

THE MESSAGE OF EVOLUTION

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Did you ever imagine that everything stops existing when you close your eyes ... and is recreated just as you open them? It helps to be about 3 years old and stuck on a bench in a silent place where people are praying. Perhaps you can even remember shutting your eyes very tightly — to make sure that everything was gone — then trying to open them quickly and suddenly enough to catch a glimpse of the void.

Self-centered nonsense, of course ... but unfortunately, this particular nonsense has an analogue in reality. Whether the cosmological constant is positive or negative — whether the universe is slated to expand into nothingness or contract into a black hole — if evolution is left in the hands of natural selection, a time will come when there will be no evidence that anything was ever alive.

Are We?

The great anthropologist Napoleon Chagnon tells a story about the first time he took his Geographical Positioning System to the headwaters of the Amazon. A group of Yanomamo Indians watched from the edge of a clearing while Chagnon fussed with his new contraption. Noticing that he seemed to be uncharacteristically vexed, a village elder who had known “Shackey” for 25 years, approached and asked him what he was trying to do. Without deflecting his focus from the GPS, Chagnon replied: “I’m trying to find out where we are.”

This was dutifully reported back to the group, which in turn became uncharacteristically silent and attentive ... even pensive, as if they were about to find the answer to a question that had concerned them as much as it appeared to be concerning Chagnon. But the process was taking too long, so they sent their emissary back for a progress report. Seconds after being asked “Shackey, where are we?” the GPS gave a reading and Chagnon shouted “We’re here!” That revelation sparked a spontaneous combustion of joy. The Yanomamo danced and shouted “We’re here! We’re here!” and celebrated into the evening.

Why such anxiety and why such relief? Because the question “Where are we?” suggests a more unsettling question -- “Are we?” Three-year-olds test the question in church pews, academic philosophers prod it with formal arguments, and Yanomamo Indians, like most people, look for reassurance from individuals who they think to be particularly well connected to mysterious forces.

Unfortunately, the answer to the question of existence, our existence, is “Maybe ... it depends.” Most of all, it depends on what we do. The void may be far away in time or as close as World War III, but if it comes, it will be as if we were never here. Which is to say, as if we never were.

So What?

Well, consider my ex-mother-in-law who died last winter. Doris Melford had 12 children, about three times that many grandchildren, and will probably be an ancestor of more than a 100 descendants by 2020. The combination of genetic information that made her a unique individual is gone, but the partial copies of her self — the halves, the quarters and the eights — already add up to more than a dozen full copies. Less tangibly coded, but potentially more important, the non-genetic information that Doris passed on — everything from kind words to generous deeds — continues to enrich the lives of people who will, in turn and in consequence, enrich the lives of people that Doris never knew. So there is a real sense in which Doris is still alive. The consequences of her life continue to have consequences.

What about people with smaller families, or people who have no children? Are we less invested in the future? No, we are not even less genetically invested — we just start out where Doris will be in ten to twenty generations. Among sexual reproducers, individuals are like hands in a card game — in the human case, hands dealt from a deck which has about 30,000 cards that are partially shuffled between rounds. The combination of genes that makes each of us physically unique breaks into ever smaller chunks until we all have essentially the same genetic legacy. Long term, the issue is not which competing forms of the few genes that are in flux will win, but whether the recipe that accounts for the vast bulk of each of us will be a link in a chain that will last forever.

Forever?

From Bernal to Islam to Dyson to Frautschi, Big Bang cosmologists have calculated futures which admit some hope that some form of descendant life could become a permanent attribute of the universe. These models are tenuous. They assume a universe that is slated to expand forever, which appears to be overwhelmingly likely, but they need to be adjusted more often than an old Jaguar. Nevertheless, even Hawking and Weinberg admit that we cannot rule out the possibility that our unrecognizable descendants might be able to manipulate the universe in a manner that would allow the perpetuation of this advanced form of matter, living matter, as a permanent evolutionary step.

Not ruling that possibility out is particularly wise as the current consensus on cosmology begins to creak at its seams. The discovery of redshift precipitated a philosophical emergency — the Static Universe was clearly untenable and scientific cosmology needed a replacement in a hurry. Friedmann's Big Bang hypothesis went from an engaging proposition to a domineering paradigm in suspiciously short time. Now we have astronomers who plot empty areas of space confident that they are mapping the bulk of the matter in the universe. Maybe they are. They cannot see dark matter, but they can point at it ... and Once Upon A Time there was an Emperor who loved new clothes ...

Whether Priests or Rabbis, Imams or Monks, astronomers or physicists ... people who account for everything on the grandest scale naturally abhor a conceptual vacuum. The Big Bang is still hot, perhaps too hot, and now the universe appears to be expanding at an accelerating rate. As

happens with religions, new observations that do not meet prior conceptualizations are met with scepticism ... and when they cannot be ignored, prior concepts are jiggered just enough to let them in.

The realization to keep in mind is that no matter how high or low the probability of having descendants forever, any finite probability is infinitely greater than zero. So whether we are in a Friedman Big Bang universe, or a universe yet to be imagined, concluding that our prospect for existence is zero, at this stage in our understanding, would be a presumptuous, even arrogant, exercise.

Given a not-known-to-be-zero probability of the possibility of having consequences forever, the rational course is to go for it. If our chain never breaks, our existence will be established. I would add, and I think that Doris would have agreed, if who we are and what we do affects the future forever, there is a real sense in which we will always be alive — all of us ... sons, daughters, mothers, fathers, grandmothers ... right back to the primordial soup.

But When You're Dead, You're Dead

Sort of. Dead men don't talk, but they may leave a permanent record, and it is getting easier and easier to make that record more and more detailed. Perhaps the more gnawing question is about ice cream. Dead men can't taste ice cream ... but let's fast forward a few links to 2100.

It is clearly possible that our not-very-distant descendants will know how to add telomeres to the ends of their chromosomes or do whatever else it takes to control the aging process. Indefinitely young and healthy, our great-great-grandchildren's primary concern will be updates — genetic changes that will keep them young and healthy — keep their immune systems two steps ahead of infectious microbes and their operating systems compatible with inanimate change.

As our descendants begin to face the prospect of immortality, the tabloids of their time will construct a moral dilemma — “How Many Changes Before You Are No Longer You?” But after a bit of wallowing in that sentimental journey, surely by 2200, they will realize that they will always be who they are at any point in time, and they will be pleased to have changed as life becomes evermore engaging. This will be similar to our realization that we are no longer who we were when we were three.

As long as our distant offspring retain the one universal characteristic of living organisms — as long as they strive to stay alive, or as put by Darwin, as long as they struggle for existence — the question will change from “What about ice cream?” to “How long will there be ice cream?” Happily, the answer will be “Until something better comes along.”

Their Heroes

Our eternal descendants, if we have them, will look back on us as philosophical heroes. They will marvel at our courage to keep trying in the face of individual death. The upbeat version of

history will record how we came to realize both the fact of evolution and the nature of evolution by natural selection — how we saw all of life as a powerful ship in a sea of icebergs — and how we collectively shouted “Steer this thing!” just in the nick of time ... even though we knew that only the best information in our genes and our most worthwhile thoughts would be passengers in their safer seas.

So much for upbeat history. It serves its purpose. Our descendants will need courage to face more than tabloid-generated dilemmas, and they will be emboldened when they hold up an idealized picture of us. But you and I need to get down and dirty if we are ever going to be held aloft. We need to take a hard look at what has really kept us going ... before it becomes a ticket to nowhere.

Heaven

Whether it's streets of gold or a cushion of cloud, reincarnation as a higher being or etherial bliss beyond imagination, if we multiply how good something would be by the probability of actually obtaining it, we get an estimate of expected gain. Heaven would be infinitely good, by arbitrary definition, but anything times zero is zero. Accomplishing existence will require a better foundation than remembering how enthralled we were by a magic trick before we found out how it works.

Put differently, we can no longer afford to spend philosophical capital and the time, energy and resources which follow, on a zero-gain prospect. Illusions can move real mountains, but ex-illusions are feckless reminders of our propensity to folly. The degree to which we continue to assign a non-zero probability to heaven is the amount by which we diminish our chance of having consequences forever. Ironically, visions of heavens have helped take us to the point of realizing where we need to go, but if we do not shed them, they will keep us from getting there.

With regard to the prospects for existence, again, any non-zero probability is infinitely greater than zero — so the logic of steering evolution, both organic and cosmic, is a no-brainer. If we try, we might succeed. If we don't, we won't. The challenge is terrible, but the amount of relief that we derive by assigning responsibility to a fantasy captain is the amount of hope that we abandon in the struggle for existence.