sociability, temperament and utility—they'll help carry groceries in from the car and even prefer to hold their own leash on a walk. They just like carrying stuff. When he heard the doorbell ring, my sister's golden retriever Hudson would run to the door with a present for visitors, usually a dog toy covered in slobber.

Goldens may also contribute to a better understanding of human cancer. Unfortunately, for reasons not completely understood, golden retrievers have a 65% chance of dying from cancer. Now, researchers at the University of California, Davis, have [published a study](#) in which they looked for genes associated with longer life.

They found expression of gene HER4 in goldens with long lifespans; it is a member of a family of human epidermal growth factor receptors important in human cancer, and it may mitigate against the genetic predisposition to cancer in goldens. Co-author Robert Rebhun said, "If we find that this variant in HER4 is important either in the formation or progression of cancer in golden retrievers, or if it can actually modify a cancer risk in this cancer predisposed population, that may be something that can be used in future cancer studies in humans."

Shareholders awful

For the last 40-odd years, economists have been punching us in the throat with an ideology emphasizing the infallibility of the market in driving social progress. So it stands to reason that we should use market-based interventions to reduce oil and gas production, right?

Haha, checkmate, environmentalists, divestment from fossil fuel holdings by small investors is almost immediately canceled out by mega-shareholder buys, according to a [new report](#) from the Center for Climate Crime and Climate Justice at Queen Mary University of London.

Among its findings, 25% of the investors studied who made significant reductions in either BP or Shell increased their holdings in the other company. And it argues that the enormous increases in market capitalization and [share price](#) for the two companies shows that divestment campaigns in general are not making their intended impact.

The report, titled "Beyond Divestment," argues that the ineffectiveness of divestment of BP and Shell shares should motivate governments to pursue other interventions that actually scale back production.

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