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Globalization and the Universe: A Short Re-Locating

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Lowell S. Gustafson

Reframing globalization, as Benedikter and Kofler rightly propose it as one of the "5R's" of re-globalization, today, in the age of the beginning expansion of humanity into the surrounding space, includes re-locating globalization in the greater context

of the world's natural history, including its place in the evolution of the universe. This may re-calibrate our view and make us a bit more humble, adding a touch of "cosmic" humanism to the present debate which remains often self-centered and loses view of the whole. The evolution of the universe offers hope and warning for globalization. The hopeful story is about ever-increasing complexity and development of sustained, structured relationships. The warning is about divergence, separation, and even hostility; increasingly complex relationship is rare, reversible, and temporary.

Sixty-five percent of the atoms (by number, not by weight) in each of our bodies are the single proton hydrogen that formed almost immediately after the Big Bang 13.82 billion years ago. The next most common elements in your body – oxygen, carbon, and nitrogen – were all fused from hydrogen and helium in stars over 5 billion years ago, before they were shot out into space. Once in space, different elements like oxygen and hydrogen formed chemicals such as water, which makes up 60% of your body. Along with all the other elements and chemicals that were formed in supernovae and colliding neutron stars, water-laden asteroids and comets accreted due to gravity to form the Earth 4.56 billion years ago. Over the next half billion years, increasingly complex chemicals like amino acids and proteins formed. These eventually formed the most complex relationships that we know of to that point in the first form of life, the first Earthling. Perhaps we will find evidence for life elsewhere; so far, all we know is about life on our planet. Decades of listening for signs of intelligent life elsewhere has produced nothing.

The single cell on Earth was able to access and manage energy, maintain permeable boundaries that let nutrients in and expel wastes, and could reproduce in response to environmental changes. The descendants of LUCA, or our Last Universal Common Ancestor, colonized the oceans as they became even more complex life forms. Prokaryotic cells became eukaryotic cells. Multicellular life forms became increasingly complex, especially starting around half a billion years ago. Some intrepid explorers left the oceans and moved on to land. Plants turned a brown Earth into a green one. Animals spread across the globe. Eventually, 28 trillion cells had learned how to cooperate in incredible complexity to form your body, which, with some luck, will continue functioning well for years to come.

Mammals from the end of the period of the dinosaurs eventually evolved into primates, hominins, and only 300,000 years ago, probably in Africa, a few thousand

homo sapiens. Our kind's evolving brain gave us the ability to develop the impressive social skills necessary to work together to raise slow-maturing offspring to maturity. Structured, sustained kinship groups gathered plant food, scavenged for bone marrow left over by the species with claws and incisors much more deadly than ours, and eventually created weapons used to hunt. Populations increased, and the African climate became drier, making it necessary about 75,000 years ago to migrate to new territories outside of Africa. Within about 50,000 years, humans completed our species' first era of globalization and were living on every continent on Earth, other than Antarctica.

Kinship groups that gathered and hunted only some ten thousand years ago began to become farmers and herders. The number of humans on Earth had risen to about 2 million. They lived in villages within extended kinship groups. Shamen would eventually seek shape-shifting symbols that people from different kinship groups could share to provide a new unity. Ever larger and more complex groups of people formed cities, nations, and empires. The Silk Road tied economies and cultures together from China to the Levant. The number of humans on Earth had risen to about 190 million.

Only half a millennium ago, people who had long since forgotten their common origins in Africa became reunited – more often by force than by choice. Sea-faring vessels, colonization, and the movements of goods, plants, pathogens, and people led to a new wave of globalization. The human population had risen to about 500 million. Trading cities with salt in the air became industrial ones with smoke instead. Classical liberals like Adam Smith argued for a world without irrational national borders in which goods, services, capital, and labor could respond rationally to supply and demand. They lamented mercantilist empires that sought to tax balance of trade surpluses to pay for ever larger professional armies and navies. Nationalists brushed such utopianism aside, and struggled for power. Empire after empire aspired to become global at the expense of others. World wars long before 1914 record their struggles. By the early nineteenth century, the human population had passed the billion mark; by 1930, it had risen to 2 billion.

After the Great War of 1914–1918, nations sought more to export unemployment than goods. After that led to an even more destructive war beginning in 1939, the classical liberal vision of free trade and stable currency values was resurrected at Bretton Woods. The hope for a globalized economy was again dashed by the

division of the world into two hostile blocs, with a third deeply suspicious of both. The fall of the Berlin Wall in 1989 and the collapse of the Soviet Union in 1991 again led to the hope for a positive globalization. US triumphalism first made that hope look to some more like a bid for unipolar Americanization; it then led to hubris and living off past glories, resulting in a public debt in 2021 of over $28 trillion. With a GDP of just under $20 trillion, the US could still feel hegemonic. But with China's having risen to over $12 trillion by 2017 and the European Union to over $17 trillion, it was clear to most that the world was fast becoming multipolar economically, technologically, and even militarily.

India's Modi, China's Xi, Brazil's Bolsonaro, America's Trump, and enough others all wanted to make their nations great again. Even progressive Joe Biden calls for his fellow citizens to Buy American. The more nationalistic than humanistic response to the Covid-19 pandemic and the noble aspirations more than the demonstrable reductions in greenhouse gas emissions, as well as ongoing trade disputes, made Adam Smith dream's look distant. With a global population now of over 7.6 billion, expected to rise to about 11 billion by 2100, resource deletion, and global warming, many see global problems facing decidedly less than global policy responses.

Perhaps the lesson from deep time is not about ever increasingly complex, structured, sustained relations. Maybe the story is about a universe expanding so much that we can only see 13.82 billion years worth of a universe that is 93 billion across. Most galaxies are forever beyond even our sight, much less our ability to communicate with them. Perhaps all life on Earth does have a common origin in LUCA, but since then, life has diversified into any number of separate species. What comfort it is to the gazelle being eaten by a lion that they each have common ancestors and live within a common ecosystem is unclear. Maybe all humans alive today have descended from small bands in Africa, but they have since become a range of groups that often enough hostile and unable to arrive at consensus in effective responses to global problems.

One view of the deep future is that dark energy will continue to cause the expansion of the universe. It began hot and dense and is consistently becoming cold and distant. The Big Bang may eventually be followed by the Big Chill or the heat death of the universe. Well before that happens, we can expect humanity to devolve into simpler and simpler units. Our brief 300,000-year rise is already well along into its demise. The chance of our species still being around to see the Sun become a red

giant and swallow the Earth is unlikely.
There is hope that the end of our universe is not the end of everything. There may be an infinite number of other universes. Maybe ours is just one that is dripping off other, new universes. And there is hope that humanity can improve its relationships, at least for a while, as it addresses global problems.

It has been said that humanity are that minute portion of the universe that can reflect on itself. Time after time, the universe transcended itself, becoming something it had not been before in a way that no one who somehow could have been there in earlier times could have predicted. What hydrogen atom 380,000 years after the big bang could have confidently predicted the formation of Earth or Beethoven's Fifth symphony? Perhaps we have inherited the universe's ability to transcend ourselves and create a harmony, a unity that has not existed before. Life itself emerged only on Earth (as far as we know now). Maybe globalization can become humanization in harmony with our environment.

Or maybe our best hope is that life forms elsewhere not only exist but can do better than we will.

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Lowell S. Gustafson is Professor at the Department of Political Science, Villanova University College of Liberal Arts and Sciences and a Senior Visiting Fellow at the Center for the Study of Statesmanship of the Catholic University of America.

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