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Bevis: Rethinking our Role on Earth

Rethinking our Role on Earth

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Sustainable Practice

*Sustainability, Earth Science, Agriculture*

## Rethinking our Role on Earth

We humans depend on the Earth. Our only home provides the means, the context, and the inspiration for our existence. We have become masters of using the raw resources and creatures present on this planet, and our imprint dominates the landscape over more and more of the world. People are living at the highest standards in history, despite our persistent struggles with war, poverty, and disease. If we want to maintain our high standards of living and solve the problems of struggling communities, we must reconcile our basic and critical relationships with the Earth. The ability to sustain ourselves globally will grow only when we act in ways that preserve the health of the planet at multiple scales: systemic sustainability is necessary for humanity to thrive. In this essay, I articulate my personal perspective on sustainability as a farmer and a student of history and geography.

The threats to global sustainability are clear. Clean air, fresh water, abundant and nutritious food, and safe shelter are all at risk, not only for families, communities, and cultures, but also for the plants and animals with which we share the planet. Currently there are major and accelerating changes in the climate, oceans, and ecosystems around the world.<sup>1</sup> Volatile and extreme weather patterns, acidification of the oceans, sea levels, and extinctions are all sharply on the rise, and linked through the rapid increase in greenhouse gasses in the atmosphere that parallels the advent of the industrial revolution and worldwide combustion of fossil fuels: coal, petroleum, and natural gas.<sup>2</sup> That is not to say the Earth is not capable of these kinds of changes itself; we know the planet has been through many ice ages, sea level changes, volcanic winters and meteor impacts, mass extinctions, and changes in atmospheric carbon dioxide.

When those of us in temperate, generally balanced, continental weather systems are experiencing climate change as a slight rise in average temperatures, a subtle shift in length of growing season, or a few more abnormally wet or dry years, it is understandable that we would associate these patterns with the natural history of the Earth, and feel confident that what is changing is cyclical, or beyond our influence. We may even simply appreciate warmer, sunnier weather and distrust scientific proof that places the cause of these very disturbing threats squarely on an energy paradigm from which we have enjoyed so much prosperity. However, to reject that which science so clearly shows is to reject the same process that made possible the car that you drive, the computer you use, and the food on your plate every day. Quite simply, we are putting way too much carbon dioxide and methane into the atmosphere, which is causing the planet to heat up. The rate of change is accelerating, and 2016 is already breaking records, just like last year and the year before.<sup>3</sup> At this critical juncture, it seems to me that we should address the source of the problem and start asking tough questions about our relationship to the Earth and the sustainability of our home.

What are ways that we might reduce the emission of greenhouse gasses? The first and most obvious response is efficiency. With more efficient fuel systems and engines we derive an immediate economic benefit as well as a local environmental benefit through reduced pollution. If our electricity is powered by fossil fuels, then we must adopt more efficient heating and cooling systems, appliances, and fixtures. Large, institutional buildings use large quantities of energy and thus are prime candidates for energy audits, upgrades, and energy efficient management plans. Our cities can become more efficient through smart urban planning that

provides viable alternatives to driving and reduces congestion. Recycling saves energy in production chains, and reduces litter and landfill waste; it would save even more energy if consumers chose to purchase recycled products and more durable items in general.

What about choosing not to burn fossil fuels? This issue is bound up with entrenched energy systems and complex economics, since in many contexts there appears to be no such choice. While there are proven forms of clean and renewable energy like solar, wind, and geothermal, it is understandably difficult for a system that is designed to burn coal and gas for electricity and petroleum for transport to shift away from those fuels and ensure a smooth economic transition for the energy producers. Therefore, the political process must actively de-incentivize fossil fuels and incentivize renewables. For example, between Alabama Power and Georgia Power, the latter is racing ahead with solar farms and net metering for homeowners<sup>5</sup> while the former is defending coal plants and resisting efforts to develop renewable energy.<sup>6</sup> Furthermore, the two states get the same amount of sun yet both lag way behind cloudy, high-latitude Germany in solar electricity generation.<sup>7</sup> We can finally choose from a few electric vehicles, but most individuals have little choice but to participate in the energy system provided by their governments and economies.

Can we remove carbon dioxide from the atmosphere? The biosphere is the main stage of the carbon cycle, and we can play a positive role on that stage by *growing the biosphere*. Plants perform photosynthesis on carbon dioxide and eventually decompose into carbon rich humus that a plethora of soil microorganisms store in the base layer of life. Vegetation itself banks carbon in forests and prairies, and protects soil from erosion. Our civilization has a long history of deforestation and decimating soils through poor agriculture, which continues in many countries. While some climates allow for quick reforestation through succession or arboriculture, desertification is devastating not only to ecologies, but also to nature's ability to store carbon from the atmosphere.<sup>8</sup> I think that one of the keys to sustainability is learning how to adapt our land use to favor the capacity-building property of healthy ecosystems to mediate the carbon cycle.

The exciting part of this approach is that it can be applied at multiple scales and in multiple contexts, with generally positive externalities. Nations can adopt policies to promote forest conservation and reserve land for wildlife corridors like Bhutan, where half the land is protected as such. Agencies can facilitate and incentivize sustainable agricultural practices such as cover cropping, conservation tillage, and long-term rotations with orchards and woodlots. Specifically, the integration of rotational livestock grazing and cropping systems in polycultures holds promise as a model for resilient, profitable farming and strengthening biodiversity, while addressing pollution problems and questionable practices of animal factory farms.<sup>10</sup>

At the local level, I always notice the disused parking lots and numerous expanses of grass that are maintained essentially as lawns, mowed down to a couple inches several times per year. Of course we all like a nice lawn and need clear space along the roadsides, but so many of these areas are never visited, provide no worthwhile vista or habitat, and cost time, money, and fuel to maintain. Where they are not posing a risk, permitting plants to grow removes carbon from the atmosphere, builds soil, promotes biodiversity, provides habitat, and moderates microclimates. A proactive approach to sustainability at the regional and municipal levels recognizes that natural vegetation and soils have intrinsic value, therefore development

codes should require that building projects plant at least as many trees as they remove, and neglected empty lots are allowed to grow and contribute to the ecosystem.

At home and in the neighborhood, we can identify the plants and animals with whom we share space and strive to understand how they live and interact with other species. By giving up mowing that corner of the yard where the grass doesn't grow well anyway, we might be pleasantly surprised by what takes root over time. Gardens are a fine example of a place where we can witness the interconnectivity of nature and beautify the landscape at the same time. Growing a diversity of fruits, vegetables and flowers in a garden with a fertile organic soil enriches the immediate environment, and results in our most efficient personal connection to the carbon cycle: eating fresh food. When we do need to rake the leaves and trim the shrubs, composting is the most direct way to conserve and stabilize the carbon and return it to the soil. Even simply piling up plant residues in an out of the way place if possible will enrich the plants and soils nearby over time, and is certainly preferable to burning or transportation to a landfill from a sustainability perspective.

By striving for an economy that drastically reduces greenhouse gas emissions and builds resilience into our energy and food systems, we can have hope for a future without runaway global warming and rising seas. Imagining ways to go about this task that satisfy the other two columns of the triple bottom line of sustainability for governments, companies, and institutions will plant the seeds of workable solutions to these problems. How can we create jobs that have a minimal carbon footprint, provide a basic standard of living, and make sense economically? For me, potential answers include investment in local food systems, decentralized and community energy generation, recycling and repurposing operations, and environmental education. As technological innovation brings about both efficiencies in our current energy systems and a glimpse of a future without dependence on fossil fuels, we ought not neglect the importance of fulfilling our role as supporting actors in this story—as responsible stewards of our home.

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