MAY 2026

Scientia

- In the 1600s, ***Prince Rupert's Drops*** became one of Europe's strangest scientific obsessions. The bizarre glass droplets, formed by dripping molten glass into cold water, were introduced to England by Prince Rupert of the Rhine, nephew of King Charles I. Rupert presented them to King Charles II, where they quickly became a sensation at the newly founded Royal Society. Early natural philosophers, including Robert Hooke and Samuel Pepys, watched in amazement as the bulbous end survived hammer blows while snapping the thin tail caused the entire drop to violently explode into dust. Hooke later wrote that the drops "fly all in pieces with a great noise" and admitted the phenomenon seemed almost unbelievable. Modern analysis eventually revealed that the secret involved rapid cooling, which traps enormous internal stresses inside the glass, leaving the outer shell in intense compression while the interior remains under tension. Even slight damage to the tail unleashes a catastrophic fracture wave through the entire object at extraordinary speed.

- In more recent news, researchers from Google DeepMind and collaborators continued advancing the broader ***"AI Scientist"*** movement, publishing new work on end-to-end research automation systems capable of generating hypotheses, running experiments, and drafting papers with minimal human intervention. This follows the broader trend of new AI-for-science tools which largely seek to automate scientific work. Our thesis at Heterodox, through Experiment Engine, is that automation will surely have a role in the future laboratory, but it will not be totalizing. In fact, we will need new tools embedded directly into the lab environment which can leverage both the creative human in-situ while still benefiting from the computational power of frontier AI. We believe this more "mixed" future will reveal itself in due time.
- A new paper titled ***BioProVLA-Agent*** introduced a vision-language-action system for biological laboratories that combines protocol reasoning, computer vision, and robotic execution into a closed-loop workflow. The system continuously verifies procedural state during wet-lab execution rather than relying purely on rigid automation scripts, reflecting the broader movement toward embodied scientific AI. This is a fascinating and relevant development in the context of our work with Experiment Engine. While BioProVLA is designed for robotic systems and Experiment Engine is built around humans, both must contend with dynamic real-world lab environments where context shifts and the "lab state" must be extrapolated from available visual information in real time.
- A major review paper published just weeks ago titled "Quantum in Biology, ***Quantum for Biology***, and Biology for Quantum" mapped the current evidence for quantum effects in living systems. The authors argue the strongest evidence presently exists for quantum tunneling in enzyme

reactions and quantum spin effects in animal magnetoreception, while more speculative ideas remain unresolved. Quantum biology remains one of the most promising fields operating at the edge of the scientific fringe, and we recommend checking out some of the work from our friends at the Quantum Biology Institute: https://www.quantumbiology.org/

INSIDE HDX

- At the end of April, we presented Heterodox Labs and Experiment Engine to the Virginia Wesleyan President's Council at DeFord Manor on campus.
- We recently published an Applied Technical Paper titled, 'Something Hidden in the Scientific Process,' where we introduce the concept of 'Procedural Observability' through the use of Experiment Engine in a series of simple gravimetric experimental trials. Read here
- Several Life Sciences labs have been onboarded to v1, and further development of Experiment Engine v2 is underway, adding multi-camera procedural tracking, an integrated AI lab assistant, and expanded experimental workflow modes.
- Through the Heterodox Research Society nonprofit, we published our curated library of readings (https://www.heterodoxsociety.org/library) as well as compelling short-form videos highlighting influential and sometimes forgotten fringe scientists, such as Cleve Backster, Roger Penrose, and Iztak Bentov across our social platforms. Follow us here: Instagram, Twitter, Youtube

  COMING SOON:

  - The HDX team will be traveling to San Francisco the first of June for the annual 1517 Fund Summit, with this year's theme being: 'The 10 year plan'. We are scheduled to do a 30 minute presentation titled 'The Future of the Laboratory; Science beyond reductionism, automation, and 'the scientific method'.