Erle C. Ellis

Time In Our Hands

do-designing a better anthropocene

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A new "great force of nature" is shifting Earth into a new interval of geological time, an "Age of humans," the Anthropocene. Global climate change, widespread pollution, mass extinction, and the loss and reshaping of natural habitats are just a few of the many indicators that human societies have gained the capacity to transform the functioning of an entire planet. For some, this time of unprecedented anthropogenic environmental change must be seen as a "rupture" in Earth history — a clean break from earlier times when human societies lived only within the limits of a natural Earth system which shaped them, and not ever the other way around. Others, including the stratigraphers of the Anthropocene Working Group, recognize the continuous nature of anthropogenic environmental change, yet still focus on defining a discrete boundary in time and rock to define the start of an Anthropocene epoch in the middle of the 20th century. Others look deeper in time, observing anthropogenic transformations of Earth's biosphere, atmosphere, and climate caused by megafaunal extinctions, land clearing using fire, soil tilage and irrigation, domestictions and species introductions facilitated by expanding trade networks, and other increasingly globalized social-ecological transformations that have produced the Earth and world systems of the current time.

Recent anthropogenic changes in Earth's environments are unprecedented in scale, rate, and intensity. Their impacts are harmful already and all but certain to increase over time, at least in coming decades. But there is nothing unprecedented about the coupling of human social change with human transformation of environments. There is no break in this human-environmental continuum.

Human societies have always engineered their ecosystems. And across tens of millennia, human transformation of ecology has always been inherently social-spatially learned and socially enacted. We have always lived within, reshaped, and adapted to environments already shaped by our ancestors. Unlike any other species, the human ecological niche, our way of living on Earth, is a sociocultural niche, constructed from the coevolving cultural, material, and ecological inheritances of countless generations across myriad societies interwoven into the fabric of human sociocultural diversity.

The emergence of ever-larger scales of interconnected human societies and their unprecedented capacities to transform Earth are dual consequences of these long-term evolutionary processes. In the Anthropocene, environmental change is social change, and social change is cultural change. Though social change follows no simple directional timeline through the many regime shifts in societal functioning and environmental transformation (from intensive hunting of megafauna, to agriculture, urbanization, and industrialization), there is no rupture in this relation.

Human societies have never been more capable of transforming Earth than they are right now. Yet these unprecedented sociocultural capacities cannot be understood or redirected without connecting them with their deep roots in millennia of sociocultural evolution in societies around the world. To break the timeline of Earth history into two parts around 1950 or even 5,000 years ago acts only to obscure the underlying processual and political realities of social-ecological change, which are inevitably continuous, heterogeneous, historically contingent, and evolving. Whether and when an "Anthropocene divide" in Earth history might eventually be negotiated among stratigraphers, the question that matters now is not when human societies changed Earth, but why, and whether human societies might yet shape a better Anthropocene than the one we are creating now. The Anthropocene paradigm puts time in our hands. Can this time be reshaped from a narrow crisis of despair and shrinking possibilities into an expansive future of hope and opportunity for both humanity and nonhuman natures?

**Engineering Time**

The Anthropocene was not designed. Nor was it built in a day. In clearing land, farming, and developing Earth to sustain our generations, no one set out to create a hotter,
more polluted, less biodiverse planet. There is no cockpit on planet Earth, nor is there a five-year plan for the biosphere. Yet this planet is the way it is because our societies made it that way. We humans, as individuals and societies, reshaped this planet while we were busy making other plans. In reengineering the biosphere to sustain our billions, we created a monstrous flood of unintended consequences that now threatens to overwhelm us, together with the rest of life on Earth.

In the words of Bruno Latour, "Dr. Frankenstein's crime was not that he invented a creature through some combination of hubris and high technology, but rather that he abandoned the creature to itself." The planet we have shaped and reshaped for generations is the only home we will ever know. There is no going back to an imagined time in which nature unaided might sustain us. It is time to move forward to nature, to embrace the used planet we've reshaped, and to guide its future toward better outcomes for both humanity and nonhuman nature.

A better Anthropocene cannot be realized if societal energy systems cannot be transitioned beyond burning the biosphere—both fossil and living. Nor can a better Anthropocene emerge while species extinctions and habitat conversions continue at current rates. Too much of Earth's ecological heritage, evolved through hundreds of millions of years, is being lost forever in ongoing efforts to reengineer the natural and the hybrid human-natural world to better sustain our societies. Without concerted and coordinated societal efforts to sustain the ecological treasures of evolutionary time, the Anthropocene will become an Eremocene, an age of loneliness.

Our populations and livestock already form more than 90% of Earth's terrestrial mammal biomass. Even while human societies still use less than half of Earth's land for agriculture, forestry, settlements, and other human infrastructure, the land we've left unused is mostly unsuited to our use anyway. The steeper slopes of hills and mountains now form islands of remnant and recovering vegetation within seas of agriculture, settlements, and infrastructure in the more than three-quarters of Earth's land we've transformed into anthrome mosaics, the working landscapes that service human populations. Only in Earth's coldest, driest, and remotest regions do wildlands linger on. As Earth moves deeper into the Anthropocene, there is little time left to sustain and restore the nonhuman natures that came before us.

It is time to disrupt the Anthropocene narrative of an ever-expanding humanity presiding over an ever-declining nature. For too long, human infrastructures have been designed and engineered without concern for preserving, sustaining, and enriching nonhuman life and nonhuman habitats. As a result, these are becoming ever rarer and ever poorer. In pivoting towards the nonhuman world, ongoing efforts to improve the human world, to end poverty, violence, and massive inequality must not be foregone—they must be accelerated. Nevertheless, the time has come to reverse the reshaping of the biosphere to serve us only. It is time to co-design landscapes and infrastructures that re-empower nature as designer in a hybrid human-natural world where humanity thrives together with nonhuman nature into the deep future. It is time to embrace our unprecedented social capacities to shape an entire planet towards co-designing Earth for the better.

Better Halves
As human populations stabilize, urbanize, interconnect, and grow ever more globally interdependent, the potential is emerging for a global social project to design, construct, and interconnect habitats at the scales needed to sustain the rest of life on Earth. Increasingly productive agricultural systems have produced more food per person every decade since the 1950s without a major increase in the global area of land cultivated for crops since the 1970s. Agricultural intensification and urbanization continue to enable societies to produce more with less, leaving behind huge areas of marginal lands in the process. With 15% of Earth's land already protected and another 2% on the way, there are real prospects for going much further, toward a radical redesign of the biosphere to make the space needed to sustain nonhuman nature across the Anthropocene.

Toward this end, E.O. Wilson's Half-Earth and the Nature Needs Half project envision restoring and conserving half of land and sea to serve the needs of nonhuman nature. While these visions yet remain more aspirational than real and the obstacles to their realization are clearly daunting, their appeal to human aspirations for a better future are the most universal of any call for conservation in human history. But there is no simple plan for building a better biosphere. Radically expanding conservation could simply become the greatest green grab in history, imposed by elites on the less powerful. Sharing land equitably across ecoregions—many of which include Earth's most productive and densely populated regions—will demand local, regional, and global trade-offs in land use that are hard even to imagine. Life is already hard enough for the billions struggling to meet their daily needs. Whose "half" will be conserved or restored? Where will lost agricultural production be made up? Who will win and who will lose in the great global land trade-off? Who will compensate whom?

Any radical expansion of conservation must be more than a global land deal or a global property portfolio in the hands of a few powerful institutions. It must engage people broadly, personally, and powerfully—beyond the wealthy and technocratic conservation systems that now predominate—by embracing the diverse nature values and needs of societies and social groups across the world, from the bottom up. Multi-level, not top-down, modes of design and governance, defined by strong local and regional institutions, as well as novel forms of social collaboration among private and public stakeholders will be needed at all levels. The Convention on Biological Diversity, the Yellowstone to Yukon project, the Landscape Connectivity call to action of the World Business Council for Sustainable Development, and Europe's Natura 2000 Programme are
helping to pave the way, but social strategies and institutions for protection, conservation, restoration, and interconnection must continue to evolve and diversify if they are to serve the needs of all people and all species. In particular, dichotomous models of used lands versus protected areas must transition toward a continuum of integrated, multi-stakeholder, co-design strategies, from interconnected regional national parks and indigenous reserves to urban green spaces, prairie strips, hedgerows, wildlife bridges, dam removal projects, and experiments with conservation management. Diverse and creative co-design solutions will be essential to navigating the compromises that will make a shared planet valuable to people and viable for wildlife.

Designing Wildness
To design, engineer, construct, and govern a planetary landscape capable of sustaining wild species in wild spaces across the Anthropocene demands a triple focus: production for human societies must be advanced together with protections for species and spaces, and the interface between these two must also function toward both ends. The anthropogenic biosphere is composed mostly of shared spaces – patchworks of remnant, recovering, and less-used habitats left embedded within our producing landscapes and connective infrastructures. Corridors of unbroken habitat, free of human pressures, must be designed, engineered, and constructed at scale to connect the largest protected areas with each other across continents. Protection and restoration can only work if they form continental webs of wildlife mobility that serve the large and the small, the slow and the fast, in the movements they must make to survive across the Anthropocene.

Design with nature brought the natural world into design projects as functional and aesthetic elements and even as a partner in the design process. Design for nature has produced reserves, parks, wildlife corridors, restoration projects, and other critical spaces for nature. But what of nature as designer? Can nonhuman natures survive the time of humans? Can the human world be redesigned and reengineered to regenerate and sustain wild places free of ongoing human interventions and influences at the same time it provides better lives for humanity at increasing scales? Can the role of nature as designer be radically empowered and expanded within an increasingly human world?

The client for a redesign of the biosphere ought to be the collective aspirations of humanity – and the rest of life on Earth. Humanity has emerged as a force of nature. In this age of humans, there is still time to make space for the nonhuman world in co-designing the landscapes of a better Anthropocene.

9 E.O. Wilson, Half-Earth: Our Planet’s Fight for Life (Liveright, 2016).