Introduction

The full title of Charles Darwin’s seminal work reads *The Origin of Species by Means of Natural Selection or the preservation of favoured races in the struggle for life*. By many measures, humans have emerged as a favored species in the struggle for life. With stunning growth in population, the ability to produce our own food and to shape habitats to our needs, we have transformed the face of the earth. Murray Bowen, MD, summarizes this success story:

Man has overcome many of the forces that threatened his existence in former centuries. His life span has been increased by medical science; his technology has advanced rapidly; he has become increasingly more in control of his environment. A higher percentage of the world’s population has more economic security and creature comforts than at any time during man’s history on earth. (272)

Viewing the human achievement as nothing less than “the social conquest of the earth,” Edward O. Wilson writes, “We have conquered the biosphere and laid waste to it like no other species in the history of life. We are unique in what we have wrought.” (13)

We now see increasing evidence of the costs of this conquest. From the many scientists, scholars and concerned citizens who are writing of the realities we face, I choose this one excerpt from Thomas Friedman, in which he makes the connection between disturbances in nature and those in human societies:

The combination of climate change, environmental degradation, drought and population explosions helped trigger the civil war in Syria, spawn terrorist groups like Boko Haram . . . and become the main force pushing tens of thousands of migrants from sub-Saharan Africa into Europe each year, and from Central America up to the U. S.

How has human evolution and history brought us to our present state of relationship with the earth, both the success and the predicament? This article will offer a few ideas on that large subject, drawing mainly from three scholars: historian Ian Morris and economists John Gowdy and Lisi Krall. Part One will address how humans have made their living from Earth’s resources and how the mode of making a living shaped the values and social norms of the society. Part Two will look at humans as an “ultrasocial” species and consider how ultrasociality has played out in human economic and social evolution.

**Foragers, Farmers, Fossil Fuels**

1. *How humans made their living: foragers, farmers and fossil fuels.*

Morris reviews a vast amount of data in his book, *Foragers, Farmers, and Fossil Fuels: How Human Values Evolve*. He “sweeps up into a single story hundreds of societies, thousands of years and millions of people” (9) to discern the simpler, underlying principles that guide human societies. The book’s title refers to the three basic modes by which humans have supported themselves by capturing energy from the earth. Energy capture is the quantitative amount of energy that humans harvest from the earth for food and all our energy uses. Morris argues that the mode of energy capture influences the values of the society, in particular those regarding equality, hierarchy and violence.

For more than 90% of *homo sapiens*’ time on earth, foraging, the hunting of wild animals and gathering of
wild plants, was the way of life. It still is for some groups. Pursuing wild food required hunter-gatherers to live in small groups and to move around a lot. Humans endured periods of scarcity and “boom and bust cycles of rapid population growth and starvation.” (33) Morris notes that this mode of energy capture did not alter the gene pool of exploited resources.

How hard was it for foragers to make a living? The abundance or scarcity of resources produced a wide variation. But, Morris writes, “Even in an environment as tough as the American Southwest, people put in an average of just two to five hours of foraging per day,” which is why anthropologist Marshall Sahlins famously called foragers “the original affluent society.” (32)

Many who have studied foragers think them to be egalitarian in their social values. Low wealth inequality was related to their mobile way of life, which made accumulating possessions pointless. Sharing was held as a high moral value, and “upstartism” or self-promotion was met with mockery, criticism or ostracism. They had some tolerance for violence, often resulting from arguments between men over women. Morris summarizes:

Most foragers take an extremely negative view of political and economic hierarchy but accept fairly mild forms of gender hierarchy and recognize that there is a time and place for violence. The reason these values are so widely shared is that they are fairly direct consequences of the economic and social constraints created by foraging as a method of energy capture. (43)

The Agrarian Revolution

Farming emerged between 15,000 and 10,000 years ago and spread across the planet with greater speed and scale than foraging. The ability to domesticate plants and animals led to a dramatic increase in energy capture. The long-term trend was exponential population growth, but along the way there were sudden spikes and terrible crashes. The steady increase in energy captured per acre of farmland made it possible to feed millions of mouths. It also demanded constant, back-breaking labor. The heavy work of plowing, manuring and irrigating became mainly men’s work. Male/outdoor and female/indoor spheres grew more separate. Women were pushed out of the fields and into the home, where they had more babies than female foragers. They also managed households that became centers for producing goods and processing food. Morris writes, “The family did remain the basic building block in farming economies, just as it had been in foraging societies. The internal structure of families, however, changed beyond all recognition.” (58)

The sheer scale of farming societies required increasingly complex division of labor. A ruling class emerged as some became “masters of violence” and gained control over resources and politics. Coalitions of elites coordinated the larger society’s activities – taxation, law enforcement, rituals, suppression of uprisings, wars and other government functions. A minority of the population formed the ruling class, while the great majority were the agricultural producers and peasants who lived in insulated villages. Morris writes, “Most farmers probably stayed within walking distance of their birthplace.” (67) By 1 B.C., political and economic inequality had become deeply entrenched. The brighter side of the division of labor was that it freed a percentage of the population to pursue an intellectual life and led to an expansion of knowledge.

As the agrarian world turned hierarchical and patriarchal, people adapted to the stratification and inequality. Morris terms the social contract that “dominated the agrarian world” the Old Deal. Based on the idea that “nature and the gods” ordained for some to be in the position of giving commands and others in the position of obeying them (72), the Old Deal defined rights and duties of all parties and was often reinforced by religious beliefs:

A great chain of being linked the humblest peasants to the supreme beings, via the intercession of priests, nobles, and godlike kings, guaranteeing the fundamental justice of the political and social hierarchy. (79)

The mutual dependence between elites and the masses led to “a pattern of general acceptance of glaring wealth inequalities, combined with grumbling resentment against them and occasional outbursts of leveling rage.” (77) These challenges to authority were not against hierarchy itself, but against certain rulers who had done something that violated the Old Deal. Morris summarizes the transformative biological change
that farming brought to the human relationship to Earth:

Farmers deliberately alter the gene pool of exploited resources. . . . Humans interfere in other species’ reproduction sufficiently to create selective pressures that lead these other species to evolve into entirely new species which can only go on reproducing with continued human intervention. (44)

Fossil fuels began to change societies when two previously separate innovations came together: the discovery that coal could be burned to release heat, and the realization that heat could produce steam to power pistons. These were united in a productive way in 17th century northwest Europe. Exploiting vast deposits of coal, gas and oil, buried for millions of years beneath the earth’s surface, “set off an energy bonanza, transforming human societies and values.” (93) Finding new sources and new methods of extraction and transmission, gave rise to new business, legal and financial institutions.

**More Abrupt Change**

This industrial revolution changed the world much more abruptly than the two earlier transformations in energy capture. Britain, where the initial breakthrough came, became a dominant colonizing presence across the globe. Morris describes the impact:

By 1914, most of the people on earth were part of a Western-dominated fossil-fuel economy and tied to global markets, and Europeans and their overseas colonists had exploited the advantages of being early adopters to take control of 84 percent of the planet’s landmass, and 100 percent of its oceans. The industrial revolution is the biggest discontinuity in human history – so far. (95)

The industrial revolution profoundly changed human quality of life and human values, summarized as follows:

- an explosion in information technology, making more data available to more people than for all previous history;
- the creation of an enormous middle class able to buy goods and services that fossil-fuel economies produce;
- less need for forced labor and the abolition of legal slavery in the 1800s;
- smaller family size with reduced infant mortality, healthier women and babies, with more women working outside the home;
- social activism toward expansion of human rights;
- a kinder, gentler world, statistically far safer than that of foragers or farmers;
- the spread around the world of liberal, individualistic values, while, at the same time, illiberal, authoritarian systems of rule in parts of the world.

Most significantly, the industrial revolution accelerated the combination of economic and population growth that began with the agrarian revolution and has led to our current “human success story” and its troubling consequences. In 1798 Thomas Malthus had seen that populations can grow exponentially while food supply grows arithmetically. “In the long run,” he wrote, “hungry mouths will always multiply faster than the food available, forcing the masses back into poverty.” (98) By 1850, fossil fuels were changing this. Steam-powered transport was moving food from where it was grown to where it was needed, making an increased food supply possible at lower prices, even as populations grew. People were eager to leave the farm in favor of “dirty, dangerous factory jobs” (100), leading to a yet more complex division of labor and increasing production of goods. The engine of productivity drove a population boom. A few numbers illustrate the point. In 1800 world population was just under one billion; by 1900, it was 1.6 billion; by 2000, it was six billion, and today it is around 7.5 billion.

Morris asks, *Quo vadis?* He offers facts on the quantity of carbon pumped into the air by burning fossil fuels (100 billion tons since 1750), the current carbon content of the atmosphere (which peaked in 2013
above 400 parts per million, the highest level in 800,000 years (168), and the rise in average temperature with the hottest temperatures recorded in recent years. He concludes:

Just what we should expect if seven billion of us carry on burning fossil fuels with abandon . . . but climate scientists agree that the consequences will be somewhere between terrible and catastrophic.” (168)

Looking to history for guidance, Morris traces societal collapses over four thousand years and identifies five forces that have always been involved. They are:

uncontrolled migration, state failure, food shortages, epidemic disease, and, always in the mix, although contributing in unpredictable ways, climate change.(168)

Every one of these forces is the lived experience of millions of people in the world today and readily seen by anyone who follows the news. What is so significantly different for us now than for past societies is captured in the popular slogan, “There is no Planet B.” Morris offers this compelling explanation:

The increase in the scale of societies across the last twenty thousand years has hugely whittled down the number of natural experiments being run, meaning that we now basically have just one global experiment, and just one chance to get it right, and for another thing, we now have ways to fail that no society has ever had before. (168-9)

**Becoming Ultrasocial**

**II. How humans became ultrasocial and what it means**

John Gowdy and Lisi Krall bring an ecological perspective to the field of economics in “The Economic Origins of Ultrasociality,” published in the journal *Behavioral and Brain Sciences* in 2016. They take a broad look at human social and economic evolution, concluding that humans are on a trajectory toward expansion and dominance in the ecosystem that is dangerous and may be unstoppable.

Humans, ants and termites are among the few species that have achieved “ultrasociality,” a high level of social cohesion that is “extremely rare and extremely successful.” (4) Its characteristics are: fulltime division of labor, specialists who do not produce food but are fed by others, sharing of information about the location of food and danger, and self-sacrifice in defense of the group. As different as humans, ants and termites are genetically, they have faced similar problems and found similar solutions in the struggle to survive.

Human evolution took a decisive turn toward ultrasociality with the agricultural revolution, which brought the ability to produce one’s own food, extensive division of labor and profound interdependence, and a dynamic of expansion. These traits allowed humans to become dominant in the ecosystem:

In only a few thousand years, humans made the transition from being just another large mammal living within the confines of local ecosystems to a species dominating the planet’s biophysical systems. (3)

The other main feature of ultrasociality is the narrowing of productive roles and reduced autonomy for individual members. Specialization works well for ants and termites, whose castes are based on different phenotypes, but it is problematic for humans who seek autonomy and resist the subjugation of regimented, repetitive work.

As the group becomes the economic unit, individual autonomy is suppressed. The society grows more complex. With elaborate division of labor, the behavior of individuals becomes simpler. Gowdy and Krall write:

Collective intelligence . . . , the ability of groups to solve complex problems far beyond the capabilities of any individual within the group . . . can increase while individual intelligence declines. (12)

Along with loss of individual autonomy, the agricultural transformation brought about rigid social hierarchies, patriarchy, slavery, poor health and an overall decline in the wellbeing of the average person. Much in Gowdy and Krall’s analysis resonates with Bowen theory. They define the group dynamic as more
than a large aggregation of individuals:

The economic organization of the group itself more rigidly defined the role of individuals within it and came to constitute a cohesive whole with a unique evolutionary dynamic. (3)

What Gowdy and Krall describe in economic terms appears consistent with what Bowen describes in terms of the emotional system. Bowen saw human systems as emotional units that function with a balance between the force for individuality and the force for togetherness. When driven by chronic anxiety, the individuality-togetherness balance shifts toward increasing togetherness and reciprocally diminished individuality. If chronic anxiety goes unabated, the process continues to an end point of chaos, violence and people leaving the group.

Product of Group-Level Competition

Gowdy and Krall describe ultrasociality as a product of group-level competition in which the group places pressure on individuals to fit into a system of expanding markets and populations. They state, “The selective ‘pull’ of the group over the individual becomes greater with increasing complexity.” (13-14) Even more strikingly, they write, “When the group begins to take on a life of its own and actively begins to shape its environment, individuals are expendable.” (14) Bowen theory describes a parallel emotional process in families and in societies as individuality and autonomy are increasingly constrained by a dominating level of togetherness. What is missing in the economic perspective but is central in an emotional systems perspective is the observation that individuals vary significantly in their degree of susceptibility to the group’s “pull.” This variation is explained in Bowen theory with the concepts of chronic anxiety and differentiation of self.

Especially thought provoking in Gowdy and Krall’s analysis is the idea that long-term human evolution operates largely outside human awareness or control. “Humans did not consciously choose agriculture,” they write. (8) It came about through incremental decisions made by innumerable individuals over thousands of years. Once the ability to produce a surplus was in place, a dynamic of growth became unstoppable.

It is interesting to stop to think about what might have turned human evolution in a different direction. E. O. Wilson considers the road not taken:

Humanity failed to seize the great opportunity given it at the dawn of the Neolithic era. It might then have halted population growth below the constraining minimum limit. As a species, we did the opposite. There was no way for us to foresee the consequences of our initial success. We simply took what was given to us and continued to multiply and consume in blind obedience to instincts inherited from our humbler, more brutally constrained Paleolithic ancestors. (Wilson, 76)

Consistent with Wilson’s view, Gowdy and Krall write:

Evolutionary systems cannot see ahead. . . . A dynamic that started out modestly and benignly locked early agriculturists into a perhaps irreversible process that led to hierarchical state societies. . . . The system works as a mechanical process and will not self-correct until negative feedbacks begin to curtail surplus production. (14)

Gowdy and Krall conclude their article with ideas about what humankind needs to do if we are to change the powerful and dangerous trajectory we are on. One hopeful thought is that *homo sapiens* has not been ultrasocial for most of its existence. Hunter-gatherers were non-ultrasocial groups; they had the social qualities of caring and cooperation that made it possible to survive extreme environmental changes, and they practiced sustainable use of resources and egalitarian social arrangements.

Another hopeful thought is that our imperfections may save us:

Humans are not ants or termites. Our very recent ultrasocial legacy is imperfect – far from being efficient and stable. Insects do not face unemployment and occupational discontent, nor are they disrupted by volatile financial markets, the problems arising from capital accumulation, and the class conflict it engenders. The
imperfect human ultrasocial system creates openings for change not presented to ants and termites. Perhaps the important question is how to tap these opportunities to gain control of the human ultrasocial system so that our species may once again have a sustainable and equitable way of life. (15)

Gowdy and Krall see recent negative feedbacks affecting the economy (climate change, loss of biodiversity, fossil fuel exhaustion) as minimal, and far from sufficient to counter the forces driving exploitation of nature and human labor. They also recognize the cooperative nature of our species and compassion at the individual and community levels but do not see these as sufficient forces for fundamental change. In their eloquent words, here is the level of change they believe is required:

Indeed to address the imbalance it may be necessary to fundamentally change the mode of production on a larger scale. . . . What seems clear from our analysis is that unless the expansionary tendency of the system can be controlled it will likely continue to grow.

. . . Can we resist leaving a valuable productive resource like fossil fuel in the ground any more than an ant can resist exploiting a pile of sugar? The answer may be “no.” Unless present global trends quickly reverse themselves, the human experiment with ultrasociality will likely end disastrously. Unlike the cases in the past where civilizations collapsed and the survivors moved on to other places, with a global overshoot and collapse humans will have no place to go. (15)

Concluding Comment

Morris’ book and Gowdy and Krall’s article are valuable, intellectually rigorous resources for the study of the evolving relationship between humans and Earth. The ideas I have highlighted in this review give only a hint of the depth of thinking in the work of these authors. I see accord among them in their conclusion that the way humans make a living from the earth’s resources (“mode of energy capture” in Morris’ writing; “configuration of productive life” in Gowdy and Krall’s) has a profound influence on the evolution of our values and the very nature of our sociality.

This study challenged me to examine assumptions that are embedded in our culture and in my own thinking. Like many Americans, I have lived with the ideology of economic growth, seeing it is a necessary and positive course, a measure of the vitality of our society, a source of national pride. We might even call it the great American virtue. With Bowen’s writings in the 1970s on emotional process in society, I began to question this expansionist thinking. With the enlightenment I have gained from the work of the scholars cited in this article and others, I see more clearly how we have arrived at our environmental and humanitarian problem and how my own lifestyle is part of it. While I only partially understand the work of Morris, Gowdy and Krall, they have left me with a broader perspective on human evolution in the same way that Bowen theory leaves one with a broader perspective on human behavior.

In his papers on emotional process in society in the 1970s, Bowen chose sober language to describe the course that mankind was on in relationship to Earth. He saw us “moving into crises of unparalleled proportions” and believed that “the ultimate change will require an order of change in man he is not yet able to contemplate.” (281) Now, over four decades later and with more dramatic evidence of the human impact on Earth, we are better able to contemplate the needed order of change. Many responsible scientists and societal leaders are pointing the way. Gowdy and Krall call for us to “gain control over the human ultrasocial system.” Bowen calls for:

a more differentiated society . . . a higher percentage of people oriented to responsibility for self and others, and for the environment, and a lower percentage focused on rights and force . . . ” (449)

Just as the human is part of all of the life on Earth, so also is human evolution a part of evolution as a whole. Humans are subject to forces operating at higher levels, often difficult for us to understand much less control. I end this essay as I began it, with the insight of Charles Darwin:

Natural selection . . . is a power incessantly ready for action, but is as immeasurably superior to man’s feeble efforts, as the works of Nature are to those of Art. (Darwin, 115)
References


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