Episode One Hundred Twenty-Three: Letter to Herodotus 12 - Events and Time

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How I Think About Time

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We've all seen projections of 3D objects onto 2D planes, such as this arch. It is reasonably easy for us to understand what we see is supposed to be a three-dimensional building, even though we really only see strange lines on a flat screen, even though all we see is in 2D. Paintings, photographs and motion pictures are such 3D-onto-2D projections, after we're born, we start practising them as soon as we can say "Crayon!" 🙂 and by the time we're grown up, we know them well.

Now, imagine for a moment, you meet a 2D creature: Their body is in 2D, their senses can only perceive 2D and their mind's capabilities are also limited to concepts of a maximum of two dimensions. Soon, you might find them in a situation like this:

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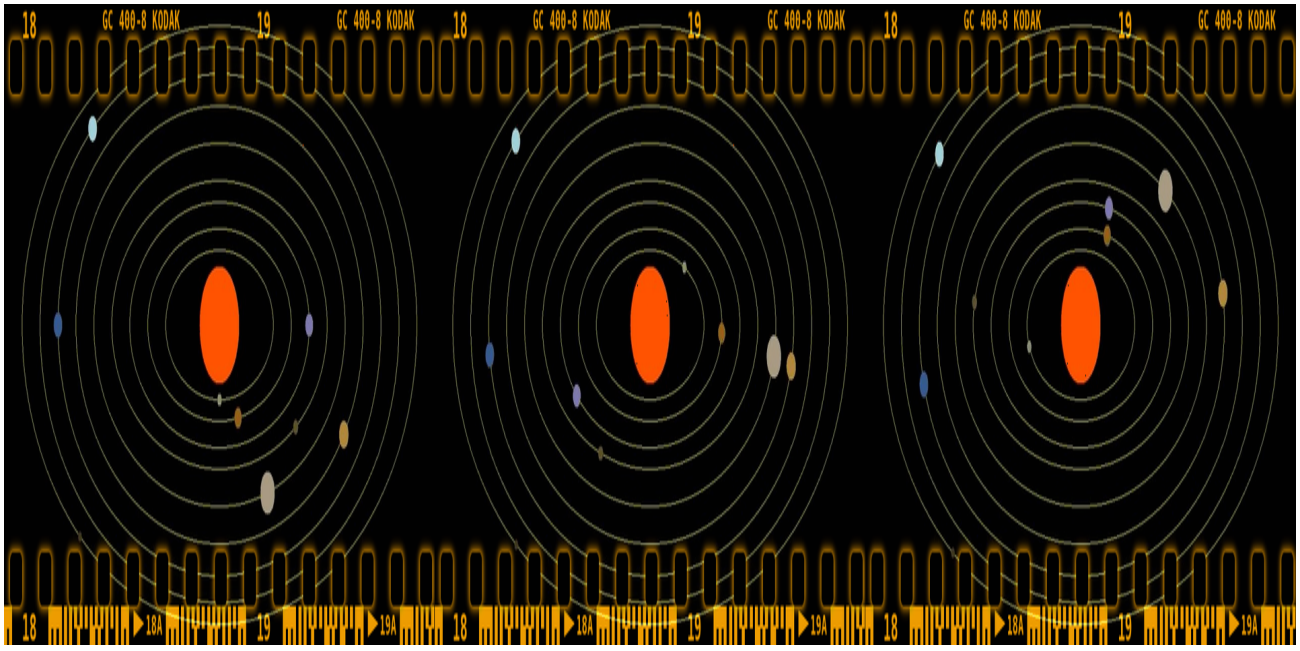
You and I, because we're 3D-capable humans, we see that our new 2D friend is in a 3D world, but they themselves can't make heads or tails of it – they keep bumping into that block, without understanding why, because to them, with their pure 2D perception and understanding, it looks just like all the rest of the world! Eventually, they will reason about their world, use the 2D sense perception they have, and theorise that "Whenever there is a dark spot (shadow) on the floor an invisible obstacle is near!" They will test the theory, see it to be 100% true, call it a law of physics, and it will help them make sense of things; not perfectly, but much better than before.

Just like the third spacial dimension is beyond the sensory abilities and mental conceptualisation capabilities of our 2D friend, any fourth dimension would be beyond the sensory and mental abilities of humans: We cannot visualise or think in four dimensions. We can merely reason about additional dimensions, even reason mathematically and geometrically, but we literally cannot hold dimensions beyond 3D in our mind the same as we can three dimensions; the hardware just isn't there for our brains to do that. The same is true for the sensation of time: Just like UV radiation, we cannot sense it directly. We can sense UV's effect, sense a sun-burn, we can also reason about where it came from, but we cannot directly sense the UV light due to which it occurred, and we cannot see UV light in our mind's eye, either – if we try to, we'll intuitively just end up transposing the colour of UV (which we never saw and never will see…) onto a colour we know – for me it's bright purple. So even though we

cannot sense nor hold UV light as a concept (mind's eye), we can sense it's effects and reason about it. Magnetism is the same: Unlike migratory birds or sea-creatures, we cannot sense the earth's magnetic field directly, either. We can, however, use a compass to transpose magnetism onto our visual sense – just like we can transpose UV light to visual light and pretend it's bright purple. And for time, we use a clock to project that dimension onto our other senses: A typical clock allows me to see *the effects of* time, about half my clocks also allow me to hear *the effects of* time, and for a long time I even wore a watch that enabled me to feel haptically the effects of time, but never do I see, hear or otherwise feel or sense *time itself* directly – and this is why, in sensory deprivation, humans gradually loose all sense about time.

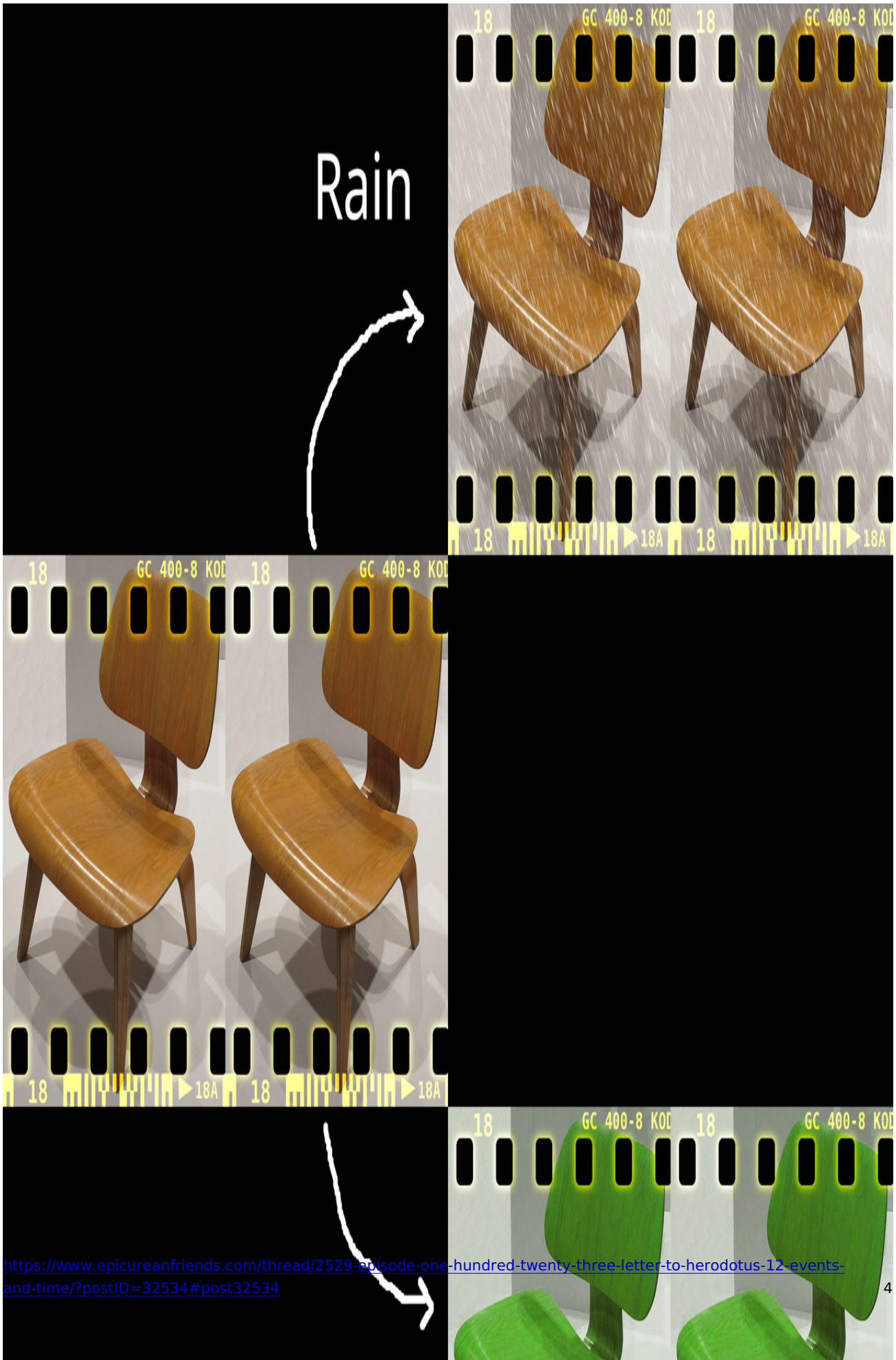
The opposite of sensory deprivation is sensory augmentation; and indeed: Sensory augmentation massively enhances and trains our sense of time – for a while. For example: If you're subjected to a one-minute noise every 15 minutes, after a day or so, you'll know quite precisely when the current 15-minute-interval is up, you'll be able to count down to the beginning of the next noise almost to the second. However, this new-found precision in your *intuition of* time does not last for more than a day or two after the noises stop, because it is precisely that, an *intuition* -- not a sense. (Similar ways exist to, for example, enhance intuitive navigation and spatial reasoning, but they too don't last after the augmentation is stopped.)

So to make sense of a fourth dimension, we need to simplify things first. Personally, I prefer to mentally "step out of the universe". To do that, I artificially limit the infinity of space; for instance, I pretend the universe consists merely of our solar system. I'm floating in space next to it, clicking away at my Kodak. Now, the passage of time is captured as the frame-by-frame progression on film:



Instead of capturing reality in such vastly simplified 2D scenes, I could capture it as perfect 3D-to-2D projections, such as proper photos, or even holograms. And what's more, I could account

for the swerve (or quantum probability effects), by adding branches:



https://www.epicureanfriends.com/thread/2529-episode-one-hundred-twenty-three-letter-to-herodotus-12-events-and-time/?postID=32534#post32534

In this scene, at first there was a plain wooden chair, neatly captured on film as a 3D-to-2D projection. During each day, I make one picture at the same time. During the night from the 2nd to the 3rd day, due to the the swerve, complex quantum probabilities and free-willed humans, there will be two choices: Either it starts to rain, or someone comes to paint the chair. The past is a single, simple sequence of events, the future is still undetermined, and branches into different sequences at every swerve/quantum/choice junction. Once any given junction is reached, only one possibility will actually manifest and become a real event in the timeline. The other options, and all they would have led to in turn, will be lost entirely, forever – and just like in a 3D cinema, no matter the tantrum I throw, there are no do-overs, no scenes are ever replayed, and I don't get to press pause, either.

(Another way to think of time is to think of the universe as residing in a cylinder, which is shot through a pneumatic tube mail system: the further it moves ahead, the further time progresses inside the transport cylinder. For every swerve/quantum/choice event, the cylinder reaches a junction box, from where our universe is transported along one lane or another – and the path-not-taken is effectively lost forever (in science fiction, the path-not-taken is usually called alternate timeline).)

This is how I think of time – and this is why I think that Epicurus appeals to our *intuitive* understanding of it: We cannot sense it directly, because we have no such organ. We cannot hold it as a concept mentally, because our senses don't capture it and it is an additional dimension, which is beyond what our brains can do. We can only reason about it, we can only infer it's existence, because our senses don't lie, and they offer perpetual *streams of* varying sensory perceptions. Through the life-long exposure to these, we gain an intuitive – that is: non-sensual, internal, gut – understanding of time, because our brains learn to simulate it to some extend (ie, we can approximately tell when one minute has passed), thanks to various biological cycles ("clocks"); but they each depend on being perpetually re-adjusted based on the *streams of* varying sensory inputs we get.

(In terms of physics, time can reasonably be called a "dimension", however it is not an additional spatial dimension, such as height/width/depth; it is a dimension of its own kind, and behaves differently. However, for ordinary day-to-day life, I still find it very useful to imagine it spatially in the ways outlined above.)