Agriculture, the Now and the Future

Jacqueline Jackson, May, 2015

The time parameter of these volumes has been from 1900 till 1972, with a few castings back and ahead. However I've used this space in the Foreword of each book for "The Now." The essay of Volume Three was my father's 1954 prophetic speech on the future of agriculture, and its message of populations inevitably overtaking food supplies clearly fitted into "The Now." This final space, 2015, concerns current agriculture and the present direction of the future.

There is a mass of up-to-date material, by reputable scientists and reporters on climate change, including the latest UN report. It is now a fact that our world is warming at an accelerating rate, much of this warming caused by human activity. Climate change is already strongly affecting the environment and the creatures that live within the planet's thin skin of life. I can't here quote all the confirming data; these data are available from many sources. The Addenda of this volume contains some references.

What I will quote, though, are a few more words from my father. The metaphor is not his. I did hear though, into his old age (he died at 94, in 1996), this comparison. If you close a banana and fruit flies in a Mason jar the banana will sustain the flies for only so long. Our world, of course, is the jar, our resources for sustaining life, the banana, while every living creature is a fruit fly. The obvious meaning: once the banana is consumed, there can be no flies. A fault lies in this, which I will bring up, but first is a partial list of the health of our planetary resources, with the focus on varying sorts of agricultural influences. For if anything is to live, it must eat. And food depends on the land, the water, the air.

Take arable land. While some countries are increasing this basic resource, through careful decisions and oversight, in the United States farmland is rapidly shrinking. Floods, drought, erosion cause some of this. We have yearly statistics on topsoil loss, from whence, and where it ends up. The Dustbowl of the '30s should be a grim reminder. But large amounts of land are also being given to housing, shopping malls, highways, and parking lots due to our burgeoning population and consumption society.

Irrigation has brought salination to large tracts of land worldwide so that those acres are unproductive. Monoculture has decreased diversity of plants, in fields and forests—diversity needed for the future health of our planet. Vast tilled fields also eliminate woodlands and hedgerows, rich in diverse wildlife. Rainforest destruction has already lost the world inestimable value, of what we know and admittedly don't know, of its ecology. And rainforest soil gained for agriculture proves to have only a brief life for the raising of crops.

Our latest insult to the earth (I thought slicing up mountains in Appalachia and dumping the remains in mountain streams was the worst) is the recent widespread use of hydraulic fracturing, or "fracking," which is technology that allows us to extract previously inaccessible oil and gas, but poses an unparalleled risk to our water resources, potentially compromising ancient aquifers.

Water is the crisis of this century. Billions of people are already drinking unsafe water. Fifty percent of the population of India lacks sanitary facilities. Polluted aquifers contribute to illness, drained aquifers are not recovering. The oceans are being overfished, there is no cod fishing in the Grand Banks. Coral reefs are fish nurseries; they are dying and being destroyed. The oceans themselves are warming and becoming acidified, endangering all shell marine life. In addition, ocean warming could change the pattern of the great oceanic "streams" such as the Gulf Stream: its change would bring the whole agricultural climate of Europe into jeopardy.

As to air, I will skip deadly smogs and specifics of air pollution, and come to carbon dioxide. CO2 in our atmosphere is necessary for life, indeed made life possible, but our industrial, transportation-driven, energy-demanding society is pouring CO2 (as well as other gases) into the atmosphere in exponential amounts. C02 is a major warming agent trapping the sun's heat. The warming atmosphere is melting and disintegrating the two great ice sheets, Antarctica and Greenland, and also causing glaciers to melt and withdraw around the world. By 2020 there will be no glaciers in Glacier National Park. The rise in earth's temperature is now melting the permafrost which covers huge areas of the northern hemisphere. Permafrost has locked up mega tons of frozen biomass for hundreds of thousands of years. This biomass stores CO2 and methane, a gas also contributing to warming. As the permafrost melts this adds more heat to our air which in turn causes more violent

weather along with droughts and heavy rains. These latter then increase melting and the consequent warming.

The whole pattern of crop production is changing, and will surely change more. The development of genetically modified organisms, or GMOs, has discouraged sound farming practices, including crop rotation and diversity, while encouraging the heavy use of chemicals. Today, almost all corn, soybeans, and cotton grown in the US are GM crops. And the seed companies are pushing forward with the development of other genetically modified crops, including wheat and potatoes. The rise of "superweeds" and "superbugs," invasive species that are resistant to modern pesticides and herbicides, is a consequence of ubiquitous cultivation of GM crops. The UN World Health Organization has just announced its finding that the herbicide Glyphosate is a carcinogenic.
This sorry list could go on and on. The crowding of animals into Consolidated Animal Feeding Operations—CAFOs, then feeding them hormones and antibiotics for faster growth and disease control which in turn decrease the efficacy of the drugs for the treatment of human diseases. The processed food in our supermarkets, full of chemical preservatives and cheap caloric sweeteners with no nutritive value. Both our food and our life-style behavior is causing pervasive obesity and diabetes. Big Ag with its patented seeds, Big Pharm, Big Oil are in ascendancy. And young people who want to farm are discouraged—they cannot afford to buy farmland, or stay in farming, even with inherited acres.
At the root is something we can't seem to factor into our thinking—how many creatures can this planet sustain? Human population is just over 7 billion, at its present rate it could rise to 9 billion in thirty-five years--approaching the upper limit of what the earth's resources can support. If the world doesn't stabilize its population through global agreement (and how likely is that?) it will be stopped for us by nature—including human nature: war, genocide, starvation, disease, emerging plagues. These are already with us. Elizabeth Kolbert, a respected reporter on world ecology (she won the 2015 Pulitzer, non-fiction, for *The Sixth Extinction: An Unnatural History*), says we cannot go on as we are. At the conclusion of *Field Notes on a Catastrophe*, where she looks at the entire planetary picture, she says "It may be impossible to imagine that a technologically advanced society could choose, in essence, to destroy itself, but that is what we are now in the process of doing."

Perhaps there may be no hope for our children, our grand and great grandchildren; perhaps we've

passed the point of no return in turning on self-accelerating feedback loops. The planet itself will survive, and much of what's on it, but in what state?

Here, though, are the flaws in the mason jar analogy. The earth is not quite a closed jar; we have the sun. And people are not mindless fruit flies. We can recognize that we must make our resources—the banana--sustainable, and we must control the number of creatures that depend on those sustainable resources. Have we the will to do this? Or do we give in to despair, keep moving like lemmings off the cliff?

An ecology-economist professor friend tells me, "I see despair as a kind of arrogance, it means we think we can predict the future. We have to have hope." But he adds, "Hope and will are not enough. We have to have smarts, and utilize them well. We need to take the technological advancements Kolbert talks of, and develop them for the good of us all. We need to elect officials that are interested in the commonweal, and not in corporate greed; people in power who govern to meet the needs of us all. Do we have enough hope, and will, and smarts?"

So, what is our hope? It is coming from many sources. Solar power, sufficiently harnessed, can supply our needs for energy indefinitely. My daughter's electric car runs on solar power from the grid she and her husband installed on their farm. Millions of solar panels are already in use worldwide. Wind farms are multiplying; Denmark expects to get all its energy from wind in the near future. Tidal power, another sustainable resource, has not yet been technologically obtainable. Technology, however has made many advances on many fronts, and new and better technologies are more than on the horizon.

Further areas of hope: public awareness is increasing. "Buy Local" is on bumper stickers, and "No Farms No Food." Discussions on food, the environment, composting, climate change are now a staple in the popular media. "Sustainability" has become recognized as an important concept, and "environmentalist" is no longer a dirty word. People, more health conscious, are reading labels and literature, flocking to farmers' markets, raising vegetables in community gardens, vacant lots, on rooftops. There are backyard chickens. Pesticides and herbicides are under question. The processed food products of our grocery stores and fast food emporiums are fighting to keep their ascendancy, school lunches are evaluated. Plastics are suspect, recycling encouraged, even mandatory in some

communities. Small farms are doing a brisk business in CSAs and "Dairy Share" groups. Many of these farms are organic. Consumers are more and more demanding free range poultry, both for eggs and chickens, and grass fed, hormone free cattle for milk and beef. The need for diversified crops is recognized, and crop rotation. Seeds are being saved, heirloom varieties preserved.

We can add to the list. Europe's vigorous fight against GM crops. Also New Zealand, parts of Africa. New York State has banned fracking, other areas are considering bans. Our remaining prairieland remnants are finally being valued, and marginal farming areas returned to prairie grasses. Wetlands are being restored, as is Emiquon on the Illinois River—my own university's project, in conjunction with the Nature Conservancy. There are organizations dedicated to the preservation of the environment and uncontaminated food: the Natural Resources Defense Council, Farmland Trust, the Slow Food movement, Weston Price; more are listed in the Addenda. This number is growing.

But let us not fool ourselves. Many of these efforts of hope are small scale. It is almost impossible to compete with the juggernaught of corporate wealth and will. Yes, we do need vast fields of corn and soybeans to feed the world, *for now*, but we need to keep pushing back, keep a balance of small and large, and a balance of values. Perhaps we are beginning to foster a new ethic, which considers more than just a profit motive in making decisions, whether within a corporation or in our private lives, an ethic which takes into consideration environmental impact, sustainability, human and animal rights, public health.

The story of *The Round Barn* is the biography of a farm and a family, but it is also a guide to stewardship. How a farm family was able to make a living from the land, for themselves and others, by respecting and protecting it. Ultimately the Dougan farm succumbed to a number of factors described in the text of this final volume, but these: lack of zoning, the super highway, and the pressure of growing factory-style, consolidated, undiversified farming played large roles. Its legacy of hope and promise, however, lives on in these pages and in the people it touched and taught. It could be a template for the present and the future.

As to hope, will, and smarts: the smarts are being developed. The other two are linked. Can we maintain hope when we realize the enormity and cost of the task? And can the world muster the

collective will to take action, and in time? The astrophysicist Neil deGrasse Tyson, after outlining the grave problems ahead, ends the recent “Cosmos” documentary by indicating to the viewers the empty corridor of the future.

The message is clear. That future—our human future on this planet--is up to us.

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