Chapter Eight

Only the Random Survive

"Billions of organisms have lived, and each one was fit enough to be born. Yet, more than ninety-nine percent of them did not leave behind a surviving lineage. Why? Why did the 99% perish without offspring? " Dr. Yawney posed, his words resonating with the audience.

“Good question,” one Explorer agreed. “Enlighten us.”

“We study animals and plants that survive and call this evolution. Right?”

“Yes,” the explorer agreed.

“But what is the study of the plants and animals that died, that did not survive? Is that also called evolution? Are they the same thing? No, not really.”

The room fell quiet.

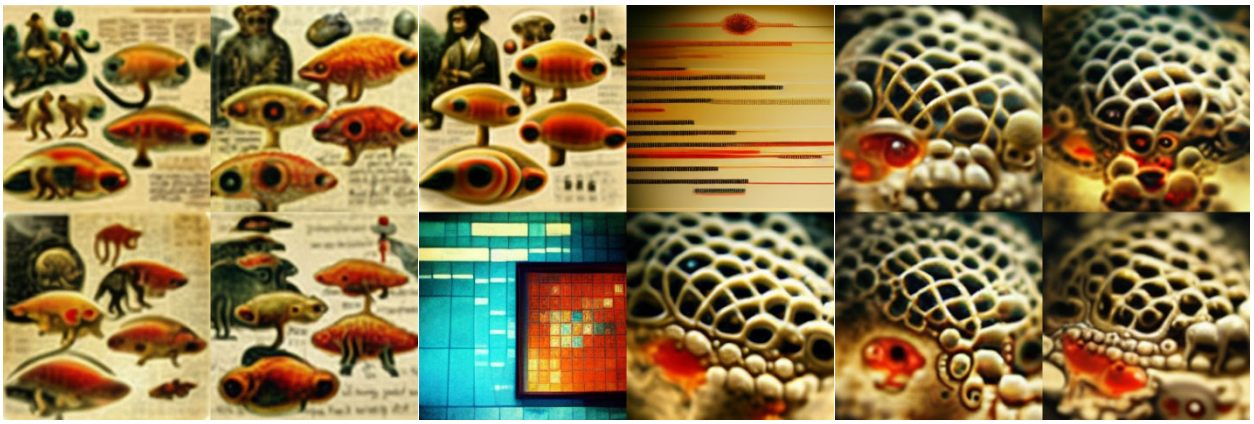
"Let's start at the beginning, briefly. In common parlance, the mechanism of Evolution," Dr. Yawney continued, "involves the sharing of genes between two individuals to create a new organism which sometimes has better characteristics more suited for survival. How does this happen?

“Simplistically, biologically, a new organism is created when parents combine genes through eggs, sperm, and coupling.

"Let's start with external fertilization in water. Fish, insects, reptiles, and birds disperse their gametes broadly into the environment, often spawning abundant eggs in water, timed to specific seasons. The large number of eggs introduces a wide variety of genes from the mother's side. Males and females don't choose each other; their selection process is limited to surviving, moving about, and coincidentally being at the same place at the same time. In water, any available male releases a cloud of sperm. The fastest sperm may have an advantage... " Dr. Yawney explained, eliciting chuckles from some of the Explorers.

"On land, its not much different. Nest builders exhibit weak or no selection. Perhaps females build their nests where preferred males reside, but they have no control over which male fertilizes their eggs."

"Internal fertilization follows a similar pattern. Much of it is random. For billions of years, females and males lacked the brain capacity for sensory processing, reasoning, or decision-making. With some exceptions, they engaged in random mating with whoever happened to be nearby," Dr. Yawney elaborated. “And they mated a lot, often with different partners. So who was daddy was not a big concern.”



"Sounds like my students," one Explorer playfully jested, causing twenty or so Explorers to chuckle. “But they don’t want babies!”

"And the rich ones who do want babies, they are not random,” One explorer joked darkly. “Rich humans now carefully select genes. Put an ad in the Harvard Crimson offering $250,000 for the unfertilized egg of a track star with blond hair, a svelte figure, and an IQ over 150. Or they buy the sperm of a movie star. Or both. Create a superchild. A stranger. Its like an investment. " the Explorer joked, evoking more laughter and toasts.

“But it's not very romantic,” another Explorer offered. “Next Level Crispr babies.”

"Let's get back to this introduction and evolution....” Dr. Yawney tried to assert control.

"Overwhelmingly,” Dr. Yawney continued, “the major extinction events have been sudden or catastrophic. If you were in the wrong place at the wrong time, you died. It was luck. Typically, the sudden catastrophes wiped out all the major existing species.

“Focusing on the fitness of surviving lucky organisms misses the point. They were just lucky. But luck is irrelevant to fitness. Luck is not skill, not ability, not ordered, not repeatable. It is random. They won because the others died. They won because the other teams forfeited. There was no competition.

“Then think about this: after an extinction event, “evolution” only acts on the survivors. Evolution starts with the luckiest organisms who survived the catastrophic event.