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What Evolution Teaches

Contribution to GTI Forum [Big History and Great Transition](#)

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I would like to thank [David Christian](#) for highlighting the importance of Big History in relation to the Great Transition. However, much as I welcome his essay, I fear it only scratches the surface of our heritage and its implications. Christian hints at our fortuitous evolutionary beginnings on this fragile planet, but doesn't delve into the implications of evolutionary science. He also hints at how the many branches of modern science and history have been conducted in siloes, rarely bringing the strands together to create a new vision.

The long view of history must surely start with our evolution, and the psychological constraints with which we are still burdened. Evolution works according to the simple algorithm of replication, variation, and selection (whether natural, reproductive, or imposed), a fact that carries enormous implications. Life simply evolved according to the evolutionary imperative, favoring the genotypes of individuals who leave the most descendants, with evolutionary fitness being determined by psychology, as well as physiology, intelligence, and physical attributes.

When we first evolved as hunters and gatherers, the traits that were retained included the ability to make rapid decisions when faced with danger or opportunity, living in the present, seeking status, showing loyalty to one's own tribe, and, often, aggression towards other tribes. We lived in the present, and some of our ancestors were even guilty of overkill of mammoths and other game. However, as a small population with few needs, we survived unscathed, even if the rest of the natural world suffered. While altruism also emerged as a trait, it was largely reciprocal, limited to kin, or circumscribed by the identification and punishment of cheating.

These traits were an advantage in this environment and at this time in history. With intelligence came enhanced cognition, but most reasoning was still emotional and instinctive, with rational

thought limited to certain difficult tasks. At that time, our ability to comprehend large numbers and exponential growth was also very limited, but is now a trait that makes effective action against climate change, rising population, pollution, and even COVID, particularly difficult.

Increased intelligence led to tool-making, copying, and language, and eventually to agriculture and trade just 12,000 years ago. This created the opportunity to accrue land and wealth, which generally led to male domination, with protection of one's "good fortune" often leading to hierarchies and violence. Specialization in trades and mercantilism followed, with business creating burgeoning towns and cities, followed by nation-states. However, almost every ancient civilization has failed, succumbing to climatic conditions with shortages of food or water, overturned by rebellion, or overpowered by conquest, all largely a consequence of the fragility of such an enterprise.

Increased intelligence and growing populations also unleashed technology and rampant exploitation on a global scale. The Industrial Revolution in the eighteenth century, which arose following the Enlightenment and spread around the world, certainly lifted many people out of poverty, but at what cost? Together with the rise of neoliberalism, it set in motion the exploitation of resources and the production of CO₂, leading to the Anthropocene, and specifically to the "technosphere," first described by Peter Haff.¹

These traits have continued to leave an indelible mark on our present make-up, a phenomenon known as "evolutionary mismatch."² So even now, we make many poor decisions by "gut instinct," whether it is choosing sweet but unhealthy food, ignoring climate change because it is slow and the damage lies in the future, pursuing wealth and exhibiting conspicuous consumption to earn status, and choosing a political party to further our self-interest, aligning our values with our chosen "tribe," even at the risk of war and the end of our civilization.

I recognize the importance of education and leadership, but I doubt it will give rise to an epiphany in enough of the global population. Most people are living day to day, swayed by the psychology inherited from the distant past, much of which is now maladaptive. I believe our only hope lies in using cultural evolution to find ways of changing how society functions, particularly how governments and other institutions might bring about a global sea change in the assignment of priorities and in social norms.³

Cultural evolution occurs in much the same way as genetic evolution, with ideas or memes being copied, altered, and selected, much as genes are. Institutions and political systems desperately need to be overhauled, such that they can nudge us in the right directions, whilst being far more representative. New models for economics would be a necessary part of the transition, replacing neoliberalism.

Big History can tell us a great deal, particularly if it recognizes the role of human nature and evolutionary mismatch in why civilizations fail, why we have governments that are unable to solve “wicked problems,” and why we may be headed to hell in a handbasket if we do not use our intelligence to leverage solutions through cultural evolution.

Endnotes

1. Peter Haff, “Technology and Human Purpose: The Problem of Solids Transport on the Earth’s Surface,” *Earth System Dynamics* 3 (2012) 149–56.
2. Norman Li, Mark van Vugt, and Stephen Colarelli, “The Evolutionary Mismatch Hypothesis: Implications for Psychological Science,” *Current Directions in Psychological Science* 27, no. 1 (2017): 38–44.
3. Helen Camakaris, “Evolutionary Mismatch, Partisan Politics, and Climate Change: A Tragedy in Three Acts at This View of Life,” 2021, <https://thisviewoflife.com/evolutionary-mismatch-partisan-politics-and-climate-change-a-tragedy-in-three-acts/>

About the Author



Helen Camakaris is an Honorary Fellow in the School of Biosciences at the University of Melbourne and a writer on sustainability, climate change, evolutionary history, and psychology. She holds a PhD in microbiology from the University of Melbourne, where she continued as a Postdoctoral Fellow to study how bacteria regulate genes in response to their environment.

About the Publication

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