

On the remarkable similarities between data storage, blockchains, DNA, holograms, and, perhaps, Universes

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Data storage - the recording (storing) of information (data) in a storage medium. DNA and RNA, handwriting, phonographic recording, magnetic tape, and optical discs are all examples of storage media. Recording is accomplished by virtually any form of energy. Computer data storage is one of the core functions of a general-purpose computer.

--Wikipedia definition

DNA - a molecule... carrying genetic instructions for the development, functioning, growth and reproduction of all known organisms and many viruses.

--Wikipedia definition

Hologram - a physical recording of an interference pattern which uses diffraction to reproduce a three-dimensional light field, resulting in an image which retains the depth, parallax, and other properties of the original scene. When a photograph is cut in half, each piece shows half of the scene. When a hologram is cut in half, the whole scene can still be seen in each piece. This is because, whereas each point in a photograph only represents light scattered from a single point in the scene, each point on a holographic recording includes information about light scattered from every point in the scene.

--Wikipedia definition

Holographic data storage - holographic data storage records information throughout the volume of the medium and is capable of recording multiple images in the same area utilizing light at different angles. Additionally, whereas magnetic and optical data storage records information a bit at a time in a linear fashion, holographic storage is capable of recording and reading millions of bits in parallel, enabling data transfer rates greater than those attained by traditional optical storage.

--Wikipedia definition

62. Thus, although each created Monad represents the whole universe, it represents more distinctly the body which specially pertains to it, and of which it is the entelechy; and as this body expresses the whole universe through the connexion of all matter in the plenum, the soul also represents the whole universe in representing this body, which belongs to it in a special way. (Theod. 400.)

-- G.W. Leibniz -- Discourse on Metaphysics and The Monadology

The holographic principle - a tenet of string theories and a supposed property of quantum gravity that states that the description of a volume of space can be thought of as encoded on a lower-dimensional boundary to the region - such as a light-like boundary like a gravitational horizon.

--Wikipedia definition

Might there be an “ultimate hack,” akin to a hack of the Universe itself? If we can assume a single driving theme of entities in our Universe, then it appears to be the creation of increasingly complex structure and its protection (fidelity/resiliency/survivability/storage?) as everything in the Universe, for sure living things, appear to “do” this. A prime example is DNA where the instruction tool set for all life is maintained in information stored in molecules. Inside of our human genome DNA is “old” or vestigial code for how to make a tail etc... As noted by the National Institute of Health: DNA stores biological information in sequences of four bases of nucleic acid — adenine (A), thymine (T), cytosine (C) and guanine (G) - which are strung along ribbons of sugar- phosphate molecules in the shape of a double helix and, taken as a whole, this package of DNA serves as its owner's complete genetic blueprint. We can posit that DNA maintains legacy information in

case the code is theoretically needed in the future or that it is perhaps stored, like memory, as a form of backup storage for our “selfish gene” gene pool.

Now what appears to be a remarkable observation or trend is how so many activities in our Universe also appear to “store” information. Note how human “transaction processing” is moving in the same direction as so many complex systems like banking transaction information stored in the form of blockchains with ledgers for an entire corporation now resiliently, safely, and distributed in them. In this passage from Jenny Chang in her online article “Blockchain Tools to Handle Information” she notes the use of blockchain tech “to help identify issues “before” they occur:

Blockchain technology can help make the entire supply chain more transparent to minimize disruptions and improve customer service. Through blockchain, all components of the supply chain can be integrated into a single platform. Carriers, shipping lines, forwarders, and logistics providers can use the same platform to update companies and customers of the product journey. Invoicing and payments can be made from the same system, too. This integration streamlines the entire supply chain and helps supply chain managers to identify issues before they occur. Blockchain also provides unparalleled protection for information, as the technology’s decentralization methodology protects data from being edited. All users must agree to updates or edits to the data before they’re implemented.

So now let us speculate about a possible correlation or intuitive leap. In 1714 arguably the most prolific intelligences of all time, G.W. Leibniz – co-inventor of calculus and “inventor” of binary mathematics - made a near perfect prediction of our present-day physics theory known as the “holographic principle” in his *La Monadologie* book foreshadowing the theory and intimating that all of the Universe is built as if it were a hologram. A hologram is special as it is an optimized method of data storage and data resiliency as “every part of the whole contains ALL of the whole” (e.g. the famous example of cutting any hologram in half only to then have two exact copies of the same original).

Now let us consider again the “Universe as a computer” simulation analogy (i.e. Nick Bostrom’s proposal) alongside a holographic Universe analogy. If a blockchain or DNA represents distributed memory of past events, like a ledger, and if the entire Universe is akin to a 2-dimensional hologram coded on the inside of a massive sphere, akin to a blackhole event horizon, then maybe, just maybe, the Universe encoding (vis a vis General Relativistic “block Universe” lacking free will in a predestined - already built future) is also encoding not just the present but (as seen in blockchains, DNA, etc...) potentially the past or the past history of all events in the entire history of the Universe!

If we assume this to be true, then in theory if humans could “hack” or decode enough of storage protocol of our posited holographic spacetime storage environment (again akin to a hologram every “smallest unit” would contain all of the information contained in the whole of the Universe) we could then, quite literally, “read the past” and actually exactly “know the past”! Now I cannot claim to speak for how exactly this information at an unimaginably small scale (vis a vis string theory or Plank scale size) might be encoded, and thus decoded, outside of using bits, but it is obviously not without precedence with human minds having decoded or encoded DNA, blockchains, computer memory, etc....

Then, logically, one might venture to speculate if our posited holographic spacetime with its vast storage also perhaps encodes “the future”? Could we thus have a dream of “knowing the future” by reading that which might be stored in the most minute of existential information arenas? Or perhaps, by its very construction, or theoretically to prevent internal inconsistency paradoxes (e.g. the Grandfather Paradox of time travel), we may never be able to read or “see” this small scale or “deep” (a virtual event horizon at the bottom of our conceptual sub-atomic scale) and perhaps our entire Universe (and all of its history) is thus inherently not on the boundary of our Universe, like as an event horizon, but rather just beyond it? If so, have we again returned to Plato and thus the necessity of another required reality outside of our own as a “Universe of Forms” where lieth the instructions for our Universe, or even all universes or the multiverse and their entire encoded histories if not also concepts like physical and mathematical laws, infinity, and an actual Schrodinger wave function? Perhaps with enough time human ingenuity and experiments like Fermilab’s Holometer and the Large Hadron Collider may one day tell.

Perhaps the fundamental problem of “the observer” in Quantum Mechanics - with so many interpretations of what happens when a quantum particle decoheres into a single “solution” from a probabilistic wave function – is answered with each given present moment or “now” (see Julian Barbour’s

book *The End of Time*) “becoming” a stored holographic memory. Is quantum decoherence simply the turning of a given “now” into a hologram - the size of an entire Universe perhaps? In essence, is the reason that diffraction dual-slit experiments and quantum eraser experiments have definitive positions, rather than superpositions, due to the “now” of a given Universe completing a process where that “now” having been turned into a “stored” holographic memory past? Is our “past” history actually a stored entity in an external reality or Platonic world of forms? Again, note that while we still, obviously, observe records of the past in our present existence, they are not in superposition or probabilistic waves.