THE FAILURES OF FARMING AND THE NECESSITY OF WILDTENDING

a collection of essays by

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Cover photos by the author. *Front, top:* Agricultural field in Imperial County, California, near the Salton Sea, 2017. *Front, bottom:* Nikki Hill collecting seed on Hell's Canyon west rim-land, 2016. *Back:* Yampah in flower in the Blue Mountains of eastern Oregon, 2016.

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Preface

This book is a collection of essays I penned between 2011 and 2018. At the beginning of that period, I was a full-time organic farmer, laboring 70+ hours per week with a couple of friends hoping to help a spark a sustainable movement. In the years that followed, I moved farms twice, co-founded a seed company, met an infamous practitioner of wildtending, made several trips up and down the West Coast, gave up farming altogether, started living out of a pickup truck, worked at a few *Cannabis* operations, wintered in the Mojave Desert three times, took over 15,000 photographs, and wrote.

I saw a fair amount during that time and this collection aims to share some of it. My learning is definitely not finished, though, and I am not presenting this as my "final word" on anything. But I feel like I've experienced enough to deliver a report-back, so to speak.

Stylistically, the pieces here vary from journalistic to scholastic to reflective to ranty, plus an interview. Because my questions and approaches changed over time, the ideas herein are not always consistent with each other. But rather than attempting to harmonize them, I have left them intact, since they provide different points of entry for various readers, all of whom are on their own paths of exploration.

Summary of chapters

"Agriculture and its Discontents"—Written from December 2017 to February 2018 as one long piece, then split into five sections, including the Introduction and Afterword. This is the book's thesis as set out in a fairly academic fashion (though not without some poetry).

"The Urban Farming Fantasy"—Published on *Counterpunch*, June 2016. A severely abridged adaptation of my book, "Adventures in Urban Bike Farming," which I published in December

2015. The blurb: “Equal parts historical document, confessional memoir and social critique, this book tells the story of 'Sunroot Gardens,' a bicycle-based urban farming operation that the author founded and cultivated in Portland, Oregon, in the early 2000's.”

“Who Will Feed the People? Obstacles to small-scale farming in the USA”—Published on *Counterpunch*, August 2011. An eight-point description of the challenging world faced by organic farmers.

“The Mark of Malice in California's 'Emerald Triangle'”—A look at northern California's *Cannabis* industry within the context of settler colonialism—by way of the Gold Rush, Native American genocide, and the Redwood timber boom—with a summation of its damaging effects on the environment. Contains portions of “How Green is Your Pot?” published on *Counterpunch* in April, 2015, and “Clear-cuts, Wildfires and Insecticides: My 2017 Pot Farm Observations,” published on *Counterpunch* in December, 2017.

“The Finisia Medrano trilogy”—Three essays inspired by my July 2012 meet-up with the notorious “Tranny Granny,” a Shoshone-trained elder with intimate knowledge of “the Hoop,” a form of wildtending practiced in the Great Basin of the western USA. “Postcard from Eastern Oregon : Where Planting Food is Illegal” was published on the *Energy Bulletin* (now *Resilience*) in September 2012. “Refugees Without Legs: Climate Change, native foods and 'invasive species' theory” was published on the same website in January 2014. “Weeds to Rewild You: Encountering Native American Food Crops” was put together for *Permaculture Design* magazine in December 2013, for a “weeds”-themed issue, but they declined to publish it. Then, it appeared in *Dark Mountain* after an editor there saw it in this collection.

“Giving Love to Every Little Root That's Still Growing: Interview with Bobby Fossek”—Bobby was raised on the Umatilla reservation in northeastern Oregon and is an active wildtender along with his partner and their daughter. We spoke in January 2018.

“A Glimpse of the Past and a Taste of the Future: Dispatch from a wildtending trip to Hell's Canyon”—An account from 2017,

posted to my blog with over 250 photos, and published text-only to *Counterpunch* in December of that year.

A note on spelling and grammar

In this text, two rules of standard English usage are consistently broken: 1. Names of animals and plants are capitalized the way human proper names are. 2. "Who" is used instead of "which" or "that" for non-human forms of life. Both choices are intentional and are intended to chip away at contemporary notions of human supremacy.

Acknowledgements

Thanks to the following: Anne Duffy Hill, both for proofreading and for providing the secret, undisclosed location—complete with resident cat!—where I hid out to finish this project; Deva for discussion and feedback; Elaine Close for asylum.

Most of all, I thank Nikki Hill, my traveling companion, partner-in-crime, and more on most of the journeys related in these pages. Without her, this book would never have happened.

Technical

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Kollibri terre Sonnenblume
occupied Chinook territory
27 November 2018

Introduction: Exploring the Past, Discovering Ourselves

> *The news here is that the lives of most of our progenitors were better than we think. We're flattering ourselves by believing that their existence was so grim and that our modern, civilized one is, by comparison, so great.* —John Lanchester[1]

The "Agricultural Revolution" is lauded as one of the greatest achievements in the history of the human race, proof positive of "Progress" and of our own exalted status "a little lower than angels."[2] Doubtless, it is among the most momentous changes that our species has experienced, on par with the utilization of fire, the development of language and the splitting of the atom. However, if we set aside these popular notions and seek a more even-handed appraisal, it is clear that agriculture degraded our health, our culture and our environment, and set us on a path that might very well end with our own extinction.

But wasn't life before farming miserable? Notoriously "nasty, brutish and short?[3] Weren't hunters and gatherers always on the edge of starvation, constantly focused on survival, and never able to enjoy free time? According to experts who study history: No. Among those who investigate the Agricultural Revolution are archaeologists, anthropologists, paleopathologists, sociologists, geneticists, linguists, primatologists, botanists, climatologists and even economists. A survey of their literature from the last half century exhibits near consensus on the big picture: the adoption of agriculture caused measurable declines in quality of life. individually, communally and ecologically. That this knowledge has not filtered out into mainstream culture is hardly surprising. These findings contradict cherished cultural beliefs that have religious origins, political value and personal appeal.

Popular 21st Century attitudes about prehistoric humans date by and large from the Victorian Age, which is to say, from the 19th Century. Unfortunately, many ideas that the educated class of that time presented as scientific were little more than validations

of their own deeply ingrained prejudices dressed up in Latin. Though they were in the process of throwing off the yoke of religion, it seems they were unwilling to abdicate the superiority it had granted them, and some "new" ideas merely sought to buttress the same old social structures with new secular support. Remember, these were the days when learned individuals in polite society could present "scientific" rationalizations for things like human slavery and the extermination of indigenous people. On the subject of prehistoric humans, the ideas of Thomas Hobbes were still in vogue. In his book, "The Leviathan," Hobbes characterized the state of humans who have "no Arts; no Letters; no Society"—as full of "continuall feare, and danger of violent death" and with lives that are "solitary, poore, nasty, brutish, and short."[4] Hobbes' treatise enumerated his personal theory of government as inspired by the travails of the English Civil War (which he had personally witnessed) and was published in 1651, well over 350 years ago. Surely, the fields of archaeology, anthropology, paleopathology, etc., that have emerged since then have made contributions that pertain to the facts more than Hobbes' politically-motivated polemic?

Terminology used in this book

- *Neolithic Revolution:* the scientific label for the Agricultural Revolution. "Neolithic" means "New Stone [Age]," which was preceded by the Paleolithic ("Old Stone [Age]").
- *Gatherer-hunter:* replaces the familiar "hunter-gatherer" because it more accurately reflects the proportions of foraged vegetables to meat in the prehistoric diet, as shall be explained. Lifestyle is mobile rather than sedentary.
- *Horticulture* aka *hoe-farming* or *stick agriculture:* a form of solely human-powered agriculture in which the main tool is a sharpened, fire-hardened stick or a hoe. Family or village-centered. Originally the province of women. Sedentary rather than mobile.
- *Agriculture* aka *agriculture proper:* generally uses the plow—and therefore domesticated animals—and often irrigation. City-centered. Nearly always led by men. Though the plow was never invented by the Neolithic cultures of the Americas, some of their efforts qualify as agriculture proper due to their extensive irrigation, major earth-moving projects and large-scale support of big urban centers.
- *Civilization:* A culture based on cities that are dependent on agriculture proper. From the Latin, *civis*, meaning city-dweller. Also called the agro-urban complex. Can be used as a purely descriptive and value-free term, though it usually isn't.

- *Wildtending:* An aspect of certain gathering-hunting societies, in which humans intentionally interact with ecosystems in order to increase wild food production. Activities range in scale from individual plants to entire landscapes. Mobile but can include permanent camps inhabited seasonally.

Timeline

The Neolithic Revolution began in several places around the world at different times. Each effort was independent of the others as far as we know, with the exception of eastern North America, which adopted many crops bred in central Mexico. These dates[5] refer to the commencement of horticulture, which was followed by agriculture proper in some but not all of the locations. ("BP" = "Before Present")

Near East / Fertile Crescent	*11,500-11,000 BP*
Yellow & Yangtze Rivers in China	*9000-8000 BP*
New Guinea Highlands	*9000-6000 BP*
Central Mexico	*5750-4000 BP*
Northern South America	*5250-4000 BP*
Sub-Saharan Africa	*5000-4000 BP*
Eastern North America	*5250-3000 BP*

Please note that these estimates mark only the approximate beginnings of processes that lasted for centuries or millennia. The transitions did not happen overnight. Nor were they straightforwardly linear; the first sedentary societies experienced frequent crashes and while some picked up the pieces and rebuilt, others were totally wiped out, and still others returned to gathering-hunting. Nonetheless, over time a very real wave gathered inertia and eventually inundated nearly all human societies.

Exploring the past, exploring ourselves

How do we know anything about Paleolithic and Neolithic people when they lived so long ago? Of course, there's much we will never know for certain, but we can gather information from a number of sources:

- Archaeological sites, including camps, towns and burials, with their tools, art, skeletons, etc.
- Genetic research of living human populations, which can identify the character and timing of past events such as migrations and dietary changes. The genetic lineage of plants also provides relevant data since it can reveal breeding and transportation by humans.
- Linguistic heritages.

- The climate record as revealed in ice, lake bed sediments, pollen and more.
- Models run by computers, testing various scenarios.
- Ethnographic surveys of existing gatherer-hunters and horticulturists. These include observations upon first contact, such as from European colonists in the Americas and Australia, and contemporary research of still existing cultures, such as of African tribes from the 1950s forward. In the second case, one must take into account how cultures might have been changed by colonization in terms of land base, population, etc.

Taking on this question in his book, "The Original Affluent Society," anthropologist Marshall Sahlins writes:

> *The surviving food collectors, as a class, are displaced persons. They represent the paleolithic disenfranchised, occupying marginal haunts untypical of the mode of production... barred from the better parts of the earth, first by agriculture, later by industrial economies, [they] enjoy ecological opportunities something less than the later-paleolithic average... The Eskimo we know no longer hunt whales, the Bushmen have been deprived of game, the Shoshoni's piñon has been timbered and his hunting grounds grazed out by cattle... [R]ather than a fair test of hunters' productive capacities, their current circumstances pose something of a supreme test.*[6]

Put another way, if we are going to make any assumptions, the first could reasonably be that the original gatherer-hunters had it easier. They were not under "colonial duress"[7] nor, at their population levels (estimated to be between one and six million worldwide just before the Neolithic revolution), would they have been competing with each other. Food of all kinds would have been plentiful and easy to collect, whether by digging stick or by spear. Living with such bounty, gatherer-hunters would have worked less than contemporary humans, in some cases far less. Numbers vary depending on the community studied and the methodology used, but it is safe to say that surviving gatherer-hunters work only 2-6 hours a day, divided fairly evenly between collecting and processing time. Often, individuals follow a pattern of one to two days on and one to two days off. Sahlins presents a wealth of stories and data about the lifestyles of gatherer-hunters, which in some cases are positively laid back. A stark contrast exists with techno-industrial lifestyles, which—as we all know—are more often than not overworked and stressful. Sahlins, again:

> *That sentence of "life at hard labor" was passed uniquely*

> *upon us. Scarcity is the judgment decreed by our economy —so also the axiom of our Economics: the application of scarce means against alternative ends to derive the most satisfaction possible under the circumstances. And it is precisely from this anxious vantage that we look back upon hunters. But if modern man, with all his technological advantages. still hasn't got the wherewithal, what chance has this naked savage with his puny bow and arrow? Having equipped the hunter with bourgeois impulses and paleolithic tools, we judge his situation hopeless in advance.*[8]

So, our understanding of the past is limited by how well we dispense with our cultural filters in the present. A 21st Century human with indoor plumbing, a permanent roof overhead and an automobile often has little or no experience with—let alone appreciation for—activities like bathing in a stream, changing abodes with the season, or moving through landscapes on foot, to say nothing of the profoundly deep backdrop of life that these were woven into. Many of the differences between these types of lifestyles can be objectively described. However, doing so accurately entails striving to discard one's own unverifiable assumptions. In other words, personal prejudices have no place in honest reckoning. Regardless, they are usually present in the reckonings you'll run across, even those issued by scientists. Though the intention of the scientific method is to avoid subjectivity in terms of what is *measured*, that's only part of the equation. Another part is the measur*er*, whose scientific education rarely (if ever) includes exercises to foster the self-awareness to even identify (let alone avoid) such prejudices. But that's only because such concepts are largely absent from Western culture in general.*

Consider, for example, one of the more popular stories about how humans started farming. A few versions exist, but here is the gist: Nomadic humans had seasonal camps where they stayed every year, and where they processed their harvests. They discarded unwanted plant parts (including some seeds) in piles. Then, one special year, they noticed plants growing from the previous year's pile of cast offs, and they deduced that plants grow from seeds. With this new knowledge, they started sowing seeds on purpose and the "Agricultural Revolution" followed shortly thereafter.

This story has at least three major issues:

First, it assumes that people never observed seeds germinating in the wild, though they would have had numerous opportunities:

- When properly moistened, seeds can sprout while lying on the ground in plain view. Acorns are an example that are

* *In contrast, introspection is central to many Eastern philosophies, which have centuries-long traditions of pursuing such. So it's possible to do.*

large and hard to miss and that humans were harvesting to eat in non-agricultural societies.

- Some plants exhibit "epigeal germination," in which the seed —after splitting open and sending down a root—is carried above ground on the sprout where it is easily recognizable. Many foods, including grapes, tamarind, papaya and some species of beans germinate this way.
- Foraging activity like digging in the soil, sifting through leaf litter, and turning over stones would have regularly revealed germinating seeds. Furthermore, samples of every life stage between seedling and adult would often have been present in profusion in the same area, illustrating the whole life cycle.
- Seeds can germinate inside a ripe fruit and be exposed when the fruit is broken open to eat. This can occur in various citrus fruits, which were domesticated in China around 4500 years ago.
- Occasionally, seeds will germinate on the plant after the flower has become dessicated. I have personally seen this multiple times with Teasel (genus *Dipsacus*), which is native to Europe, Asia and northern Africa and is now common throughout the USA, and with Coneflower (genus *Echinacea*), which is native to eastern and central North America.

Second, the story assumes that planting seeds was not a human activity until agriculture began, but that is not factual. Gathering activities were not merely acquisitive but also involved intentional plant propagation and seeds were knowingly sown, often in planned conjunction with harvesting. For example, such practices were traditional in the Great Basin of the western USA for many thousands of years among nomadic Native Americans who never settled down into a sedentary, horticultural lifestyle.

Third, the story is undergirded by a quasi-determinist premise that's certainly up for debate. A particular choice—agriculture—is presented as inevitable once particular knowledge—that plants grow from seeds—has been "discovered." In the ongoing debate about how and why humans took up farming, one of two motivations is usually offered: "necessity" (we did it because we had to) or "opportunity" (we did it because we could). The seed-discovery story is an "opportunity" narrative so it presupposes that a) agriculture is an improvement over gathering-hunting and b) so of course humans would jump at it as soon as they could, even though—*lacking any farming experience, by definition*—they would have *no* criteria for making such a judgment. Wait, what?

This seed-discovery story says more about current Western humans than it does about prehistoric ones: it projects a contemporary perspective backwards in time, in effect imagining how

educated city folks nowadays—*without plant knowledge*—might "discover agriculture" if they were transported to the Paleolithic and set loose to figure it out in the wild starting tomorrow. But that's not what it was like for our prehistoric ancestors. They weren't suddenly dropped into the world to "discover" these things. Though unfamiliar with agriculture, they were *not* without plant knowledge; on the contrary, they had been invested in *that* wisdom for a long time.

The plain truth is that we have no freaking idea what it was like to live on this planet before agriculture. By that, I don't mean that we don't have plausible scenarios of diet, housing or lifestyle based on archaeological evidence, because obviously we do. What I mean is that we ourselves, immersed in our contemporary lifestyles, have no idea what it *felt* like. No light but fire and heavenly bodies (and the occasional luminescent insect or tide). No sounds except the elements and the animals (and at some point, drums). Never smelling exhaust, never hearing an airplane, never feeling the vibration of an engine, never tasting plastic and almost never seeing right angles. Everything manufactured with technology invented in the last 10,000 years is absent; all the ideas that emerged in the same time frame—property, money, nations—are unconceived; and the despairing philosophies of modernity, in which the self is isolated, on a lonely journey, struggling in competition against nature... all of this is not only unimagined but unimaginable. The mental space that humans inhabited then was truly alien from our own, incredibly so. If we're going to be honest with ourselves, we must concede: far be it from us to know their thoughts, let alone their desires.

❦ ❦ ❦

But not everything is up for so much interpretation. The planet's oceans and atmosphere are increasingly tainted by agricultural pollutants. Soils everywhere are toxified and eroding. Aquifers are being poisoned and depleted. These are facts. Sooner or later —due to loss of arable land, shortage of water, and extreme weather, among other elements—agriculture at the present scale will no longer be possible. That's inevitable. And the road that leads to that level of destruction is marked by the extinctions of countless other species around the world along the way, and would likely include our own.

Clearly, what we're doing now has to stop. Collectively, we must pursue change. Fortunately, there's nothing new to invent, though the path we follow will be novel.

Agriculture & its Discontents, Part 1: The Health Decline

> *The fossil record shows that life for agriculturalists was harder than it had been for hunter-gatherers. Their bones show evidence of dietary stress: they were shorter, they were sicker, their mortality rates were higher. Living in close proximity to domesticated animals led to diseases that crossed the species barrier, wreaking havoc in the densely settled communities.*[9]

The diets of wildtenders and other gatherer-hunters were very diverse and their lifestyles were highly mobile. The variation in food, in kind and in season, supplied complete nutrition and lessened the chance of going hungry. Living in small, migratory groups virtually guaranteed that individuals were in good physical condition and disallowed certain diseases from becoming widespread. Of course, gatherer-hunters were themselves diverse, and their diets and lifestyles differed with geography, but altogether they were more like each other than they are like the agricultural societies that largely replaced them.

Some of the most detailed accounts of gatherer-hunters come from the western USA, where the traditional ways of some Native Americans were held mostly intact until the mid-19th Century. Here, for example, are some details about the diet of Native Americans who lived in what is now central California:

> *Hunger was unknown to the Central Region's people. They had a liberal food surplus due to the sheer diversity of their wild foods. No one item, with the possible exception of acorns, was so necessary to their diet that its sudden disappearance could not be made up by other items...*
>
> *In addition to acorns, a wide variety of other plants were gathered and eaten... Seeds of grasses and small, flowering shrubs... were parched, ground into flour, and consumed as dry meal or formed into cakes. Bulbs, tubers and roots were dug from the ground with a hardwood digging stick and eaten uncooked or roasted in hot ashes. Berries of many kinds were picked and eaten raw, or dried,*

> *pounded into flour and stored for winter use when they were reconstituted by mixing with water. The tender leaves and stems, along with the flowers, of many plants were eaten with relish, either raw as salad or steamed. And along the coast, seaweed was an important food item.*
>
> *Game was plentiful and varied and for many groups provided a good share of their diet. Men hunted and trapped Deer, elk, bear, mountain lions, rabbits, squirrels, and along the coast seals, sea lions, and sea otters. They also caught birds such as quail, woodpeckers, ducks, and geese. In many areas insects, such as grasshoppers, ants, caterpillars, and crickets, also formed a part of the diet, as did the larvae of moths, bees, and sometimes yellow-jackets. And among some of the Pomo-speaking groups, earthworms were also added to the diet....*
>
> *Freshwater streams yielded Salmon (and in places sturgeon) while other fish species were available in the various lakes and marshes. Along the coast, abalone, mussels, and many other shellfish were found in abundance and for some groups were more important sources of animal protein than mammals.*[10]

On the topic of indigenous humans in Africa, James Suzman, author of *Affluence Without Abundance*, writes:

> *Hunting and gathering was a low-risk way of making a living. Ju/'hoansi hunter-gatherers in Namibia traditionally made use of 125 different edible plant species, each of which had a slightly different seasonal cycle, varied in its response to different weather conditions, and occupied a specific environmental niche. When the weather proved unsuitable for one set of species it was likely to benefit another, vastly reducing the risk of famine.*[11]

That human health suffered with the switch to agriculture is not a matter of debate within the historical field; ample evidence exists in the archaeological record, as well as observations of more recent transitions when European agriculturalists encountered gatherer-hunters and horticulturists over the last five centuries. Regarding Paleolithic and Neolithic remains, mostly what we have are bones—besides the odd mummy or frozen corpse here and there—but they can provide a wealth of information that includes sex, age, weight and also diet, disease and lifestyle.

> *[A]t Dickson Mounds, located near the confluence of the Spoon and Illinois rivers, archaeologists have excavated some 800 skeletons that paint a picture of the health changes that occurred when a hunter-gatherer culture gave*

> *way to intensive maize farming around A. D. 1150... Compared to the hunter-gatherers who preceded them, the farmers had a nearly 50 per cent increase in enamel defects indicative of malnutrition, a fourfold increase in iron-deficiency anemia (evidenced by a bone condition called porotic hyperostosis), a threefold rise in bone lesions reflecting infectious disease in general, and an increase in degenerative conditions of the spine, probably reflecting a lot of hard physical labor.*[12]

By 5000 years ago in the Near East, average height had fallen by six inches for men and five inches for women.[13] Notes anthropologist Katherine J. Latham: "Growth stunting can be indicative of undernutrition due to malnourishment and high exposure to disease."[14] She also mentions that "cereals [like wheat, rice, and maize] contain little iron, but do contain phytates which are known to inhibit iron absorption"[15] and which can lead to anemia.

A narrower diet also affects the digestive system. A 2014 study compared the gut microbiota of contemporary Italian urbanites with traditional Hadza gatherer-hunters in Africa who "practice no cultivation or domestication of plants and animals and receive minimal amounts of agricultural products (less than 5% of calories) from external sources." The authors noted that gut microbiota "directly influences health and provides an extra means of adaptive potential to different lifestyles." The study found that the Hadza had "higher levels of microbial richness and biodiversity" in their biome.[16]

Dental health took a big hit in the Neolithic Revolution with "reduction of tooth size, crowding, increases in caries, and increased occurrence of periodontal disease [gingivitis]."[17] What changed? Diet and preparation methods. More cereals boosted the amount of certain carbohydrates and thus sugars in the diet. The grains were ground-up and cooked into porridge, which was softer and easier to chew than previous foods. These changes led to:

> *"gracilization" of the human skull and resulted in a smaller human face with reduced jaws and teeth (Larsen 1991, 2006; Sardi et al. 2004). Reduction of the face negatively affected human oral health because human teeth did not reduce proportionately to the jaw and crowding resulted (Larsen 2006). Dental crowding is problematic because it creates tight spaces between the teeth where bacteria can easily grow. These oral bacteria can contribute to plaque build-up and promotes caries, "an oral infectious disease [which] involves the demineralization of the enamel and the underlying dentin and other tissues, caused by the acids produced as a byproduct of the metabolism of di-*

etary carbohydrates, especially sugars" (Larsen 2006:13)[18]

Other health declines were brought about by the sedentary nature of the agricultural lifestyle. New types of repetitive labor became common such as plowing, harvesting monocrops, "making mudbricks, preparing lime-plaster, tree felling and grinding cereals."[19*] Simply put, the high mobility of gathering-hunting offered a totally different work-out, one that was better for the body. A 2014 study showed that, compared with ancient gatherer-hunters (from 7000 year old sites in eastern North America), contemporary agricultural humans have 20% less bone mass in their hip joints and an increased risk of fracture.[20] A 2015 article was in agreement, stating "high bone densities were maintained throughout the span of human evolution until the development of agriculture."[21]

Dependence on a smaller number of domesticated plants for sustenance is a hallmark of agriculture. Consequentially, so are crop failures, and the Neolithic Revolution brought on “severe, recurrent and catastrophic famines.”[22] Indeed, “the historical record shows that early cities and states were prone to sudden implosion.”[23]

Epidemics were also responsible for population crashes and the domestication of animals introduced new infectious diseases to humans. Living in close quarters with sheep, goats, pigs, cows, chickens, etc., humans picked up bacteria that are "zoonotic," that is, that jumped from animals. Examples include tuberculosis, brucellosis, and foot and mouth disease, and very likely diphtheria, influenza A, measles, mumps, pertussis (whooping cough), rotavirus A, and smallpox.[24] High population density in the new cities facilitated the rapid spread of disease. The initial death rates must have been quite high. Indeed, writes Suzman:

> *[T]he expansion of agriculture across the globe was punctuated by catastrophic societal collapses. Genomic research on the history of European populations points to a series of sharp declines that coincided first with the Neolithic expansion through central Europe around 7,500 years ago, then with their spread into north-western Europe about 6,000 years ago.*[25]

Over time, survivors passed on their genes, and entire populations gained general immunity. But this led to tragic consequences millennia later, when the descendants of the Middle-Eastern agricultural societies invaded the Western hemisphere

* *Grinding stones were also used by some gatherer-hunters for nuts, seeds and dried roots. However, the scale was smaller; people were producing for their households as individuals in communities, not for entire cities as a class.*

and exposed the indigenous people there to their zoonotic diseases, resulting in death rates as high as 90%.

With all these health issues, longevity* decreased, especially for women, more of whom died during childbirth due to increasing rates of pregnancy and generally poorer health.[26]

Despite the fact that individual humans were dying earlier, the rate of population growth increased. Mobile gathering activities had discouraged pregnancy in a number of ways: leaner, more athletic women were fertile less regularly; babies were breast-fed for 3-4 years, and milk production precludes ovulation; one woman could not carry more than one infant at a time, so was limited to that number. With agricultural proper—when men took over field work with plows and animals—women became stay-at-home moms for the first time in history. Menses became more regular, the duration of breast-feeding was curtailed, and babies arrived more often.[27] The population boom began.

So, the Neolithic Revolution gave us bad teeth, weak bones, infectious disease, shorter lifespans, and more. Not an improvement, obviously. Why, the resulting lifestyle could actually be described as "poore," "brutish" and "short."

All of this is to say nothing about the contemporary agricultural diet, which is exceedingly unhealthy: highly processed foods manufactured from over-bred crops doused in poisons and served out-of-season in over-sized portions. Coronary disease, diabetes, cancer—these are all curses of the "modern" lifestyle. One could say we have traded quality for convenience, but it is much worse than that. It was not only our physical health that was degraded by the switch to farming. So, too, were our relationships with each other and with the natural world. But it doesn't have to stay this way.

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* *Please note that "life expectancy" and "longevity," aka "maximum lifespan," are two different things. Life expectancy is the average length of life of all individuals within a particular population, geographical or historical, including those who died as infants and children. Longevity for that same group could be a much higher number. So when one hears that the average life expectancy in the past was "only 35," that doesn't mean that most adults died around 35 or that no one made it to old-age. In the case of ancient humans, including gatherer-hunters, the infant and childhood mortality rate was higher than today, in some cases much higher, which pushed down average life expectancy. However, once adulthood was reached, longevity was not necessarily less than contemporary measures and in some cases was greater. For example, John Zerzan notes in his essay, "Agriculture," that "eyewitness Spanish accounts of the sixteenth century tell of Florida Indian fathers seeing their fifth generation before passing away." Maternity death was also more common, further driving down life expectancy.*

The Urban Farming Fantasy

Multiple, intertwined crises face the human race in our times, among them resource depletion, economic dissolution, and ecological degradation, including global Climate Change. Though most people in the USA respond to the news of these crises by putting their fingers in their ears and singing, "la la la," a small number of others are (and always have been) offering solutions, or at least brainstorms for how we could collectively change our lifestyles to address them. Among the many, many ideas batted around are renewable energy, income redistribution, carbon-trading and sequestration, and alternative approaches to conventional farming including organics, "permaculture" and urban farming.

The viability of any of these concepts is a matter of debate, though in general the facts demonstrate that none are capable of maintaining levels of production and consumption at anything close to their current levels, or, more importantly, of healing the hurts suffered by the world and its multitude of creatures. In short, the concept of business-as-usual being "sustainable" in a recognizable form is a false hope. I have come to this conclusion not only by studying these ideas, but through my own personal experience, most notably with urban farming.

How is "urban farming" different from "gardening"? The majority of people who garden enjoy the activity as a hobby but are in no way dependent on it for their diet. The most ambitious ones might cut their summer produce bill significantly and put by an impressive amount of preserves for winter, but they are exceptional, and what they are doing is still not farming. Farmers are trying to provide for themselves by providing for other people, and to succeed, what they provide must be substantial. It is a matter of both scale and seriousness. Urban farmers are simply individuals attempting to follow their vocation in the city instead of the country, which has its own advantages and disadvantages.

In theory, urban farming has a number of beneficial effects: decreasing fossil fuel use; providing produce that is fresher and in-season, and therefore more flavorful and nutritious; cutting the tethers between big agriculture and big finance, with their

perversities of pricing and distribution; reducing food waste; restoring rural monocultured landscapes to wilder spaces for their original denizens; and, last but not least, reconnecting urbanites with the cycles of nature that exist outside their smartphone screens. This last effect would be accomplished in part by the fact that, were urban farming to be taken up a large scale, many more people would be farmers than presently are, which is less than 1% of the US population, down from over 30% just prior to World War II.

It was with all these benefits in mind, and more, that I myself began urban farming in Portland, Oregon, in 2005. Previously, I had been a political activist, mainly with the Independent Media Center, aka "Indymedia." I was inspired by Hurricane Katrina to devote myself to farming instead because of the inspiring stories I heard from fellow activists who went to New Orleans after the storm and were involved in the grass-roots, community-level efforts to recover and rebuild. The gratifying and fruitful experiences they helped manifest with local people contrasted sharply with the actions of the government and large non-profits, which were driven by corporate greed in motive and often haphazard in execution. Suspecting that catastrophe-mode would eventually become the "new normal" in other parts of the US as the aforementioned crises worsened and became impossible to ignore (in a phase that James Kunstler has dubbed, "the Long Emergency"), I believed that building resiliency from the ground-up, independent of The Powers That Be, was an essential endeavor that should optimally commence before the shit hits the fan.

Two years later, starting with the 2007 season, urban farming had become my sole means of financial support when I formed a CSA. "CSA" stands for "community-supported agriculture" and is a business model in which customers pay the farmer a lump sum at the beginning of the season for regularly distributed produce later, typically from Spring through Autumn. This arrangement is advantageous for everyone involved; the farmer is guaranteed a certain amount of monetary income when it is most needed—at planting time, before there is any produce to sell—and the customer has the opportunity to develop a close and even personal relationship with a farmer while enjoying fresh, local food—very local in the case of urban farming. I named my CSA "Sunroot Gardens," after a nickname for the Jerusalem Artichoke (*Helianthus tuberosus*), a perennial root vegetable that is very hardy and, like myself, native to the US Midwest.

I had never had a driver's license or vehicle in Portland and biked everywhere I wanted to go, so by default Sunroot Gardens was a bicycle-based enterprise. In 2007, I was tending over a

dozen different plots, all but one in the city's Southeast quadrant, on two wheels with a cart, often with a hoe and shovel strapped to the frame of my Diamondback. This raised quite a few admiring eyebrows, but for me, doing business by bike was actually the only means I had available. Nonetheless, I gratefully accepted any support that people offered because they thought what I was doing was "cool."

In early 2008, this support took the form of attention from the local media. To a particular writer with one of the city's weekly newspapers, urban farming by bike was the *exemplar par excellence* of self-consciously "keep it weird" Portland and he put together a story about me and Sunroot Gardens. The paper was (and is) widely read and soon my phone was ringing off the hook and my email in-box was deluged. In no time at all, I had filled my customer roster for the season and ended up expanding the number I had originally planned to take. If I had kept a waiting list, it would've had at least 50 more households on it, there were that many inquiries. Offers of yards to garden also poured in as well as pledges of time from volunteers.

When I had been involved in political activism, a perennial complaint had been the lack of resources. Scrambling for cash and supplies took significant energy and time. But with Sunroot Gardens, I no longer had this complaint, thanks to the media attention and—also essential—very cheap rent from landladies who wanted to support my work and could afford to donate space for me to reside.

So, I had the freedom to seriously investigate urban farming without distraction. I was looking for answers to specific questions, among them: Could urban farming be effective in addressing the multiple crises facing society? Could it be viable as a means of personal financial support? Could Portland, like post-Soviet break-up Havana, become a garden city that raised over 50% of the produce it consumed within its own municipal boundaries?

In 2008, I partnered with two other people, one of whom ran her own bike-based CSA. That season, we tended over thirty plots together, all in Southeast Portland. Our experiences with different locations and landlenders provided a rich learning environment.

The heart of our farming was in the gardens. That's where our crops were growing, of course, and where we spent most of our time, but there was more to it than that. The acts of farming—taking out a lawn, turning the soil, sowing some seeds, tending with care and finally harvesting—were all transformative acts in more than one sense.

On the most obvious level, the appearance and function of a space was transformed: An ornamental monoculture, a lawn, was replaced with a productive polyculture, a garden. The useless became useful. This transformation offered the immediate satisfaction of accomplishment—"a job well done"—and put us one step closer to the goal of providing for ourselves and other people.

On a cultural level, replacing lawn with food transformed the message sent by the property to neighbors and passers-by. Historically, lawns were popularized by the British landed gentry who installed them to showcase their wealth; only rich people could afford to take a field out of agricultural production and devote it to decorative purposes. These ostentatious expanses literally and figuratively distanced their idle owners from the toiling masses, from whom the real estate had been stolen in the first place. Previously, most land had been in "the Commons" and had been available to peasants for farming, grazing and forestry, but the Enclosure Acts seized and privatized these lands. In the new hierarchy, the lawn was a bright green line demarcating the haves from the have-nots. In our own day and age, few people know these origins, but the social impression projected by the contemporary lawn is fundamentally unchanged: prosperity, leisure, order. Conversely, home gardens can connote the opposite: poverty, labor, messiness. We were well aware of this transformation in message when we took out a lawn for a garden and were delighted to be the agents responsible. It appealed to our appetite for social mischief, like coloring outside the lines on purpose.

On a deeper level, any act of transformation affects not only the transformed but also the transformer. Movement in the material world is accompanied by corresponding movement in the mental world, a place that is no less real for lacking physical substance. By making the domesticated more feral, we were inciting ourselves to break with convention, to "tune in, turn on, and drop out," as Timothy Leary famously put it. The power of this particular transformation should not be underestimated; US society as a whole would be positively improved if more people experienced personal growth of this kind.

The gardens varied in size from less than a hundred square feet to some fraction of an acre: a quarter, a third, a half. Some sites we worked for just part of a single season with quick annual vegetables while others hosted perennial medicinals for multiple years. Each garden had its own unique combination of traits when it came to soil type, amount of sun, availability of irrigation, etc. No "one-size-fits-all" approach could be applied across the board for designing or caring for them, much to the consternation of people who wanted a quick answer to the question,

"What are your methods?" Creativity and flexibility were essential and I greatly enjoyed the challenge and variety.

Every garden we tended was on land that someone else owned. So to one degree or another we did not have full control over any of them. That's difficult for a farmer. While it's true that rural farmers who own their own land also face restrictions—whether legal (land-use laws) or social (keeping peace with the neighbors)—for the most part, no one can tell them what to plant, where to plant it or how to tend it. As urban farmers, we had people breathing down our necks about all of those choices and more. What could we do? We were on their property, after all—"at their grace," as it's said—so the best we could do was to try to choose plots wisely. Sometimes we did, sometimes we didn't.

Because some of the people we worked with were renters, not owners, we called them "landlenders." Potential new landlenders always asked, "How does this work?" and we always answered, "However you'd it like to." Each landlender arrangement was different. Some received produce, others didn't. Some allowed us to use the water, others forbade it. Some demanded a written contract, others were satisfied with a handshake. No one, interestingly, ever asked for money. Nearly all of the landlenders approached us first; we rarely added new sites by walking up to strangers with a pitch.

During the time I farmed in Portland, I had relationships with over forty different landlenders. As could be expected, these relationships ran the gamut from truly enjoyable to downright infuriating. It was kind of like dating: Fevered excitement in the beginning often led to disappointment, and some relationships were terminated by one or both parties after only one season. Other matches were decent and grew in fruitfulness for everyone over time. In a handful of cases, intimate bonds were forged.

The most common point of contention with landlenders was aesthetic. Farming doesn't look like gardening. If the landlenders had done as I had, and visited the rural operations of their favorite vendors at the farmers' market, they undoubtedly would have been shocked: farms are, as a rule, messy, and exceptions can betray misplaced priorities. The vegetable beds are never totally weed-free; piles of pots, plant trays, and plastic sprawl wherever they were last used; broken equipment waiting a day of repair that might never arrive are half-obscured in vegetation. The barn door is hanging from one hinge, the hoop-house covering is torn, and the irrigation leaks. The list of "I'll get to that next" projects is usually long. By the standards I had seen we were actually quite tidy, but the landlenders didn't know that.

Conventionally, the ideal city garden is well-manicured, weed-free, and set out in neat little rows. Of paramount concern is appearance. Conversely, the number one priority of farming is productivity; if a bed is a little rough-around-the-edges but it's pumping out big harvests, then the job's getting done. We were not *un*concerned about the appearance of our gardens, but we were (usually) unwilling and (often) unable to perform labor we considered unnecessary. Of course, when a landlender got persnickety enough, then the unnecessary became necessary just to keep the peace (and the plot).

But beyond questions about whether the cabbage patch is well-ordered, farming also includes certain practices that—by their nature—can look unkempt or even chaotic to the untrained city eye. Two examples that repeatedly raised issues for landlenders or their neighbors were cover-cropping and seed-saving, both central to small-scale, sustainable agriculture.

Cover-cropping is a method for creating and maintaining the healthy soil needed to grow nutritious vegetables. Depending on what is planted when, cover-crops serve different functions; they can add nutrients, smother weeds, create green manure for soil-building, discourage pests, and protect the ground from compaction and excessive mineral-leeching during the rainy season. Cover-crop seed is usually inexpensive and the plants themselves generally require little care, so it is an affordable and fairly easy way to improve land for vegetable-growing.

But a stand of cover-crop does not fit the picture of the ideal city garden. The seed is broadcast thickly to raise a dense stand, so there's no rows. The plants themselves are alien to the urban landscape and can send a "wrong" message: oats, rye and wheat taller than a few inches look like un-mown lawn grass; vetch is tangly, buckwheat is gangly, and crimson clover is a jumbled mess. To make matters worse, a blend of cover-crop plants is often grown together and can appear disorderly (which, honestly, it is). Basically, a vibrant patch of cover-crop can resemble a thick patch of tall weeds if you don't know what's going on. Some people, including a few landlenders, were aghast at the appearance of cover-cropping and a more than few of our patches were chopped down prematurely.

Though cover-cropping raised some ire, the most offensive act of farming we committed in the city was seed-saving. If cover-cropping was a rude remark, seed-saving was a slap in the face. Every farmer wants vegetables that are hardy, delicious, and easy-to-grow, and for that the farmer needs seed that is strong, well-selected, and locally-adapted. Much of the seed on the market, however, is of low quality or unknown origin. Even reputable

seed houses sometimes ship bunk. Additionally, we are now in the era of Genetically Modified Organisms (GMOs), facing unknown but potentially catastrophic dangers.

Seed-saving is the ultimate way of knowing where your seed came from, of course, and it is also an essential step in improving a vegetable for hardiness, etc. Basic plant-breeding is easy to try. Without doing anything special, the first generation of saved seed from a store-bought packet is already a meaningful "selection" because it grew from that percentage of the purchased stock that was a.) viable and b.) able to reach to seed-bearing age locally. In following generations, further selections can be made for appearance, flavor, shelf-life, etc. Seed-saving is an essential activity for the small-scale farmer, including the urban farmer.

But there are negative social implications to letting a plant "go to seed." When compared to the ideal city garden aesthetic, a bed full of bolting lettuce, spinach, or mustard greens appears untended or even abandoned. Over our years of urban farming, we lost seed crops in multiple locations when people cut down patches before they were ready. Nothing got the weed-whackers revved up like a patch of vegetables in flower. Arriving at a garden to find beautiful plants destroyed was frustrating, infuriating and sad. Frustrating because a crop had been wasted after months of tending, infuriating because the cause was human stupidity, and sad because companions in our lives had been killed. I can't count how many times it happened, and it was often perpetrated by the landlenders themselves.

All in all, I would guess that many (though not most) of the landlenders were dissatisfied with their relationship with Sunroot Gardens at least some of the time, and a few of them most of the time. In the first couple years, we were partly at fault for this by setting expectations too high. But later, when we tried to be more realistic, we still displeased people with our bountiful creations; they just didn't fit the picture that people had. Most of them wanted some miniature facsimile of Versailles—or at least a well-ordered *potager* garden—but what we delivered was the provincial peasant farm that the nobility kept at bay with their lawns and hedges.

Some of the landlenders, of course, were entirely pleased with us. Because those people were the most pleasant to work with, their plots got the most attention. The old saw, "the squeaky wheel gets the grease" didn't apply in our world; instead, it got the boot. By 2010, when we were winding down Sunroot Gardens, it was abundantly clear to us that most landlenders were not ready for farming in the city.

We were not content to grow only fresh produce. Fruits and veggies typically make up 10-15% of a healthy agricultural human diet, with grains and proteins making up the other 85%. Therefore, in 2008, we started up a parallel effort that we called "the Staple Crops Project." The ambitious goal was total food independence. In that year and in 2009, we invested over $15,000 in a few larger plots, mostly in suburban areas where larger, unused properties were available.

Our main crops were wheat, quinoa, flour corn, soup beans, flax and oilseed sunflowers. We purchased a tractor for initially tilling the plots but we seeded, tended, harvested and processed mostly by hand. In order to attract the needed hands for all this labor, I devised a distribution system in which Sunroot Gardens kept only 20% of the harvests, and divided the other 80% evenly between the monetary investors and the volunteers, 40% to each group. So instead of hiring people and selling the product, we invited people to participate as their own free agents acting of their own volition. This was a conscious and purposeful break with the modern agricultural model in which "owners" "pay" "workers" and keep the majority of the take for themselves. We believed that this model was outmoded and that it was time to get back to the community taking care of itself.

Sometimes it worked pretty well. In 2008, for example, over the course of just a couple weeks, we harvested and completely processed over 600 pounds of wheat with the help of 42 people. I made a spreadsheet to keep track of every labor hour spent on each step—harvesting, threshing and winnowing—and so was able to calculate that the collective productivity rate in the end was 2.6 pounds of wheat berries per hour. Helpers ended up receiving one pound of wheat for each hour worked. Monetary investors got 24 pounds for every $250 invested, though they were also receiving other crops in addition. (A detailed report of every crop harvested in 2008 and 2009, with all the numbers crunched, and photographs, accompanies the online version of this chapter at macskamoksha.com.)

Though we never achieved total food independence, the Staple Crops Project was, for us, an important experiment in the context of urban farming. It was certainly instructive to see how much time is saved by the industrial threshers that can process that much in few minutes. It was also gratifying to see how much people enjoyed themselves with this simple work and how, with so many involved, it was not arduous. Nobody broke their back. A few blisters for the most enthusiastic workers were the only hardships suffered.

But our innovations did not stop there. We were also keenly interested in breaking down conventional contemporary relationships between money and food. If the future threatened (or promised) a world in which finance would collapse and community would take its place, I wanted to play with how that might look.

Therefore, in 2009, I reduced the number of CSA shares that would be available for traditional monetary investors by almost 50% in order to devote more of the harvests to helpers and bartering relationships. I added a second weekly produce pick-up day exclusively for these non-monetary relationships. This was knowing that 2009 promised to be a banner year, with more real estate under cultivation than ever before, and many established plots having proven themselves as reliable producers. In other words, instead of expanding the operation to make more money —which I easily could have done with the customer demand that presented itself due to the media attention—I chose to invest the resources into what I saw as a rehearsal for the future when the dollar would no longer be king. If, as the anti-globalization activists had chanted, it is true that *otro mundo es possible*,* then why wait to make that world? If not now, when?

I took it yet further for the 2010 CSA season, which was a ten month long contract starting Winter Solstice 2009 for monetary investors. (Over the winter of 2008-2009, Sunroot Gardens had started offering a bi-weekly winter CSA, one of the few CSAs in the Pacific Northwest to do so. The mild climate of the area allows for the harvesting of fresh green and roots from November through April, though most farmers in the area act like its New England or the Midwest and just shut down.) For that fiscal farm year, I did two things:

1) Did away with set prices for CSA shares and instead invited members to "set your own price." I announced it thusly in an email to current CSA subscribers:

> *"The Farm is not pricing shares this year. Instead, we are presenting the year's budget and inviting people to offer what they would like to offer for what they would like to have. We are putting the pricing into your hands because you are the one who knows the most about how much you'd like to take, of what, how often, etc. Buying into this year's budget gets you produce from Winter Solstice 2009 to Samhain 2010, which is a little over 10 months. It also gets you staple crops harvested during 2010, to include wheat, corn, quinoa, millet, soup peas, soup beans, etc. You decide if you want produce or staples or both and then you*

* *"Another world is possible"*

make an offer accordingly. ...With this new price-your-own-share method, there is nothing stopping you from paying $1 and then picking up produce 3x a week the whole year and not feeling bad about it at all, if that's how your world works. And if that's really how your world works, go for it!"

I followed this with a quotation from Peter Goodchild: "Where there is no law, there are no criminals." Within the context of Sunroot's world, I was attempting to strip away not only law but also conventional notions of ethics as they apply to pecuniary matters and replace them with a kind of community-based utilitarianism. Only one household ended up "taking advantage" of the situation and helping themselves to more than they donated, but that didn't really matter.

2) I also reduced the "farmer salary" line item (that is, my own personal annual take) to $1. How would I get by? This is how I explained it in the same email:

*"Rent' is picked up in the new budget item, 'farmer quartering,' which is intended to include the renovation of the greenhouse [so it includes a habitable winter bedroom], and the paying of utilities related to that. So for $1800—the monthly price of a condo on Hawthorne—we plan to quarter the farmer for a year. Another line item new to this year's budget is 'farm kitchen,' meant to help cover for all the food that Mrs. K [my wife] cooks for the farmhands, including those delicious field meals she has packed up in the past. Hardly a day went by at the Firepit [the garden that served as Sunroot's HQ, where the aforementioned greenhouse was located] this year when someone was *not* joining Mrs. K for breakfast, second breakfast, elevensies, luncheon, afternoon tea, dinner, or supper [which, by the way, are the seven traditional Hobbit meals]."*

As you can see, something that was not missing from the Sunroot Garden enterprise, despite the 80 hour work weeks, was whimsy. Despite our seriousness about the work, we kept the mood light. "A spoonful of sugar helps the medicine go down," don'tcha know.

Besides all of this, we wanted to facilitate the expansion of urban farming as a bona-fide movement in Portland. We had no desire to keep everything to ourselves. We hoped to help spark a vibrant scene with not just dozens, but hundreds, of urban farmers who could transform Portland into that veritable "garden city" where you couldn't bike down any block without seeing vegetables in front yards. Only then would "urban farming" be a real thing and not just a media-manufactured meme. Only then

would there be a shot at survival when, as we believed, the system would inevitably fail, leaving the populace to its own devices (such as essentially happened after Hurricane Katrina).

To this end, we offered as much as we could to those people who exhibited seriousness about urban farming. Helpers who were willing to put in the most time, and invest their own resources, were themselves accorded the title of "farmer" and with that appellation were granted a larger take of harvests. With more responsibility—that is to say, with more responsiveness—came more reward, and isn't that how it should work? We also gave away plots, seed, soil amendments, tools, vegetable starts, construction materials, and anything else we had to offer, free-of-charge. Sunroot had amassed so much wealth in these areas that we could spare some to people who seemed serious. We were trying to actively live the ideal of "creating the world you want to see" and our efforts had their own rewards, regardless of their results.

2010 was the final year of operations for Sunroot Gardens. I declared this at the beginning of that season because I had grown weary of city life and wanted to try farming in the country, in just one location, where I wouldn't have to spend a big chunk of time just traveling among different plots. As it turned out, this timing was perfect for other reasons. Portland itself was changing, and in ways that are happening to many cities around the US.

Between 2005 and 2010—the years I was an urban farmer—Portland was in transition. Of course, no city is static, and each one is always between phases that are often accurately seen only in retrospect, but the "City of Roses" in that period was a particular place in a particular time that made it especially fertile ground (no pun intended) for the urban farming experiment known as Sunroot Gardens. Passing away was "Little Beirut," a city given that nickname by George H. W. Bush's advisors in the early 1990's because of the energetic protests the President faced there. This Portland was a center of unabashedly leftist politics but was also a homely, low-rent backwater that was perennially overshadowed by its more urbane and glamorous siblings, the burly industrial brother to the north, Seattle, and the pretty, sophisticated sister to the south, San Francisco. "Little Beirut" was the city I hoped to find when I moved to Portland in early 2001, hot on the heels of the explosive anti-WTO protests in Seattle in late 1999.

The Portland that emerged next was "Portlandia," a caricature of itself, a destination no longer for scrappy activists—or starving artists, their sometimes partners-in-crime—but for the app-driven digerati, with their oh-so-refined tastes and non-confrontational blue-state politics. Rents skyrocketed, hipsters pushed out hippies, and by 2015, Portland was the most quickly

gentrifying city in the USA. In short, no longer a hospitable place for unconventional experiments. In retrospect, it is clear that Sunroot Gardens took full advantage of this particular time and place for as long it lasted, neither arriving too early nor leaving too late (like an engaging work of fiction).

Today, in "Portlandia" (or "Potlandia" as it is sometimes called since the legalization of recreational marijuana), I would not be able to engage in the Sunroot Gardens experiment again. Land has become too valuable, resources too short and the culture less supportive of the edgy.

So far, most urban farming businesses in the USA have been far less experimental than Sunroot Gardens, which is to say, not as responsive to the multiple crises bearing down on civilization as we know it. From my own research, the ones that are most financially successful are the ones that focus on bourgeois niche markets like baby greens for restaurants. While this might be providing a steady income for the entrepreneurs who run them—and even providing opportunities for traditionally disenfranchised populations—they are certainly not breaking ground, so to speak, in terms of what will be required from urban farming when the nation suffers an interruption in what has come to be expected as normal agricultural output from Big Ag. Given Climate Change, a precariously upheld financial system, and ongoing depletion of basics like top soil and aquifers, Big Ag has finite limits that will be reached within a finite amount of time, perhaps with unexpected suddenness within the lifetime of the reader. "Man cannot live on salads alone," to coin a phrase, and urban farming will have to do more than it is if it's going to be part of the solution.

That is, if urban farming is going to contribute to the survival of Americans in a significant, meaningful way, it will need to switch gears from niceties to necessities and expand quickly. "Exponentially" is the adjective I would actually suggest. It will be too late to grow "food not lawns" when the grocery store shelves are empty, a not inconceivable event considering that most American cities hold a food back-stock of no more than a week or two in our "warehouse on wheels" system of regular deliveries by diesel-fueled semi-trucks. Farming takes time. The learning curve for newbies is steep. Soil-building is an investment of years, not months or weeks. Figuratively speaking, the time to start was yesterday.

If we were heeding the flock of canaries keeling over in the coal mine of our society even as we speak, we would be ripping up turf left and right and planting gardens right now. Property owners would see that their aesthetic notions are a luxury they

can no longer afford and would be begging, "Please plant here!" City governments would be suspending zoning laws that disallow farming, striking down neighborhood covenants that prohibit gardens and offering public parcels for cultivation.

But that is not the society we have, nor—do I suspect—is it the society we are likely to have any time soon, which is to say, by the time we need it.

Urban farming, then, cannot be said to be a possible answer when the relevant questions are not even being asked.

Of course, within the context of our multiple, intertwined crises, there are deeper questions to ask than those that can be answered with words like "urban farming," or, for that matter, "solar panels," "higher unearned income tax rates," or "certified organic." An electric car charged up on wind power is still a killer on the road; it'll murder jack rabbits in the desert, squirrels in the city, or cats in the country the same as any gas guzzler.

The most radical voices are advocating for the total dismantling of civilization (which is to say, the entire agro-urban way, "civis" being Latin for "city") and a "Return" to the pre-agricultural ways that are the only truly "sustainable" ones. Given the comparative track records—10,000 years of the farm/town complex, attended by brutal religions, genocidal wars and ecocidal lifestyles vs. 200,000+ of gathering/hunting, defined by a light touch, steady-state technologies and a cooperative, creative participation with earth's dynamic equilibrium—I'd say they're right. The truth will ultimately be discovered by the survivors of this undertaking known as civilization, if any remain.

Who Will Feed the People?

Obstacles to Small-Scale Farming in the USA

"In the future, more people will have to grow their own food" has become a truism among pundits and observers who are paying attention to the changing state of Western industrial civilization, and of the US in particular. Declining energy resources, ecological degradation, and global financial dissolution are a few of the trends that are and will be impacting agriculture-as-we-know-it, and forcing agriculture-as-it-will-be.

That chemical-based farming is a failing experiment has been well-documented elsewhere; numerous books and articles have explored declining soil fertility, chemically-resistant weeds and pests, the tainting and depletion of irrigation water, the shrinking diversity of seeds, the dangers of genetically modified crops, and the plummeting nutritional value of fruit, vegetables, and grains. I will not reiterate these issues here, except through examples that address my points, which concern the future of agriculture.

The "need" for a smaller-scale, non-chemical-based agriculture is clear. So are the attributes that it must have. This agriculture will be regionally-based, because the means for shipping produce around the world will no longer be profitable. This agriculture will be based more on animal power (two-legged and four-legged), because machines will be few, and the fuel for them too expensive or unavailable. This agriculture will focus on soil-building rather than chemicals, because the chemicals are sourced from the same raw materials that make the fuel. This agriculture will break with mono-cropping over hundreds of acres and instead utilize small parcels inter-cropped. And, this agriculture will have to involve much more than 2% of the population, even if that population is in decline.

I must mention that, in my opinion, the forces at work in the world today—energy, ecology, economics—are of such a large scale and their inertia so powerful that we are being coy when we say we "need" to switch to a smaller-scale, non-chemical agricul-

ture. I suspect that we "will be" making that switch, like it or not, planned or not. No need to rally for the ball that was tossed in the air to come back down. It's on its way, like all things that go up. But the transition—the beginning of which we are living to see right now—is a very tricky one, to say the least!

Despite appearances—which include the mainstreaming of "Organic," and the growth of farmers' markets, CSAs (Community Supported Agriculture), and urban agriculture—very little fieldwork (pun intended) is happening that meaningfully addresses the emerging challenges of our time. A "100 mile diet" for more than a few "sustainability" geeks is still the stuff of fantasy. The mega-farming system born of the 60's "Green Revolution" is still what puts food on the table of almost everyone in the US

I am a farmer in Oregon's Willamette Valley. This season* I have partnered with two other farmers† and we are working about seven acres together, trying to grow vegetables, medicinal herbs (not marijuana) and staple crops such as legumes and grains. In the recent past, we were urban farmers in Portland, growing produce for our CSAs in little yards and empty lots while experimenting with staple crops on larger suburban and exurban plots.

Among us, we have over ten years of farming experience, a botany degree, and work in the restoration field, as well as above-average intelligence, impressive resourcefulness and a dawn-to-dusk work ethic rarely seen anymore these days in the US (at least among white people). We are not trying to get $-rich, but we are not idealistic money-haters. Until the seed-and-feed, gas station, and hardware stores take barter, we need the cash. We do not limit ourselves to a single doctrine, such as permaculture. We are unconcerned with the pettiness of politics or the vagaries of the nation's culture. We are simply people who are aware of the emerging food crisis, and want to see what it takes to grow a sustenance-providing amount of food and medicine for ourselves and a few friends and family who threw investment our way.

We are farming on land that was formerly used for grass-seed production, and has been hammered with chemicals and big machines for decades. Over 50% of the cropland in the Willamette Valley is planted in grass-seed, so the lessons we are learning are potentially valuable for future farmers who will be attempting the same in this area. But the issues we are facing—lack of soil fertility, residual chemical effects, out-of-balance insect populations—will be found across the nation for anyone trying to farm on land that was conventionally abused.

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* *2011*

† *Clarabelle and Angel*

While in the city, my bicycle-based CSA operation gained much media attention (see this, this & this), so I was able to raise enough resources to give urban farming a very serious try. Unlike most urban farmers, I did not have rent or other bills to pay, so was able to devote myself full time. Having thus immersed myself in the practice, theory, and context of agriculture, both urban and rural, for the last several years, the following eight obstacles to sustainable farming have become obvious to me.

1. Not Enough Farmers

Less than 2% of the US population is directly involved in farming. Two hundred years ago, it was over 90%, and as recently as the 30′s it was still 40%. Increased mechanization and cheap fuel were the paired enablers of this historic shift to giant farms manned by a handful of people. The so-called "Green Revolution" of the 60′s, with its "better living through chemistry" was the hammer that nailed shut the coffin on small-scale farming, which has been dying a drawn-out death in the decades since. Despite a small uptick in the number of small farms over the last decade—due largely to the Organic trend—most agriculture is still huge and corporate-run. The population of the US and much of the world is utterly dependent on this system for sustenance, and will remain so while any transition takes place.

This 2% will have to grow, but how? Who wants to give up a working week of five 8-hour days for one that is seven 12-16 hour days? Who wants to give up a regular check for financial uncertainty and perhaps impoverishment? Who wants to give up their city socializing and entertainments (both increasingly electronic)? Or maybe their electricity and hot running water? Not most people I have met, whether the proposition is to farm in the country or in the city.

Many Portlanders I met were inspired by the urban farming beginning to take place in the city, and some dreamed of Havana. As portrayed in the film, "The Power of Community," a radical rearrangement of agriculture took place in Cuba after the fall of the Soviet Union and the attendant loss in resources. Non-chemical farming became the only viable option, and the practice of urban farming grew dramatically. The makers of the film claimed that Havana was now growing over 50% of the produce it consumed within its own city limits. Impressive and inspiring, on the face of it.

But Portland is and was not Havana. A few dozen people starting CSAs and selling to restaurants does not a food revolution make, and besides, Cuba's very different style of government was likely the major steering and empowering force in that shift.

Most Portlanders would probably not appreciate the contrast in ownership models, etc., used on that island, were they to be imposed to them and their neighborhoods (which is not to denigrate Cuba or its response in any way).

Portland is a hypey town, and the press that urban farming got made it look much more impressive than it was. I know this from reading the articles about myself and my own operation, all of which but one had glaring errors that presented things not quite like they were. One result of the press coverage was that people made the assumption that "OK good, somebody's taking care of that," and went on with their days.

But no, nobody's taking care of that yet, really. Urban farming has still not attracted enough practitioners to be taken seriously.

2. Lack of Equipment for Small Scale Farming

Suppose you want to plant an acre each of wheat, soup beans, and millet. How does one plant, cultivate, harvest, and process crops on this scale? Wheat can yield over two tons per acre, beans and millet half a ton each. You can't efficiently seed plots of these size by hand. Or weed them, or harvest them, or thresh and winnow them. Not without a lot of people, that is, and the days are over when the whole village would drop what they were doing and turn out to bring in the harvests from the fields.

The vast majority of machinery available on the market today in the US is geared toward the hundreds, or thousands (or even hundreds of thousands) of acres. It's too big to move around in such a small area.

The equipment needed for small acreage farming is no longer manufactured in the US, and hasn't been on a mass scale since the 70′s. Most of the old stuff is sitting in rusty heaps at the edges of fields or has been re-purposed as "yard art." Earlier this season, we watched helplessly as scrappers hauled away an old combine they had found in the blackberry brambles on the property we are farming. Being lessees, we were unable even to buy enough time to see if it was repairable, but we saw pieces go by that could have been used on their own for seed-cleaning at our scale.

Equipment for small acreage farming is still manufactured and sold in other parts of the world, including Europe, China, and India. The technology has continued to develop in these places, with new innovations improving on tried-and-true designs. We farmers have drooled over the beautiful machines that Ferrari is making. But the cost of purchasing and shipping this equipment to the States is a prohibitive factor for our operation.

The Amish and a few hobbyists have been keeping alive draft animal practices, but these folks are also few and far between.

Animal husbandry is not a skill learned overnight, and, as with vegetables, some heirloom breeds that are good for field work have been lost or are dwindling.

In the city, the situation is easier, because the plots are usually small enough to be polished off with a walk-behind rototiller. Here, too, there are serious quality issues, and the best machines are made overseas, many of them in Italy. Regardless of how good the equipment is, some knowledge of small-engine repair will really help the farmer, especially to avoid costly by-the-hour fix-it shops, who might or might not do the job right.

Additionally, for farmers rural and urban, parts could eventually become an issue. If the economic fabric frays to the point where shipping becomes expensive, then the next skill the farmer will have to take up—or better yet, find in someone else who wants to barter for food—is metal fabrication, including welding. If you don't feel like picking up a pitchfork, consider enrolling in a VoTech.

3. Lack of Knowledge about Small-Scale Farming

The knowledge of how to grow on a smaller scale is also disappearing. The average age of an Oregon farmer is 67. If he (usually) even remembers how things were done before, who knows if he is capable of changing, or if there are enough of him around who are willing or able to teach younger people. The big equipment he uses cost hundreds of thousands of dollars and isn't paid off yet. What else is he supposed to do? Federal agricultural subsidies aren't going to Grandpa Grass Farmer; they're going to ConAgra, Cargill, and Archer Daniels Midland.

We have the pleasure of knowing the farmer in our area, Harry McCormick of Sunbow Farm, who founded the Willamette Valley Grain and Bean Project. Harry has been farming near Corvallis since 1972, and has a wealth of knowledge and experience about growing horticultural and field crops. He started the Grain and Bean Project a few years back to try to help farmers get out of the grass-seed business and start growing food. Thanks to his efforts, thousands of acres are in transition, but that's not as impressive as it sounds. Harry himself describes this work—cultivating staple crops on a small-scale basis—as "fringe."

Old USDA publications from the early 20th Century (and earlier) will become more useful again, as they describe in detail many practical, reliable techniques that don't involve 40+ foot wide combines.

4. Lack of Financial Resources

Will there be a Marshall Plan for small-scale agriculture in the US? Not from a president who appointed someone from Monsanto to the USDA.* How about from the cities, counties or states? Nope. They're going broke and cutting essential services already. The private sector? There's no money in it. The non-profits with their grants? Only if you fit their ideological stripe and promise to play by their rules. Ralph Nader's bizarre vision of the super rich saving us is only slightly less far-fetched than the idea that the Galactic Federation will be raising us to the next level of consciousness in December 2012.

Though I had no difficulty selling shares to my produce CSA in Portland (and could in fact have kept a long waiting list), I have not had similar success with raising funds for our current project. I don't know why, for sure. Possible reasons: Staple crops and herbal medicines, delivered once at the end of the season, doesn't offer the same gratification as twice-weekly produce. Or, grains and beans lack the trendiness of urban farming, which in Portland has reached the status of sexy (for which I will gladly accept some credit!). Or, having moved to the country, I am now out-of-sight and out-of-mind. Or, I was just too outspoken for some people's standards, and their self-obsession led them to take personally what I meant culturally. Who knows?

The bottom line is that there ain't much of one. In our case, the only way we were able to invest as much as we have (a low five-figure amount), is because one of us had an inheritance from a recently deceased mother to draw on. Which is not exactly what most people would wish for, or that many can even look to as a possibility. Going into this year's season we had seeds, tools, books, and other hard-good resources (altogether worth another low five-figure amount) only because we had invested in those things so well during the urban farming years. We were not starting from scratch. In these ways, we had a financial and material advantage that other people can't count on.

Not that these resources have been adequate to the task; they haven't. We estimate that our project could only be truly effective if we had a low six-figure sum for a three year period. Who is going to hand that out, to tens of thousands of farmers across the nation?

5. Lack of Market

One farmer in the Grain and Bean project is sitting on 17,000 lbs. of garbanzo beans because he could not find a buyer willing to

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* *Obama.*

pay a reasonable price. While the big boys are continuing to be subsidized—not just by the USDA, but by the US military holding control of various regions and their resources—the non-chemical farmer coming up in this country is unable to compete on price.

One year in the city, I calculated that my hourly wage was something like 5 cents. Even in a so-called "Foodie Town" like Portland, it was challenging to find a market for my produce. Most consumers, including restaurant owners, are still shopping for produce with a list in their hand, rather than learning from the farmer about what can and can't be grown in their region. On the first hot day of Summer, which happens sometime in late June in the mild Northwest, everyone wants tomatoes, watermelon, and corn. Never mind that those crops are still 2-3 months away at that time of year (if they finish at all).

The farmers bring some of this on themselves, by choosing to cater to perceived customer desires, rather than by concentrating on what grows best and presenting a balanced, nutritious diet to the customer and educating them about it. For example, the Pacific Northwest is the best place in the US to grow parsnips: the roots can winter in the ground and don't need to be dug up and stored, and, the sweet flavor comes out only after a couple-three freezes, but the ground doesn't get cold enough to kill them. For this second reason, California parsnips never taste as good. The temps just don't go down enough. Here is a delicious—almost sugary when roasted—vegetable to get you through the winter, along with carrots and turnips also from the ground through the cold months, and very few Oregon farmers are growing them.

Even if you grow something people want, making a profit is still a challenge. Restaurant owners want to pay a wholesale price that compares well with Cash-and-Carry, and farmers' market customers are often looking for a bargain, too. Farmers' Markets can be expensive to attend for the starting-out farmer, what with the costs of a tent, table, bags, a legal scale, etc., and (often) mandatory liability insurance. Most Farmers' Markets would more accurately be called Farmers'-Market-Manager-and-Their-Non-Profit-Board Markets, as they have become highly regulated structures, making demands of farmers in the interest of creating their own personal vision of a market that matches their effete tastes. Gone are the days when you could just drive a truck up and sell produce out of the back, with no cost except gasoline and a tarp.

6. The Wasteland Left Behind by Conventional Farming

Much of the farmland in the United States is a wreck and not ready to eat out of. Here in the Willamette Valley, over 50% of

cultivated acres are in grass-seed. Another sizable percentage is in Christmas trees, for which very poisonous chemicals are used, including Atrazine, a ground water contaminant. Nurseries of ornamental plants account for another chunk. Only 5% of the Valley is in food production. That's a lot of poisoned, not-ready-to-farm real estate.

We are seeing first-hand the issues in making a grass-seed-to-food transition, and the picture is sobering. The first thing we discovered is that you can't simply till the grass under and plant. The list of crops that can grow unaided in our particular toxic circumstance doesn't go much beyond Jerusalem Artichokes, Chicory and Horehound. Soon after arriving, we transplanted healthy perennial medicinals into the ground and watched as they turned red immediately. Some grew out of it, some did not. They have all been stunted and in some cases misshapen. These were the kinds of plants that are said to thrive in poor soils, and which we had never amended before. Tough old birds reduced to clipped weaklings. Sad to see.

Without the money to amend all the soil, we took to carefully dressing each spot or row where we would be seeding or transplanting. This has worked somewhat well, but is not a farming-technique that I would recommend. The result has been a field that is still predominantly infertile, with little "pots" of short-term fertility plugged into it. An act that's difficult to follow the second season, and not at all a long-term solution.

We were able to get a list of the chemicals used by the grass-seed farmers. Broad-leaf herbicides, 10-10-10 fertilizer, fungicides, and growth regulators were their main tools, with Round-Up at the end of the five- to seven-year planting cycles. A toxic brew, to be sure, but not nearly as intense as what people will find at sites where other crops were farmed.

The effects of these chemicals are persistent, even when the chemicals themselves are (allegedly) not. Fungicides take out the mycorrhyzal bacteria so important for healthy root growth, and must be re-introduced. When artificial nitrogen is used, the nitrogen-fixing bacteria in the soil stop fixing, and must be restarted. When broad-leaf herbicides are used, the diversity of plant life becomes constricted to those tenacious weeds that can survive the pounding, and their vigor in the absence of chemicals can quickly overcome the organic farmer's new crop.

Cover-cropping and other methods could eventually fix these hurting lands, but they take years. So, when people realize that they can't wait any longer to switch to small-scale, non-chemical farming, will it be too late? If it's going to take empty shelves in stores to make more farmers, then the future will bring starvation.

Interestingly, we found that the soil in the city was much cleaner and more productive than any of the country land we have worked (five different locations). The image in city minds of a pristine countryside is false. Many agricultural chemicals are flat illegal to use in urban areas. Nope, the country has become a toxic wasteland, and people have another thing coming if they think we'll just be able to fan out into the fields around the cities and start growing our own food when the machine breaks down.

7. Climate Change

The apparently more common instances of extreme climate events such as droughts, floods, and fires are leading to crop losses around the world and in the United States. Some people claim that Climate Change isn't real, but as a farmer who closely observes the local weather, and who keeps up-to-date about other farmers' weather, it is clear to me that we definitely are in a period of increasing climatic instability as relative to immediately preceding decades.

Hundreds of hours of work and many months of growing can be wiped out by an early frost, a record heat-wave, or an unseasonable rain. You can't eat your insurance policy, even if you have one. This year, in our location, we experienced precipitation high above average in March, April and May, preventing tilling and hence the planting of spring grains. Then, in June, we got rain twice, the second time only a sprinkle. In July, we had one two-day rain event. Last year, the rains didn't stop until early July, also preventing tilling. Then the October rains started in September. Going back season-by-season, each year of the last six has been marked by different extremes of wet, dry, hot and cold, all considered atypical. So, abnormal is the new normal, which makes it very difficult to plan, and to plant.

Historically, agriculture has been marked by famine on a regular basis. That the US has not experienced widespread crop-failure since the Dust Bowl is an historical aberration. With the floods in the Midwest and the droughts in Texas and the Southwest, perhaps we are witnessing the end of that lucky streak currently. In any case, the drama of weather will play itself out region-by-region, farm-by-farm, farmer-by-farmer, and does not seem likely to be easily predictable.

8. The Social Challenges

Sometimes when I'm out there in the field doing repetitive and arduous by hand because there's no other way to do it (sometimes because that's just how it's done and always has been done), I find myself wondering, "How do people think we are

going to switch from conventional to 'sustainable' agriculture?" The on-the-ground facts paint a picture of mind-boggling challenges, tangled (by nature) logistics, steep learning curves, tremendous labor, and radical lifestyle change for which no one seems ready.

The people of the US are, by and large, the pampered children of Empire, unaware of and uninterested in their own privilege, taking their war-won comforts as an entitlement and their narcissism as a birthright. For much of the rest of the world, the view is different: the globe is a plantation, its people slaves, and the US is the master's house on the hill. The flabby inhabitants of that mansion don't want to go out into the fields for fear of getting their hands dirty. Or chop their own wood, or carry their own water, or so on.

Why does this matter? Because although we are all individuals, we are all—whether we like it or not—"in this together." U. G. Krishnamurti put it in terms of the cells in the body; each cell is its own individual entity, but each cell is dependent for its survival on all the cells immediately surrounding it, all of which are dependent on the cells around them, etc. There is no going-it alone. "Rugged individualism" has always been a myth.

When it comes to my own current dedication to farming, I have personally experienced what I can only describe as some kind of instinct with a species-centered focus, to work on our collective survival. I do not consider myself better or worse than anyone else for choosing this work. There is not for me a political, philosophical, or sentimental motivation. I offer no vision and have no hope. And I do not believe that I will survive difficult times just because I am knowledgeable. I say all this to dissuade you from your own delusions of hope, if you have any.

Wishing, praying, or (*à la* the New Age) "manifesting through intention" does not grow food. Neither does hard work on a piece of land if the soil is poisoned, or if you lack equipment or resources, or if the weather knocks you for a loop. Those are the circumstances that all the farmers, old and new, will be facing. Agriculture has always been a crapshoot, and it looks to me like the odds against it are rising.

The Mark of Malice in California's "Emerald Triangle"

Cannabis farming in the context of settler colonialism

Marijuana is the biggest cash crop in California[28], a state that would have the sixth largest economy in the world if it were an independent nation. As such, *Cannabis* agricultural operations have significant effects, environmentally and socially, within the state and beyond. A major portion of the crop is grown in the "Emerald Triangle," which is comprised of Humboldt, Mendocino and Trinity counties along the northern coast. Although that part of the state is sparsely inhabited and appears wild or even untouched, in fact it has been abused for well over a century and a half, and the mark of malice lies undeniably upon it. Waves of destruction, both genocidal and ecological, have swept through the region, and the "Green Rush" of recent years has brought more hurt, and none of the healing that the land cries out for.

Much of the Emerald Triangle is also Redwood Country. The Coast Redwood, known botanically as *Sequoia sempervirens*, is the tallest species of tree in the world, regularly growing to heights of 150-250 feet, with some specimens exceeding 350. The source of their name might be "Sequoyah," a famous Cherokee man, though he did not live in the area, and the connection is unclear.[29] *Sempervirens* is Latin for "always green" or "evergreen," which describes the needled foliage. Until about 5,000,000 years ago, the distribution of the species was "cosmopolitan," meaning that these trees were found all around the world, including Asia and Europe. Climate-related factors such as ice ages eventually reduced the Redwood's habitat to a narrow strip along the California coast (with a few groves in southern Oregon).

I first visited the Coast Redwoods of northern California as a six year old on a family vacation. I was astounded at their size, towering over me. The memory has remained bright though that was over four decades ago. The next time I saw them was in 2005, traveling as a videographer for Indymedia, in the happy company

of direct-action forest-defense activists. I was astounded again. Yes, the trees are tall—almost unfathomably so—and yes, they are wide—almost unbelievably so—but it was the quality of the air in their midst that most inspired me. Every inhalation was an enlivening revelation, so vibrant and full, almost as if I had never breathed before. How could something invisible be so substantial? The word "magical" is over-used (and misunderstood, too), but it comes readily to mind around these magnificent beings.

At the time of the Gold Rush, in 1849, Coast Redwood habitat covered a little over 2,000,000 acres. Now, only a few island-like fragments remain. Loggers cut down 96% of the trees. That's right: *less than 5%* of these trees survived the European onslaught. Left only to their own devices, I have little doubt that the loggers would have taken every last tree larger than a sapling. Fortunately, a few extraordinary individuals purchased multiple tracts of forest early in the 20th Century and set them aside to be spared from the saw. Following their example, governments instituted parks at later dates. In the late 1970's, Jimmy Carter's administration proposed expanding Redwood National Park by 48,000 acres, protecting any trees there from timber activities. In response, citizens of Orick, a logging town in Trinity County, carved a giant peanut from a Redwood log—over twelve feet long, six feet tall and weighing nine tons—and brought it to Washington, D.C., to present it to Carter in protest. Their message: "It may be peanuts to you, but it's jobs to us." The park was expanded regardless and the giant peanut, now over forty years old and looking a little worse for wear, is on display, so to speak, in a gas station parking lot at the southern end of town. Few now know what it is.[30]

Coast Redwoods are among the longest living creatures on earth, with normal lifespans of 1200-1800 years, and some individuals surviving into their fourth millennium. Had the citizens of Orick gotten their way and been allowed to cut down the set-aside trees, how long would they have economically benefited? Twenty years? Ten? What if it was a hundred? Would that have been a decent trade? The temporary support of a few individual humans for the lives of beings that regularly last longer than the whole birth-to-death histories of entire human civilizations? There are Redwood trees who were saplings when Rome was founded and who were cut down—perfectly healthy—by Europeans as soon as they saw them. But not because they "had to." Were some humans housed or warmed by the wood? Sure, but most of it was cut simply for profit—"without even the bad excuse of feeding the fires," as Treebeard grumbled in Tolkien's *Lord of*

the Rings—and enriched a small class. Yes, some people had "jobs" too but that period of time was short.

Orick is one of many old mill towns on the US West Coast that are half dried up and blown away. It has no real reason to be there anymore. This is how resource-extraction economies function. What is to be done with these places?

Before the European invasion, a substantial number of Native American peoples inhabited the area, among them the Wiyot, Yurok, Hupa, Karok, Chilula, Whilkut, and the southern Athabascans, including the Mattole and Nongatl. Their diet was comprised of acorns and other seeds, roots and greens, and fish and game. They made use of fallen Redwoods for constructing houses and making canoes but other parts of the tree were also valuable to them. Medicinally, the bark was employed as a blood purifier, for jaundice and to treat syphilis; the leaves were applied as a heated poultice for earaches; and the gummy sap was mixed with water and drunk as a tonic for "rundown conditions." The smaller roots and burl sprouts were handy in basketry and girls played with dolls they fashioned from pieces of bark.[31]

Like other non-agricultural Native Americans elsewhere on the continent, the tribes of northern California worked with their landscape to improve its food production. They accomplished this primarily through fires, which they set in the Oak savannas near the Redwoods. Clearing spaces this way encouraged berry bushes, rejuvenated grasses that bore seeds and plants that were useful for basketry, and left behind scorched grasshoppers to gather. Setting low-intensity fires on a regular basis burned off excess fuels, which prevented high intensity fires that could kill the older, acorn-bearing trees. Fire also kept acorn-eating insects such as weevils in check and held back Firs. Finally, fires helped with hunting by increasing the supply of post-fire plants that were eaten by Deer and other game, and by improving visibility for hunters.

Compared to agricultural societies like the invading Europeans, the touch applied to the land by Native Americans was light: cooperative rather than extractive. They were participants in a dynamic equilibrium. This was "wildtending."

So no, the desolation of places like Orick is not inevitable. When people gathered and hunted with no permanent abode, they didn't have this problem. When acorn season was over, you moved on from acorn camp. Or pinenut camp, or berry camp, or salmon camp. Nobody stuck around in the root digging place after the roots were dug. And nobody ravaged these areas, either. Such places of abundance were treated carefully for the benefit of the community, a community that was not limited to humans.

But this lifestyle was not admired or imitated by the rapacious newcomers and it was brought to an abrupt halt by the Gold Rush, which started in 1848. Over the course of the next seven years, over a quarter of a million non-indigenous people flooded into California, mostly from the US but also from Europe, Latin America and Asia.

> *The initial contact with native peoples was gruesome. The newcomers pushed the American Indians off their land, hunted them down, scorned, raped, and enslaved them. Resistance—and many of the American Indians did resist—was often met with massacres. Militia units composed of unemployed miners and homesteaders set forth to rid the countryside of 'hostile' Indians, attacking villages and, in many documented cases, slaughtering men, women, and even infants. Upon their return, these killers were treated as heroes, and paid by the state government for their work.*[32]

These events were not secret. The Wiyot massacre, on Tuluwat Island (now Indian Island) in Humboldt Bay on February 26th, 1860, was reported in the *Northern Californian*, the local Arcata newspaper, at the time:

> *Blood stood in pools on all sides; the walls of the huts were stained and the grass colored red. Lying around were dead bodies of both sexes and all ages from the old man to the infant at the breast. Some had their heads split in twain by axes, others beaten into jelly with clubs, others pierced or cut to pieces with bowie knives. Some struck down as they mired; others had almost reached the water when overtaken and butchered.*[33]

Between 80 and 250 Wiyots were murdered. This massacre was executed in coordination with attacks on other Native American settlements in the nearby countryside that killed an additional 58, 40 and 35 Wiyots, respectively. It was settlers, not soldiers—organizing themselves under the name, "Humboldt Volunteers, Second Brigade"—who were the culprits. Many of the surviving Wiyots were rounded up by soldiers from Fort Humboldt and removed to the Klamath River Reservation. This was a pattern that had already repeated itself endlessly from east to west during the expansion of the US: settlers took the lead in driving out Native Americans with the army sent in to back them up. Criticism by other settlers was discouraged; local European writer, Bret Harte, who condemned the Wiyot massacre at the time it occurred, was soon forced to leave the area due to death-threats.[34]

The Gold Rush was also responsible for much environmental degradation. The first phase was "placer mining" in which gravel is sifted in running water for flakes and nuggets. This phase included "panning" for gold by individuals in streams. Soon this phase was played out and next came dams, dredging and—worst of all—hydraulic mining, in which entire hillsides were washed away with high pressure hoses. The resulting sediments clogged waterways and buried agricultural fields downstream. (Fields that had themselves replaced wetlands or indigenous harvest and hunting grounds.) A witness at the time described a typical scene: "Certainly by no other means does man more completely change the face of nature than by this method of hydraulic mining. Hills melt away and disappear under its influence... The desolation which remains...is remediless and appalling."[35] Mercury was also used to separate gold from other rocks, and some streams and lakes in California are still tainted with such high concentrations that eating the fish is unhealthy. Though other parts of the state were hit harder for gold than the Emerald Triangle, as a region it was quickly overwhelmed by the waves of newcomers and their marauding.

In the century and a half since the massacres, the mining, and the logging, a mythology has arisen in which the conquerors' rapaciousness is cast as "hard work" and their killing as "bravery." This grotesquely misleading narrative lives on in every statue of Paul Bunyon—like the one on the 101 north of Klamath in Del Norte County—and in all the "commemorative" events—like "Frontier Days" in the town of Willits, in Mendocino County. This version of history must be recognized for what it is: propaganda. Instead, we should collectively turn our attention to, first, acknowledging past crimes and offering reparation for them, and second, eliminating any present policies and practices of injustice and destruction, of which there are many.

The "Green Rush"

In the 1980's, in response to Reagan's successful throttling of Mexican Marijuana smuggling, people in northern California began growing more *Cannabis*. Many were back-to-the-landers from the 1960's and 70's who had purchased ranch and timberland when it was very cheap. Back in those heady days, growers could sell a pound of weed for $5000, but the work was risky. Not only were legal punishments harsh if you got caught, but violence was part of the scene.

With the 1996 passage of California's Proposition 215, which legalized Marijuana for medical use, these back-woods efforts ballooned into a multi-million dollar industry. Residential elec-

tricity use in Humboldt County rose 50%.[36] By the 2000's, people were referring to this trend as the "Green Rush," with no apparent awareness that the original Gold Rush had been defined by ecological devastation and genocide.

Yet, the appellation is apropos; it's the same song, different verse, in a history of abuse. The *Cannabis* industry is not kind to the environment, as has been well-documented. Springs are sucked dry during the summer, killing fish and harming other fauna and flora. Streams and rivers are polluted with pesticides and fertilizers, affecting entire riparian ecosystems. Wildlife is killed by rat poison placed out to protect the plants from predation. Energy-use and its attendant carbon emissions has soared to heat grow rooms and greenhouses, drying sheds and trim shacks. Light pollution from lit-up grows has marred the once dark, star-filled nights. The landscape is littered with plastic: pots, hoop-house coverings, irrigation lines, harvest tubs and netting. Acres of trees are cut down to make clearings for what are euphemistically called "gardens."

As in the wider agricultural world, a small number of pot farmers grow their crop organically without the use of chemical pesticides or fertilizers. Most, however, use conventional methodology. Some growers have even used products manufactured for lawns or other non-food crops that are not intended for human consumption, according to the Huffington Post, which also noted that, "medical *Cannabis* samples collected in Los Angeles have been found to contain pesticide residues at levels 1600 times the legal digestible amount."[37]

Marijuana is a thirsty crop. The standard estimate is that each outdoor plant takes 1 to 6 gallons of water per day during peak size and growth, which is in the summer. While drought has become the new normal in California, pot growers have been taking so much water from local rivers and creeks that wildlife are being adversely affected and in some cases water flows are ceasing entirely when it is hottest and driest. According to the Redwood *Times-Standard*, the federal government considers Humboldt County's Marijuana industry to be "a threat to coho Salmon" due to its overuse of water. The Eel, Trinity and Mattole Rivers and Redwood Creek are all considered "heavily impacted by Marijuana grows." Salmon spend their first year in freshwater before swimming to the ocean, so when a stream runs dry, they have nowhere to live.[38] This is assault on a creature already endangered from the previous century and a half of mining and logging.

According to *The Guardian*, the California Department of Fish and Wildlife "saw the amount of land used to grow Marijuana approximately double from 2009 to 2012." With this expansion, the

impact on wildlife has been "significant." "[F]our of five streams in the research area that reach Marijuana farms went dry last summer. The only stream that didn't wasn't a source of water for the crop." Individual growers are not necessarily breaking any laws in their water use. Says the Guardian: "California's water rights law doesn't specify how much or at what rate those who live along a stream can draw. Those property owners can draw as much as they deem reasonable for domestic use, and they don't have to meter how much they take."[39]

The Independent, a newspaper published in southern Humboldt county, reported on the some of the environmental effects of "trespass grows" (when Marijuana is cultivated on public or private timberland, unbeknownst to the owners):

> *A team of government agencies and non-profit groups cleaned seven trespass grow sites in Humboldt and Trinity counties and documented their environmental impacts. [Dr. Mourad] Gabriel [executive director of the Integral Ecology Research Center] said the sites diverted over 65 million gallons of water from the Trinity River and used over 8000 pounds of fertilizer, 104 pounds of rodenticide and 560 gallons of insecticide.*

Gabriel's field research since 2008 has focused on studying the effects of rodenticides on Pacific fishers:

> *"We have a serious issue here, an issue where now we're having additive mortality and take of a species proposed to be listed," Gabriel said. "And all these mortalities are specifically from toxicants utilized at Marijuana grow sites." ...Exposure to toxins has also been confirmed in insect and soil samples, he continued, demonstrating an over-all "contamination of the food web." ...[Humboldt County] Supervisor Mark Lovelace said the findings at trespass sites are probably also relevant to grows that are "otherwise legal." Gabriel agreed. ...With an estimated 4,000 plus grow sites in the county, "I think it would be naive for us to say that all of those are clean," Gabriel continued.*[40]

But won't legalization set safety standards that prohibit poisonous substances? That's the idea, but we'll see how well the standards are followed. Canada is way ahead of the US in terms of legalization and regulation and three dozen or so large corporations dominate the market there with industrial-scaled growing operations. The rules are tight but in 2017, product from one of these corporations was found to be contaminated with myclobutanil, which produces hydrogen cyanide when it smoked or heated, which of course is what most people do with Marijuana.[41]

Of course, regulatory agencies are typically controlled by the industries they're ostensibly regulating. The revolving door between the two is a busy one. Rules are promulgated but are watered down; penalties are set but not levied; standards made but not enforced. If any meaningful limitation happens, it's when citizens can apply enough pressure (by whatever means necessary) to force the government to follow its own laws. Of course, the channels for citizen involvement are also being increasingly constricted. Besides all that, you've got plain old-fashioned palm-greasing. In 2017, I heard about a county inspector who was "essentially taking bribes" to grant passing marks.

Perversely, new rules could also end up promoting environmental abuse. For example, as they stood at the time of this writing (February 2018), *Cannabis* regulations in Humboldt County encourage clear-cuts.[42] If your property is zoned TPZ (Timber Production Zone) then you are *only* allowed to legally grow Marijuana within a single three-acre area that is either already open (such as a meadow) or is a "conversion exemption area," i.e., forest converted to agricultural use, i.e., a clear-cut. Humboldt County is rugged, hilly land, much of it densely forested and designated TPZ. Many thousand *Cannabis*-growing operations already exist in TPZs so the potential is great for clear-cuts throughout the county, with the cascades of environmental disruption that follow them. Humboldt's regulations are widely recognized as being pro-"Green Rush": which is to say, quite business-friendly and a far cry from "green."

Agriculture and the mistreatment of women have gone hand in hand since farming's birth.* In the Emerald Triangle, sex trafficking increased with expansion of the *Cannabis* industry. The local press has documented stories about women who are brought to remote farms and forced to provide sex as well as farm work. The number of calls received by Humboldt Domestic Violence Services increased by about 80% from 2011-2015.[43]

The year 2021 is frequently mentioned by growers as when "everything will change." They are referring to verbiage in Proposition 64—the 2016 ballot initiative that legalized Marijuana for recreational use in California—which "ensures the nonmedical Marijuana industry in California will be built around small and medium sized businesses by prohibiting large-scale cultivation licenses *for the first five years*"[44] [my emphasis]. It is widely believed that "large-scale cultivation" will move the crop down out of the hills and into the Central Valley (which would be ironic since those counties voted against Prop 64). I have mixed feelings about this. First of all, if Marijuana cultivation declined in a big

**See "Agriculture and its Discontents, Part 2," in this volume.*

way in the Emerald Triangle, the rivers and wildlife would get a break. More water flow for the fish; fewer traps to kill mammals and birds; less spraying to exterminate insects; etc. But on the other hand, why are the valleys always the sacrifice zones? So few wild places are left in the well-watered lowlands that Agriculture always covets and claims. As much as the forests of the hills have been chopped down, so too have the prairies and wetlands been plowed under and drained, and to a worse degree actually. Farming's footprint needs to be reduced not expanded.

And if we are to reduce the space dominated by agriculture, how will we make those choices? Food and medicine are certainly necessities, and ornamentals and export crops not so much, obviously. The efficacy of *Cannabis* for certain health conditions is scientifically proven, and it's medical benefits served as the gateway to its legalization, but it's recreational effects have always been the main draw and are by far the more common use.

I am willing to believe that in earlier decades, Marijuana's potential for personal mind expansion and social radicalization was real. Many, many people thought so, including luminaries like Carl Sagan, who said: "The illegality of *Cannabis* is outrageous, an impediment to full utilization of a drug which helps produce the serenity and insight, sensitivity and fellowship so desperately needed in this increasingly mad and dangerous world."[45]

But Sagan died in 1996 and I think it's reasonable to ask if it's the same substance it was then. Contemporary strains have been bred for a much higher percentage of THC than was present in the rustic stock of the 60's and 70's. More significantly, concentrated forms like "dabs" have become quite popular since 2010. So much so that it's now standard for people in the business to say, only half-joking, that "no one smokes flower [buds] anymore." Some concentrates are so strong that they are nearly pure THC. As it gets stronger, does its potential for transcendence decline? Or has the culture we live in become more hostile to "serenity and insight"? Whatever the case, I'm certainly seeing less "sensitivity and fellowship" around me even though Marijuana use has gone up. Has it become just one more tranquilizer in a society that already offers so many? I also find it telling that the Establishment no longer seems to perceive Marijuana as a threat to the status quo. Could it now, in fact, be helping to uphold it? Are revolutionary sentiments and actions being quelled by the increasingly potent preparations of this plant? Or is our society itself sliding further into apathy regardless?

I totally understand why people living in the US these days might want to numb themselves to aspects of their lives. Social, economic and political conditions are rapidly deteriorating. The

urge to escape can be strong. But I would posit that this "medicine," in its ever more refined form, only provides superficial relief to some symptoms—anxiety, anger, alienation—but does little or nothing to help address their root causes, which are cultural, not personal. And actually, I daresay, the plain truth is that we should *not* be happy, content or satisfied with how things are. As Jiddu Krishnamurti famously said: "It is no measure of health to be well adjusted to a profoundly sick society." Since that's the case, let's stop trying to adjust *ourselves* to society—by plant or by pill—and let's change *society* instead.

The mark of malice

The regional destruction wrought by the rushes for gold, timber and pot are not the end of the story. The system that spawned them, industrialized Capitalism, is just the latest and greatest form of the agro-urban complex that dates back many thousands of years and which, globally, is responsible for human-induced Climate Change, an existential threat to life everywhere on the planet. The other shoe is dropping. Even if we halted everything now, the quality of life on the planet will continue to deteriorate for decades or centuries to come from the effects of our collective actions up to this point. We are riding a train with too much momentum to stop. The only question is: How much further do the tracks go before they run off the edge of the cliff?

As I have traveled in the Western states over the last few years, it has been highly educational, deeply sobering and sometimes enraging to see first-hand the effects of European colonization on this continent: the extractive activities of mining, logging, farming and ranching have so ravaged many places so badly that the original landscape can only be imagined. Reading about destruction, and looking at photos or watching video, is one thing. Actually seeing it in person is another. And, *feeling* it is something else again. Once the heart has experienced it, there is no going back, not without smothering that part of the self that gives awareness in the first place, and that's a path of self-evisceration. Whether we know it or not, we are creatures in connection with all of life—animal, vegetable and, yes, mineral—and we cannot help but to emotively experience—on some level—the consequences of our actions. That is to say, the pain of the world and all its creatures is present within us all.

"Malice" leaves a mark. It is true that ecosystems are regularly affected by disturbances like fires and floods, but such events are cyclical and provide essential openings for the opportunistic creatures who rush in to fill the new—and temporary—gaps. Some beetles have infrared senses that draw them to forest fires

where they lay their eggs in the dead trees.[46] The seeds of certain plants will not germinate until their hard coating is scarified by a flash flood.[47] There are species of pine trees whose cones won't open and release their seeds until they're exposed to fire.[48] These are but three of hundreds of examples of how "catastrophic" events are essential to the health of particular ecosystems. Some of these relationships have only recently been observed by scientists, even as the habitats that host these webs of connection are disappearing.

But nature has no malice. Only some humans do. Malice is the intentional destruction of life, and to hell with everything and everyone else. On my visits to the Emerald Triangle, I have often felt the mark of malice on the land. So many of the forests are all second growth, dense and tangled. The oak savannas are like abandoned orchards, invaded by trampling cattle, and the acorns lie unharvested. The very hills seem to groan tortuously; I could sense it through my skin when I sat on the ground.

I will not say, as some people do, that malice is inherent to human nature. To me, such claims smack of misanthropy, a brand of hatred that is always, inevitably, turned on the self. I will call out this worldview for what it is: nihilism, a philosophy that is only credible in a culture that is profoundly disconnected from nature. As such, it is a philosophy of the privileged and is a luxury we cannot afford.

The history of our species, *Homo sapiens*, dates back at least 200,000 years, and not until the ascendancy of agriculture and its offspring, urbanism, did we take this turn towards ecocide. Imagine this time-line is laid out on a football field and you are standing in one end-zone, looking toward the other: the first 94 yards starting at the far side represent our period as gatherers and hunters. Only the last three yards in front of you is civilization. You'll have to look straight down to see the Industrial Revolution, starting at the last six inches, the post-WWII boom at 1¼ inches, and the World Wide Web at slightly over a ½ inch from the tip of your toe. In other words, the way we live now is the real anomaly. During the vast majority of our history, we mostly lived cooperatively with our ecosystems. Ecocide is the exception, not the rule.

The way forward must include looking back, it is true. But also looking *around*. A few humans, here and there, are still practicing the "old" ways, though they are fewer with each passing year. They carry the last bits of living knowledge (and wisdom) about how to live with the earth sustainably. Will we throw that heritage away because it is not "modern" and would prefer to put our faith in pie-in-the-sky technofixes? Is the lesson of Icarus still unlearned?

And we must look inside, too. The crisis we are facing in the world today is primarily a crisis of consciousness. How is each of us carrying the culture's malice within ourselves and meting it out to in big ways and small to those around us? Will we continue to ignore the pain that it causes? Can we find the strength to face that anguish, and listen to its warning? Time might very well be running short...

Agriculture & its Discontents, Part 2: The Social Dissolution

> *For all the grandiosity, describing it as the greatest advance toward human achievement, for all the rationalizations hailing it as "progress" and "evolution," the tame/wild dichotomy actually initiated a spiral of massive social, cultural, economic and ecological disruption.*—Chellis Glendenning[49]

The Neolithic Revolution radically reoriented the fundamentals of human culture. Some of its inventions were cities, property, writing, taxation and in the Near East, monotheistic religion. The transitions were not immediate. First, humans settled into sedentary villages based on horticulture, which brought one set of changes. Then, after a few thousand years, agriculture proper emerged, driven by the plow and fed by irrigation, spurring more drastic transformations.

In most gatherer-hunter societies, the majority of the diet was the part that was gathered. Such was comprised of roots, seeds and nuts, berries and fruit, greens, and in some places, grubs and insects. All of these had their own seasons, stages and habitats that varied annually depending on natural cycles, the weather and other circumstances. But food was not the only thing being gathered; the botanical world also provided fibers for weaving clothes and containers, colors for painting and dyeing, and teemed with medicinals for treating injuries, easing pain, tending to hygiene, improving vigor and—last but certainly not least!—controlling fertility. Altogether, gatherers had knowledge of hundreds of plants and thousands of factors. This encyclopedic understanding was shared generationally for millennia through an oral tradition that conveyed not merely information but also wisdom. As a result, the practice of gathering was a highly consistent endeavor that dependably provided sustenance, crafting materials and medicines throughout the year.

Hunting meat, by contrast, yielded erratic results. Even when game was predictable—such as during an annual Salmon run or a Reindeer migration—the pattern of hunting as an activity was "feast-or-famine." In some cultures, meat was preserved by smok-

ing or drying it, but the amount that could be conveniently stored or carried was finite. In some parts of the world, gatherer-hunters would never have been daily meat eaters, and during particular times of the year, would have had a predominantly vegan diet.[50]

According to the archaeological and anthropological evidence, gathering was predominantly the sphere of women and hunting that of men. This division makes sense, since babies or small children could accompany gathering activities, but were likely to disrupt hunting. This division was also voluntary, says Gerda Lerner, author of *The Creation of Patriarchy*: "The earliest sexual division of labor by which women *chose* occupations compatible with their mothering and child-raising activities were *functional*, hence acceptable to men and women alike"[51] [emphasis in original]. So, as many theories go, since Paleolithic survival depended on the contributions of both sexes, egalitarian societies were the norm. Roles within a group were based on "linking rather than ranking"[52] and relationships focused on cooperation rather than competition. These balanced forms of culture have also been called "partnership societies" as opposed to "dominator societies," the latter of which are patriarchal. (It seems unlikely that a true matriarchy has ever existed.*)

So the image of the caveman dragging his woman around by her hair is a mythical view of the past, although it's a telling expression of our present day misogyny that this is what we project back in time. Clearly, we are trying to justify what we know is bad behavior.

When humans first settled into sedentary horticultural societies, women often led the fieldwork. This made sense since horticulture's main tool for digging and seeding is the sharpened stick that women had already been using for millennia for digging wild foods (and planting their seeds). As such, social equality between the sexes was still well-balanced in some cultures (at least, taking into account that horticulture required more time

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* *Lerner: "Those who define matriarchy as a society where women dominate over men, a sort of inversion of patriarchy, cannot cite anthropological, ethnological, or historic evidence. I think one can truly speak of matriarchy only when women hold power over men, not alongside them, when that power includes the public domain and foreign relations and when women make essential decisions not only for their kinfolk but for the community. In line with my earlier discussion, such power would have to include the power to define the values and explanatory systems of the society and the power to define and control the sexual behavior of men. It may be noted that I am defining matriarchy as the mirror image of patriarchy. Using that definition, I would conclude that no matriarchal society has ever existed" [*The Creation of Patriarchy, *p. 31].*

and harder work than gathering). An example of such is described by Ramon Gutierrez in "When Jesus Came, the Corn Mothers Went Away":

> *The Pueblo Indians viewed the relations between the sexes as relatively balanced. Women and men each had their own forms of wealth and power, which created independent but mutually interdependent spheres of action. The corn fetish every child was given at birth and the flint arrowhead with which boys were endowed symbolized these relations and expressed the basic preoccupations of a people living in a semi-arid environment... Female sexuality was theirs [the females'] to give and withhold.*[53]

The Pueblos were not alone. Lerner writes:

> *It is in horticultural societies that we most frequently find women dominant or highly influential in the economic sphere. In a sample survey of 515 horticultural societies, women dominate cultivation activities in 41 percent of the cases, yet historically such societies move in the direction of sedentary settlement and plow agriculture, in which men dominate economic and political life.*[54]

Then, after a few thousand years—for reasons still unknown—the Near Eastern horticultural societies embarked on agriculture proper. Men took over the field work, in part because "plow agriculture initially demanded the strength of men, and certainly was not an occupation pregnant women or lactating mothers would have chosen, except in an auxiliary fashion."[55] Women were then relegated to the domestic sphere: cooking, cleaning and kids. Patriarchy kicked into full swing.

Researchers Clay, *et al.*, in "Women in the first Urban Communities (after 3500 BCE)," reveal that

> *women's experience in the first urban centers was marked by a general devaluation of their social freedoms, a denial of their claims to the results of their labor, and sometimes even a reshaping of their religious expression... In Mesopotamia as early as 2300 BCE, inscriptions for "slave girl" appear earlier than those translating as "slave male." ...Ensuring the lineage of a family meant keeping ever-close tabs on women's morality, which could include preserving a woman's virginity until marriage and ensuring that she had only her husband for a sexual partner. This would guarantee that the paternity of family members would be unquestioned... By 2500 BCE a law [in Mesopotamia] allowed a man to break his wife's teeth with a burnt brick if she disagreed with him... The cases com-*

> *piled by the Babylonian ruler Hammurabi about 1700 BCE forbade women from divorcing, yet allowed men to terminate their marriages.*[56]

Chellis Glendenning outlines the big picture of women's new roles in the emerging agricultural societies:

> *The tragedy is painfully clear: for over 99 percent of human existence, women's role had been absolutely vital for community survival. Now what women did was becoming "women's work," and in this lesser role, they were coming to be economically dependent, incapable of self-sufficiency—and vulnerable as the perfect targets for the mounting rage and terror men were feeling.*[57]

Family structures underwent profound changes. Bloodlines, formerly of little account, became paramount. Partnership was displaced by despotism. Lerner, again:

> *In Mesopotamian society, as elsewhere, patriarchal dominance in the family took a variety of forms: a man's absolute authority over children; authority over the wife restrained by reciprocal obligations to the wife's kin; and concubinage. The father had the power of life and death over his children. He had the power to commit infanticide by exposure or abandonment. He could give his daughters in marriage in exchange for receiving a bride price even during their childhood, or he could consecrate them to a life of virginity in the temple service. He could arrange marriages for children of both sexes. A man could pledge his wife, his concubines and their children as pawns for his debt; if he failed to pay back the debt, these pledges would be turned into debt slaves.*[58]

On the topic of how sexual roles changed during the Neolithic Revolution, John Zerzan said: "Women experience[d] the move from autonomy and relative equality in small mobile anarchic groups to controlled status in large, complex governed settlements."[59] Diana Shard describes a similar fall for men, who "now had to work in groups, and not the free-forming groups that might assemble on the spot for a hunt but organized, disciplined groupings that insisted on conformity."[60] The age of drudgery had begun, from which we have yet to emerge.

The dichotomy of work vs. play did not exist prior to the Neolithic Revolution. Writes anthropologist, Diane Shard:

> *Where men had once chased and then rested, they now were compelled to day after day of steady, back-breaking labor, from sunup to sundown. This change in work inevitably brought a change in recreation. In pre-Neolithic*

> *society, recreation in a formal sense had been unnecessary, for the work itself integrated the play element. Men ran, competed, killed. With agriculture, a recreation apart from work became essential. Hence the development of special holidays... [P]re-agricultural man had no need for such distinctions. And agricultural peoples tried artificially to recreate, in their recreations, the pleasure that had gone out of their lives.*[61]

One of the biggest game-changers of agriculture proper was grain storage. Though some humans had been eating grains since at least 20,000 BP,[62] it was not until the implementation of the plow and extensive irrigation systems that grains were grown in substantial enough amounts to necessitate large-scale storage. Logistically, stockpiled excess enabled a whole new range of activities that would prove calamitous.* Says James C. Scott, author of "Against the Grain: A Deep History of the Earliest States":

> *"[Stored grains] led to the birth of the state, and also to the creation of complex societies with hierarchies, division of labor, specialist jobs (soldier, priest, servant, administrator), and an élite presiding over them. Because the new states required huge amounts of manual work to irrigate the cereal crops, they also required forms of forced labor, including slavery; because the easiest way to find slaves was to capture them, the states had a new propensity for waging war. Some of the earliest images in human history, from the first Mesopotamian states, are of slaves being marched along in neck shackles."*[63]

Slavery was virtually unknown in gatherer-hunter societies, but was a defining institution of the emerging agro-industrial complex (and indeed remains so to the present day). Lerner surmises that human slavery *generally*, and secondarily, was a product of the subjugation of women *specifically*, and primarily. She also traces how something so brutal could become normalized (as indeed it still is):

> *The precedent of seeing women as an inferior group allows the transference of such a stigma onto any other group which is enslaveable. The domestic subordination of women provided the model out of which slavery developed as a social institution. Once a group has been designated*

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* *Although in some minds not* wholly *calamitous. As anthropologist Elizabeth Marshall Thomas pointed out, grain storage unintentionally invited in other members of the grassland ecosystem with the harvest; namely, seed-eating rodents—mice, rats, etc.—and one particular and now well-loved rodent-eating predator:* Felis silvestris lybica, *the common Cat [*The Tribe of Tiger, *Simon & Schuster 1994].*

> *as enslaved, it gathers on itself the stigma of having been enslaved and, worse, the stigma of belonging to a group which is enslaveable. This stigma becomes a reinforcing factor which excuses and justifies the practice of enslavement in the minds of the dominant group and in the minds of the enslaved. If this stigma is fully internalized by the enslaved—a process which takes many generations and demands the intellectual isolation of the enslaved group—enslavement then becomes to be perceived as "natural" and therefore acceptable.*[64]

Arguments for the "natural" inferiority of women, whether employing the rhetoric of religion or rationality, are still commonly made around the world, by men and women alike. Similar arguments, always as spurious, have been (and are) put forward on the basis of race, too, as it pertains to slavery, social worth, etc. The process of manufacturing prejudice has been insidious and essential from the beginning of agriculture, it seems.

Children were not exempt from the worsening human lot brought by agriculture. As Elise Boulding explains:

> *Ethnologists who have studied both foraging and agricultural societies comment on the change in the way of life for children that comes with agriculture. Whereas in foraging societies they have no responsibilities beyond feeding themselves and learning the hunting and foraging skills they will need, and therefore they have much leisure, it is very common in agricultural societies to put children to work at the age of three, chasing birds from the food plots. Older children watch the animals, and keep them out of the planted areas.*[65]

From the contemporary viewpoint, it seems impossible to imagine, but property—besides one's personal articles—was a concept new to the Neolithic; no one had owned land, animals or other humans in the Paleolithic. But the first written records (dating to ~5100 years ago)[66] are mostly comprised of lists of property, primarily grains, slaves (tracked by sex) and heads of animals. For its first five centuries, writing's exclusive use was accounting, not art.[67]

Art, it has often been claimed, flowered with the Agricultural Revolution, because of extra leisure time, although, as already discussed, such time was actually in shorter supply. Some scholars have suggested that art suffered from the transition. Says Zerzan:

> *The pre-Neolithic cave paintings, for example, are vivid and bold, a dynamic exaltation of animal grace and freedom. The neolithic art of farmers and pastoralists, how-*

> *ever, stiffens into stylized forms; Franz Borkenau typified its pottery as a "narrow, timid botching of materials and forms." With agriculture, art lost its variety and became standardized into geometric designs that tended to degenerate into dull, repetitive patterns, a perfect reflection of standardized, confined, rule-patterned life... And where there had been no representation in Paleolithic art of men killing men, an obsession with depicting confrontation between people advanced with the Neolithic period, scenes of battles becoming common.*[68]

Deeper still were shifts in how humans looked at themselves in relation to the natural world. James Suzman writes:

> *Where hunter-gatherers saw themselves simply as part of an inherently productive environment, farmers regarded their environment as something to manipulate, tame and control. But as any farmer will tell you, bending an environment to your will requires a lot of work. The productivity of a patch of land is directly proportional to the amount of energy you put into it.*[*] This principle that hard work is a virtue, and its corollary that individual wealth is a reflection of merit, *is perhaps the most obvious of the agricultural revolution's many social, economic and cultural legacies* [my emphasis].[69]

Here, then, are the roots of the "Protestant work ethic" and of the over-production that techno-industrial capitalism has taken to such ecocidal extremes. But the twists and turns of the mutating moralities went deeper than that, as Zerzan points out:

> *Artificiality and work have steadily increased since [agriculture's] inception and are known as culture: in domesticating animals and plants man necessarily domesticated himself. Historical time, like agriculture, is not inherent in social reality but an imposition on it. The dimension of time or history is a function of repression, whose foundation is production or agriculture. Hunter-gatherer life was anti-time in its simultaneous and spontaneous openness; farming life generates a sense of time by its successive-task narrowness, its directed routine.*[70]

No discussion of the Neolithic Revolution in the Near East would be complete without mentioning monotheism, which Gore Vidal called, "easily the greatest disaster to befall the human race." This religious dogma was a logical expression of the agri-

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* *This is not always the case. Crop failures can definitely follow hard work and dedication. See "Who Will Feed the People? Obstacles Facing Small-Scale Agriculture" in this volume.*

cultural lifestyle. The new god was a man, entirely independent of women, with no mother, wife or daughter, a sharp contrast with gods in the existing pantheons.* He did not live on the earth and was not present in its life, its form, or its elements, except on special occasions, e.g., when taking the form of a cloud or a fiery shrub. He declared that the planet and everything on it was the "dominion" of humans, for them to treat as they would like. Clear hierarchies existed: God over humans, human men over human women, all humans over nature. Last but not least, humans themselves were born flawed, inherently unable to find true happiness in living.

By whatever justification, religious or otherwise, and through whatever mechanism, intentionally designed or not, during the Neolithic Revolution, men took the majority of social power from women and it has never been returned or retaken. Or even honestly acknowledged. Modern liberal feminism has won only very minor reforms; the fundamental mode of oppression remains unshaken. That mode—patriarchy—is the domination not only of men over women but of those characteristics considered masculine over those considered feminine. Dualism and domination are two of its hallmarks: the division of everything into opposites and the subsequent subordination of one to the other. On the grand scale, patriarchy is an expression of humanity splitting itself from nature and setting itself counter to it.

As domination over nature was exerted, respect for nature declined. How could it not? You cannot at once lash something and love it. That some people believe you can just shows how far down this "nasty, brutish" road we've traveled. But no: respect and domination *don't* go together. *Can* not. They are mutually exclusive.

Ultimately, the breaking of our conscious, intentional connection with nature was the worst outcome of agriculture. Not content to merely abuse ourselves and each other, we extended our desecration to everyone else—animal, vegetable and mineral—and to the planet itself. Currently, our survival is no less connected to nature and the world than at any other time, but we are now less *aware* of that connection than ever before. The cost of that break—of over fifty centuries of intense exploitation—is now weighing on us heavily.

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* *Bizarrely, monotheism's creation myth claims that woman was created from man: "Then the LORD God made a woman from the rib he had taken out of the man, and he brought her to the man" (Genesis 2:22). Christianity expanded it: "For man did not come from woman, but woman from man. Neither was man created for woman, but woman for man" (Corinthians 11:8-9). The denial of basic biology is astonishing. The subsequent rationalization of thralldom is beneath contempt. That these repulsive ideas still have currency is worst of all.*

The Finisia Medrano trilogy

In 2012, Clarabelle introduced me to Finisia Medrano, aka "Tranny Granny," who had been living a wildtending lifestyle for nearly three decades at that time. Inspired by the meeting, I ended up writing three separate essays. In the years since, I spent more time with her and my appreciation only deepened for her experience and knowledge of wild foods and "the Hoop." The last time I saw her was in late Summer of 2019. She died in late Spring 2020.

"Fin" was well-known in rewilding and wildtending circles and others have stories to tell, too. Some might be less flattering. Unafraid of controversy and passionate to the core, she offended many. I myself was on her blacklist once but I didn't take it personally. What else can you expect from such a feral creature, so thoroughly discontented with civilization? After all, when we respect "tact," we usually end up being silent about our collective crimes: genocide, ecocide, etc. Some were offended by her verbal crudity, but her fierce advocacy for wildtending was not only appropriate but essential.

*Please note that "Tranny Granny" is a term of affection, not a slur, having been bestowed upon her by some of the "Radical Faeries." Fin underwent sex-reassignment surgery to transition from male to female in her younger days, before being introduced to the Hoop. The Radical Faeries are a queer movement dating from the 70's who have been variously described as neo-Pagan, counter-cultural, anti-establishment, anarchist and radically environmentalist (all of which sound great to me!) and their nickname for her carries no malice. It is with less comradeship that some staff of the Forest Service and Bureau of Land Management (among whom she is well-known) refer to her as "Sacaga-*he-*a," but Fin found it quite comical.*

Postcard from Eastern Oregon

Where Planting Food is Illegal

This Spring* my farming partners and I found ourselves landless. For the past eight years, we had been actively exploring a variety of forms and practices of small-scale agriculture and restoration, including bicycle-based urban farming, CSA (Community Supported Agriculture), plant-breeding and seed-saving, staple crops (grains, legumes and oilseeds) and the cultivation and processing of medicinal herbs (no, not pot). Last year I wrote an article, "Who Will Feed The People?," discussing the challenges to small-scale agriculture in the United States, such as lack of equipment, knowledge, financial resources, and markets; the polluted wasteland left behind by conventional farming; increasingly volatile and unpredictable weather patterns brought by Climate Change; and, last but not least, the social barriers: people of the US are by and large uninterested in significant changes to the socio-economic status quo, and resist cutting edge projects. It was the social factor—which can and did embody a profound hostility to truth—that brought down our own farming efforts, at least for now.

With sadness and anger, we put our tools and seeds in storage, found foster homes for our perennial medicinals, and raised traveling cash by selling our home (a school bus) and an old but reliable Volvo. After tearfully parting with our beloved farm cat, two of us hit the road in an old pickup to see what we could see.

This journey took us to Eastern Oregon to seek out Finisia Medrano, aka "Tranny Granny," a Shoshone-trained elder who knows the ways of "The Hoop," an ancient tradition of food gathering and cultivation that sustained the Native Americans and the land in good health for thousands of years until being violently disrupted by the European Invasion. The Hoop is not dead but, as we were to see, is severely threatened.

It was August when we arrived at Granny's current camp, northeast of Klamath Falls. The land is a mix of ranchland, pine plantations, and table land, interspersed with a few winding

* *2012*

creeks and marshy spots. Drought conditions were prevailing there, as they were over a majority of the continental United States at that time. The haze of forest fires first blurred and then concealed the hills on the horizon. Sunrises and sunsets were awesome displays of orange and red, apocalyptic.

The University of Oregon had just released a report predicting that the tinderbox conditions of this year are a taste of what Climate Change will bring over the next century. In the local paper, ranchers scoff that they don't need anyone to warn them about drought because that's what they prepare for every year anyway. Their tone is freighted directly from the grade school playground: it is aggressively, ignorantly petulant. Meanwhile, another article in the same edition solemnly mentions the concerns among ranchers about when the flow from the reservoirs will be shut off this season.

Everywhere we drive in the area we see huge sprinkler systems, hundreds of feet long, spraying water airborne in enormous plumes during the hottest part of the day when a high percentage of it will be lost to evaporation. At least half the rigs sport leaks, and big puddles form at a rate of gallons-per-minute far exceeding any city person's garden hose by a long shot. Next to one such pond is a bright yellow sign, one of many in the area, proclaiming, "Stop The Klamath Dam Scam." This refers to the proposed removal of dams on the Klamath River, in part to bring back the Salmon population.

Contrary to popular imagery, it is not lawn watering, car washing, and long showers that are depleting aquifers and draining rivers. As Derrick Jensen points out, 90% of the freshwater in the US is used by industry, including industrial agriculture, with the remaining 10% being split evenly between municipal users (such as people in homes) and golf courses. Here in eastern Oregon it's a small constituency—the ranchers—sucking up most of the moisture, and whining about it to boot. There's your real scam.

When I first moved to the Pacific Northwest in 2000, I was so impressed (as I had been during visits as a child and young adult) by "all the beautiful forests." But after I became involved with the tree-sitting campaigns and learned how to really look at the landscape, I saw what is really there: plantations of uniform trees, second- or third-growth; mature trees left only along the road to conceal the clear cuts behind them; entire horizon-to-horizon vistas of "managed" landscape with only tiny islands of Old Growth struggling to survive. A land not "pristine" but hammered. It was this type of revelation, but of the steppe country, grasslands, and pine forests of Eastern Oregon, that I was seek-

ing by going to see Granny, and that's what I got—at least an introduction.

Granny is of Irish extraction (a people she called, "carrot-headed, fat-cheeked, pus-gutted son-of-a-bitches"), but was adopted into Native American culture as a young adult. The tribe grandmothers became *her* grandmothers and gave her much knowledge and perspective. She has been following The Hoop for nearly three decades, on land both private and public, over several states, and has watched as what little remains of the native food plants—and of the Native rights to harvest and plant them—has been suffering ongoing assault. She is one of a handful of people keeping the practice alive, only some of whom are sharing their knowledge. "Long House says it is time to open the bundles," she told us. "Not everyone is opening their bundles, but I am, and that's why I am showing you these things."

Granny took us up onto "The Table" first, because I said I wanted to meet Yampah (botanical name: *Perideridia gairdneri*). The Table is a mesa. It is a flat area elevated above the surrounding grasslands with steep sides that are broken occasionally by "draws": tree-filled ravines running down to the bottom. On top it is rocky and dusty, crisscrossed by a few rutted roads, with hills rising still further up along its northern edges. She stopped the jeep and jumped out, announcing that we had arrived at a Yampah patch, and that this was the time of year to gather the mature seed.

At first I saw nothing but dried vegetation, undistinguished. We gathered around her as she showed us a Yampah plant right next to the road. About 18″ high, with no apparent leaves and three or four umbrella-like crowns of seed. Each seed, of which there were 50-100 per head, were about the size and shape of Caraway. Indeed, another name for Yampah is "Wild Caraway." She demonstrated how easily the dried brown seed falls from the umbels when it is fully mature, but clings, plump and yellow-green, when it is still developing. I tasted the seed and it was delicious, much like Caraway but with an extra zing. At first I stayed right there, crouched down, examining the plants right around me, and ate quite a few seeds at the different stages, until my stomach gurgled with liveliness from the strong essential oils so characteristic of seeds in the Umbel Family (see also: Fennel, Dill).

One of Granny's students offered me a Yampah root he had just dug. It was about 3/4 of an inch long, roundish at the top end, and tapered at the bottom. The flavor was very much like a carrot but with, again, a "wild" edge. After a few minutes, I began to feel a kind of high from these samples; an earthy rush of energy, like a warmth spreading out from my stomach; a sensation of real substance. When I arose and looked around, I got the

now-you-don't-see-it-now-you-do experience so often reported by mushroom hunters; where before I had noticed only dried vegetation among rocks, now I was seeing the Yampah everywhere. It had been there, of course, but before being able to see it, I had to "get the eye for it." And maybe in this case that happened in part through my stomach!

Unlike most of the domestic vegetables in European/US cuisine, Yampah is a perennial plant. A five-year old specimen might have just three tubers on it. One with seven to nine could be more than a decade old. Like many plants of arid regions, it grows slowly. This results in a more powerful nutritive punch than domestic vegetables offer. The minerals and other constituents are denser since that's what the plant needs to survive and thrive in such a challenging setting. These attributes are passed on to the eater, and not only in the form of calories. Granny said that after 40 days on The Hoop eating only wild foods, your body begins to transform. The animals react to you differently because your smell has changed. If "you are what you eat," then domestic food might make you tamer and wild food might make you more feral. Modern, chemical-laced, processed food certainly seems to be making people toxic in both body and mind.

As we dug roots and harvested seeds, we also sowed seeds. The planting part of the activity was a revelation to me. Previously, when I had thought about "hunting and gathering," I had pictured an exclusively acquisitive activity, in which people simply harvested what was available, but had no other interaction. But as a form—or perhaps the primary form—of hunting and gathering, a Hoop also includes planting and tending. Tellingly, Granny referred to the various patches of Yampah, Biscuit Root, Coush, Looksh, and Camas, etc., as "gardens."

"Gardens" are not what the European invaders saw when they arrived in the Great Basin, where the Shoshone and other tribes had been walking their Hoops for millennia. Gardens are still not what non-Natives see in these places. Then, as now, Europeans saw "emptiness" to fill and "resources" to take (or, in the modern parlance, to "manage"). These things they did, and continue to do.

Granny remembers when more of the local landscape was still gardens, not the grazing land or fodder fields that it is now. In the springtime blooming season, the sight was spectacular: Along the water was a sea of purple (Camas), surrounded by a band of yellow (Biscuit Root) and bordered in white (Yampah). "You couldn't take two steps without stepping on food," she said.

In terms of acreage, ranching is and has been the principal means of destroying the gardens of The Hoops in the West. The domesticated cow as an animal evolved in moist forests in Eura-

sia, so its needs are not well served by the sparsely treed, dry climate of the Great Basin, where only 2% of the land area is riparian. The cow's intensive grazing habits are not comparable to the migratory browsing of the native ungulates—elk, pronghorn, Deer—and the plant life did not evolve to live under such heavy pressure. So far more acres are needed per-head to attain market weight as compared to "back East."

Despite these facts, the Europeans considered the Great Basin to be perfect rangeland. The Spanish colonizers were the first, starting from the south, with their missionaries who preached that humans have "dominion" over nature, thus excusing any damage in advance. Later in the North came other whites. Though some of them were family homesteaders, the major players were men from wealthy backgrounds, a few from Europe. As state legislatures formed these men placed themselves in prominent positions, and to this day their brethren are over-represented in public office from the county to the federal level, ensuring that their perks—such as running their cattle on 70% of Western public lands, including National Parks, at leasing prices that are far below market—are protected.

As detailed in the excellent book, "Welfare Ranching," the beef production of the Western states comprises a low single digit percentage of total national output, but, as mentioned, at a much higher acre-per-cow ratio than back East. The efficiency is very low. The economic significance of ranching is grossly overplayed, but its effects on the ecology and original non-European inhabitants of the West have been and continue to be devastating. Native animals are hunted to extinction or its brink, or their habitat is destroyed; precious water sources are diverted, drained and polluted; Native people are decimated and disallowed from continuing The Hoop. Granny put it plainly: "It's still genocide, active today, not history."

Granny showed us the effects of cattle grazing firsthand on a visit to another garden in the area, in a moist meadow in the forest. This Spring she had seen the place filled with Camas, of which the bulb is the edible portion, harvested in the Autumn. She was hoping we would find mature seed heads to collect. But though we walked all around the area, we didn't locate a single one. What we did find, however, was plenty of proof that the cows had been brought in to graze there. The ground was densely marked by hooves, and the spring had been trampled, its banks smashed, and its course choked. The Camas bulbs, which do not live too deeply in the ground, had been crushed. Incidentally, this area was the victim of an allegedly progressive ranching policy that limits how long the cattle are kept in a particular place,

rather than for the entire season. This is intended to mitigate the effects of grazing, but in this case a garden was devastated with enough time left in the season to destroy another one, or more, somewhere else, with the same animals. This is spreading the damage around to more acres, not reducing it.

The proliferation of exotic (non-native) plant and animal species due to ranching has also severely impacted the Great Basin ecosystems. But though Granny witnesses the deleterious effects of such "invasive" species as Cheat Grass, she has no goal to restore and maintain native-only environments as they existed historically. First, she is interested in any and all food plants that can successfully "rewild," including European imports. An effectively "rewilded" plant is one that can propagate itself with a minimum of human attention, and which will retain its desirable nutritional and palatable qualities without degenerating. Certain mustard greens, for example, might rewild well, but she has found that the domesticated carrot does not, and turns woody like its uncultivated ancestor, Queen Anne's Lace. Her approach is pragmatic, not ideological, and as such is a direct challenge to the native=good vs. exotic/"invasive"=bad dichotomy stiffly held by most white restorationists and permacultists.

Secondly, in her decades on The Hoop she has seen the effects of Climate Change. Many native food plants are suffering in their historical areas of distribution, and need to be moved by reseeding, transplanting, and other forms of propagation. She describes these plants as "refugees without legs" and insists that we —humans—must be their legs. She talked about plants in Nevada that need to be brought north to Oregon, and perhaps ultimately to Saskatchewan. She pointed out how many of the Yampah plants in the gardens on The Table did not produce seed this year because they were attacked during their flowering stage by mites. The plants were weakened and the insects strengthened as a result of weather abnormalities this year that included unseasonably hot weather in late Winter followed by extreme cold in the Spring. So the Yampah must be seeded elsewhere to provide some amount of insurance.

However, the essential work of being the legs for these refugees is, in almost all cases, illegal. Except for a few tiny pockets of Indian Reservations, all the land is owned either privately or publicly. Private landowners don't look kindly on "trespassing," and sowing seed on public land is, Granny told us, a felony.

Here we find ourselves approaching the heart of the matter: the lack of communal land. Private land is by definition not communal, and what is called public land is simply private land owned by a nominally public institution, and is also not commu-

nal. (If you think "public" means "communal" or "open" or "free," try finding a spot you're allowed to camp without paying on the Oregon coast, all of which is "public!")

It is useful to remember that the Forest Service is an agency of the US Department of Agriculture, and does not exist to protect forests as dynamic ecosystems but to "manage" them for timber and other forms of resource extraction. The Bureau of Land Management (BLM) is similarly charged, with more attention given to cattle ranching. Each agency has its token areas that are "preserved" from development (at least for now) or are undergoing "restoration." On the face of it these both sound like good ideas, but in typical practice, neither preservation nor restoration is recognizing at least two vital factors.

First, Climate Change is significantly altering the ecological conditions of every area, so that restoring the exact make-up of plant and animal populations that existed in any one area is no longer feasible. Secondly, the actual conditions of these lands before the European Invasion is not that they were "untouched" by people—"preserved" from them—but in fact included humans as integral participants. This is how it was for many, many thousands of years: the gardens were peopled. But now this is illegal.

When land is viewed as property, whether private or public, and is not recognized as communal—which, it is vital to understand, means non-ownable—no true sustainability can exist. No new "policy" for public lands will change this reality. As for private property, it was central to the European Invasion, the American Revolution, and Manifest Destiny, and remains the cornerstone of the current socio-economic system. That's unlikely to change without some massively catastrophic upheaval that is beyond anyone's ability to induce or guide. But the fact remains that without relinquishing "property," there is no path forward to truly sustainable living.

Granny sees whites as belonging to a "culture of death," and Native people worldwide share this perception. The values of the opposing cultures are entirely at odds. I believe that the difference can only be understood experientially, not intellectually, which poses a great challenge for people of the techno-industrial cultures. In my own observations of West Coast New Age culture, it has seemed to me that for whites to cherry pick a few concepts, symbols, or totems from Native Americans and consider themselves actually connected—or worse yet, somehow absolved—is the height of pretension: just "playing Indian" really. Even so, Granny declares that it is time for "cultural appropriation." Referring to the bundle she is opening, she said: "These things need

to be co-opted so they're not forgotten. But people need to assimilate *this* way."

Granny told us how living on The Hoop is an existence of "symbiosis" with everything else that lives. And everything is equally alive: animal, vegetable and mineral. Though each season brings variation—more or less Elk or onions or acorns—a steady state exists, on balance.

Or did exist. For though Native peoples still live—and so too do their "bundles" of knowledge, wisdom, and experience—the threats to their survival are a current event. This situation endangers not just them, but all people. For, as it was put before a UN conference in the 90's, though indigenous people around the world represent less than 1% of the human population, they have over 99% of the knowledge of how to live on the earth in a truly sustainable way. This is a use of the word "sustainable" that leaves no room for prattle about special light bulbs, low-flow toilets, or bringing your own bag to the store. Those measures are like bailing out the Titanic with a teaspoon. Technically, they "make a difference," but not a difference that *makes* a difference. If we want to be serious about this, we need to set everything aside and listen, listen to the Native people, and to those like Granny who have learned directly from them.

Granny does not mince words. In reference to the eager but inexperienced young white people who have been coming to her to learn, she says, "I feel like I'm sifting through human garbage. They are spoiled, stupid infants." It became clear to me while spending time with her that I could not think of myself as better than that. Indeed, for as hard as I have worked—at farming, in political activism, on my own spiritual well-being—I remain stupid and spoiled when it comes to knowing how to actually live on the earth without participating in its destruction. How different am I than Gandhi's "Englishman" who fills his pantry and thinks of himself as "self-sufficient?"

When Clarabelle and I had hit the road a month before, we were full of questions about what direction our farming should take next, or if we will be able to find a way to continue at all. We had already been growing weary of market-driven production farming, onerous government regulations and corporate rules, and the rank ignorance, petty narcissism, and passive-aggressive obstructionism of Society. We were increasingly suspicious about whether stay-in-one-place agriculture—even if organic, biodynamic, or permacultist—could be sustainable in any real sense. We were, then, consciously receptive when we arrived at Granny's, and after a few days of catching the pearls she spit out whenever she opened her mouth, we felt a little more clear.

Shortly before we left her place, we talked about "truth." What is it exactly? Experientially, it's obvious. Said Granny: "It's like a door opens in front of you and light comes shining through. Most people slam that door shut and forget—or try to forget—what they saw."

"When I don't like something, I know it must be true," Granny said with a smile. Nonetheless, she added, "It's not enough to hate the lies. You must also love the truth."

Refugees Without Legs

Climate Change, native foods and "invasive" species theory

"Refugees without legs." Finisia Medrano coined this phrase to describe various traditional Native American food plants that are threatened in their current ecosystems by Climate Change, and that must move to new locations if they are to survive. Temperature extremes, atypical rainfall, and disturbances in seasonal patterns are all taking a tangible toll, disrupting cycles of growth—sprouting, flowering, seeding and rooting—which had been stable for millennia, and at a speed that is fast and getting faster. The rate of Climate Change has already outpaced the ability of plants to migrate on their own as they historically did during previous, more gradual environmental shifts. Finisia insists that if these plants are going to survive as viable species and food sources, they will need to be relocated further north and/or to higher elevations. Since it is we, humans, who are responsible for their refugee status, so it is we, humans, who must be their legs so they can flee.

"Refugees without legs." This phrase, and its implicit call to action, has been rattling around in my head since I first heard Finisia use it. Indeed, humans have induced Climate Change, and I agree that with that culpability comes responsibility. Creatures are suffering who had no role in the destruction we are wreaking. If we are going to address this mess we've made—as daunting as it is—then one thing we'll have to adjust is our own minds; we will need to adopt new ideas and practices, and discard older ones. In my opinion, one idea we must re-examine is that of "invasive" species.

What is an "invasive" species?

The word, "invasive," whether pinned to an animal, plant, algae, etc., has a deceptively simple ring to it, but it is actually somewhat ambiguous.

Colloquially, it is tossed around pretty loosely. Many gardeners, for example, label as "invasive" any plant that thrives and

spreads with little or no care, and cast the term alike not only on "weeds" (which in many cases are native plants) but on nursery plants that have grown outside their apportioned area. In these cases, the label "invasive" is pointedly disparaging, not merely descriptive.

In more scientific circles, "invasive" generally refers to "introduced species (also called 'non-indigenous' or 'non-native') that adversely affect the habitats and bioregions they invade economically, environmentally, and/or ecologically" (source: Wikipedia). "Adversely" is the key word here; efforts to eradicate "invasives" from an area are justified by the alleged effects that the introduced species has or threatens to have.

Further muddying the picture, the term "noxious weeds" is often used interchangeably with "invasive species." Lists of noxious weeds are generally drawn up by local government agencies that support conventional farming and ranching, so a given plant (native or introduced) will be designated as "noxious" because of its negative effect on domesticated crops or animals. Thus, St. Johnswort (*Hypericum perforatum*) is "noxious" because it can cause phototoxicity in sheep; Chervil (*Anthriscus sylvestris*) because it might carry a rust fungus that can affect cultivated carrot crops; and Woolly Adelgid (*Adelges tsugae*) because it inflicts damage on Christmas tree farms. Note that in all three cases the plant or animal species needing protection from the noxious weed are themselves not native, and are products of a system—industrial agriculture—that is severely detrimental to the habitats and bioregions it has invaded. Despite recent glosses of "sustainability" applied by some adherents of noxious weed theory, the primary focus of noxious weed management is economic, not ecological, and often involves pesticides, sometimes in wild areas.

Farming and ranching (along with logging) are by far the leading vectors for introducing "invasive" species into native ecosystems. But since those industries are politically and culturally untouchable, the blame is more often foisted on individuals: hikers who don't clean their boots or lazy city gardeners who won't yank weeds.

Perversely, the most widespread, non-native beneficiaries of the decimation of native ecosystems from the Atlantic to Pacific are *never* called "invasive": I am referring here to the massive monocrops of corn and soy that replaced the prairies of the Midwest; the row by endless row of orchards-for-export filling the drained wetlands of California's Central Valley; the millions of cows who trample public lands to provide "free range" beef to urban liberals. Agricultural animals and plants are always ex-

empted from the dread label of "invasive," as is—and no one wants to go here!—lawn grass.

Speaking of forbidden topics, the spread of "invasives" did not occur in a vacuum; it is a symptom of ecosystem fragmentation, which is the inevitable by-product of the private property system ennobled by Western culture and promulgated in its laws. Discussion of changing *this* system is dismissed in nearly all quarters, across the whole political spectrum. We sowed "invasives" through our own destructive behavior and now we blame the plants and insist on their eradication, yet we avoid like the plague addressing the central cause: our own acculturation and greed. The vituperative tone we aim at certain blameless plants and animals would better be pointed at a mirror.

Invasive species management

Invasive species theory has spawned a proliferation of laws, methodologies and organizations, many of them presenting themselves as ecologically concerned. Tragically, herbicides including glyphosate (the active ingredient in Monsanto's notorious "Round-up") have been liberally applied in the cause of eradicating invasive plants, to the great detriment of native flora and fauna. Finisia has brought specimens of spray-killed native plants to the responsible government agencies, along with her observations that the "invasives" survived, but to no avail. My farming partner, Clarabelle, who earned a degree in Environmental Science with a Minor in Botany, left her post-collegiate employment in the restoration field after a few years out of disgust for the widespread use of chemical killers on "invasives." "Invasives," being the hardy, adaptable pioneer species that they usually are, can often more easily adapt to poisoning than natives. For example, Pigweed Amaranth (*Amaranthus palmeri*) has become famously Round-up resistant across the Midwest.

That wielders of poison can, in cases, be called "conservationists" exemplifies the 1984-esque doublespeak that insidiously pervades our social discourse. The dirty little secret of restoration and "invasive" species management is that actual rates of success are very low but are regularly inflated in official reports in order to keep the grant money flowing. This is only one illustration of the rampant dishonesty endemic to the institutional world, "non-profit" and otherwise. That an urban home-owner, surrounded by miles and miles of deforested, drained, paved-over land has the temerity to get huffy over the "invasive" weed in their neighbor's yard demonstrates the haughty hypocrisy so common in the USA.

Whether the claimed concern is the preservation or restoration of native ecosystems, or the protection of agricultural industries, the war on "invasive" species has depended on the assumption that, notwithstanding annual variations and the occasional "Act of God," the planet's climate is inherently stable and reliably predictable. Climate Change is changing all that, and not gently.

Climate Change

As Finisia has observed, wild stands of native food plants who had managed to avoid extinction from logging, farming, mining and ranching are now threatened by Climate Change (which was brought about in part by these very practices). At one time, when talking about restoring a particular parcel of abused territory, the conversation would have focused on, removing elements that didn't belong—cattle, non-native plants, old infrastructure—and letting the land recover. But now, new conditions of temperature, moisture, seasonal timing, etc., might prevent plants and animals from thriving there that previously did. As time goes on, and the Climate Change worsens, these circumstances will only magnify. We must face the fact that it will be *impossible* to restore the land to its state before the Europeans invaded.

For example, fire has been a natural part of the ecology of forests in the American West for thousands of years. Some plants are actually fire-dependent, with seeds that won't germinate until after exposure to heat. But the fires of recent years, magnified by Climate Change, are burning hotter, over larger areas, and exhibiting new and unexpected behaviors. In their wake, injured seed banks are awakening to conditions that are different than the ones that previously shaped their evolution. We can not expect the cycle of natural recovery to function like it did before. We might now ask: Will forests in the West recover, period?

Ready or not, we are entering a new era. Old rules will no longer apply and they might not be replaced by new ones. A more chaotic world is emerging. We will do best to be flexible, both in our actions and our attitudes.

Is it possible that some "invasives" are actually providing benefits during Climate Change? Take the case of Holly (genus *Ilex)*. It is grown commercially in the Pacific Northwest for national distribution during the Christmas season, but is considered "invasive" outside the orchard fence. This Summer*, Clarabelle and I farmed on a piece of land with an old Holly orchard and we observed many, many birds nesting in the derelict trees. Holly makes for excellent avian habitat because its waxy foliage is evergreen, providing cover in the winter, and jaggedly pointy, dis-

* *2013*

couraging predators. Our favorites were the hummingbirds that whizzed back and forth between the orchard and our garden, which was full of flowering plants being grown out for our vegetable and herb seed business. During a hard freeze in late Winter, we noticed robins flocking to the orchard and feasting on the berries. Their usual staple is worms, but the ground was too frozen for them to dig it. At that time of year, no native berries remained. That same week, I read in the Rodale Organic magazine that robins are showing up 300 miles farther north than previously seen, a shift attributed to Climate Change. After that, I saw the Holly orchard as a haven, awaiting other winged refugees who will be driven here over time.

When I was an urban farmer in Portland, I was once lectured by a neighbor about the Holly tree in the front yard of a plot I was gardening. "It's invasive," she hissed, with a vitriol that I wish was more often applied to deserving targets such as Monsanto, British Petroleum, or the New York Times. Confounded, I stopped and looked at this tree—at this single plant—and though I could not discern its evil, I was also unable to articulate a response. Some time later, I found myself in a debate about "invasives" with a group of Permacultists, and when I expressed my distaste for the word, I was rebuffed by one person with, "Well we have to call them *something*." This brought laughter to the group, who seemed to feel she had won the argument.

Alternative terminology (and alternative thinking)

Since then, I discovered that an excellent alternative has been offered, as explicated in the article, "A neutral terminology to define 'invasive' species," by Robert I. Colautti and Hugh J. MacIsaac, published by the Great Lakes Institute for Environmental Research at the University of Windsor in Ontario. Leave it to Canadians to be more nuanced than their southern neighbors! Colautti and MacIsaac observed that "the use of simple terms to articulate ecological concepts can confuse ideological debates and undermine management efforts" and that "subconscious associations with preconceived terms, particularly emotive ones, can also lead to divergent interpretations and a confusion of concepts and theory." I had certainly witnessed just that, plenty of times.

In place of a single word such as "invasive," Colautti and MacIsaac put forward a system that is biogeographical (place-based) rather then taxonomic (species-based). This makes so much more sense. The system describes possible stages of a new species entering an area. As summarized on Wikipedia, these stages are: I. Traveling, II. Introduced, III. Localized and numeri-

cally rare, IVa. Widespread but rare, IVb. Localized but dominant, V. Widespread and dominant. The single Holly tree in the front yard in Portland was at stage III: "Localized and numerically rare." Corn in the Midwest, European trees in New England, and cattle in Eastern Oregon, by contrast, are at stage V: "Widespread and dominant." This system can also be used to describe native plants. Conifer trees being decimated by post-fire logging are passing from stage V. to stage IVa; from "Widespread and dominant" to "Widespread but rare," and could eventually be at stage III: "Localized and numerically rare."

Put in these terms, if we follow Finisia's advice about Climate Change's "refugees without legs," we humans must be the means for many species to enter stages I and II: "Traveling" and "Introduced," with the goal of their becoming less "rare." On the other hand, if we continue down the traditional road of restoration and "invasive species management"—with or without pesticides—we run the risk of speeding ecosystem destruction, as fewer and fewer native species will survive as either "widespread" or "dominant," and nothing will remain except abuse-resistant "invasives." I shudder when I picture such a desolate landscape.

Certainly, the human introduction of species to new areas has had dramatic effects on native ecosystems in many cases. Witness the spread of Kudzu in the American South, the Cane Toad in Australia, or Zebra Mussels in the Great Lakes, all to the detriment of native species. I have empathy for the people who are concerned about "invasives" if its motivated by a loving appreciation for native flora and fauna. I, too, am saddened to see plants and animals disappear.

Yet pinning the blame on the "invasives" alone and opening fire on them is no longer a realistic option. Not to say it ever was. Most models of restoration or conservation in the 20th and 21st Centuries were flawed at their foundations. The principle seems to have been Set-It-Aside-And-Don't-Touch-It-Until-It-Returns-To-Eden. But this precept ignores the vital role played historically by humans—the Native Americans—in cooperation with "all our relations" in the dynamic equilibrium that used to exist, back when much of the Americas was wildtended. Before 1492.

Finisia's words are rooted in a wisdom that precedes the very real invasion of that year, and as such are a good place to start.

Weeds to Rewild You

Encountering Native American Food Crops

> *How could present-day America possibly exist if great numbers of people believed that the minerals in the ground, the trees and the rocks, and the earth itself were all alive? Not only alive, but our equals? If our society suddenly believed it was sacrilegious to remove minerals from the earth, or to buy and sell land, our society would evaporate... [I]t is logical, normal, and self-protective for Americans to find the philosophical, political, and economic modes of Indian culture inappropriate and foolish.*
> —Jerry Mander[71]

"Yampah," "Luksh," and "Coush": These are three wild plants that Native Americans depended upon as staple foods. They were seeded, cultivated and harvested on "The Hoop," a mode of hunting and gathering that dates back tens of thousands of years on the North American continent but which is now marginalized, by violence or by law. People followed The Hoop in bands with the seasons, like the herds and the flocks. The relationships among all these creatures—legged, winged, and rooted—existed in a balance until the European Invasion. Genocide was perpetrated and is still perpetuated. Now fences, roads, and borders criss-cross the land, preventing free travel along The Hoops. Private property owners can and do forbid "trespassing." Public property administrators can and do prevent traditional harvesting and cultivating.

"Yampah," "Luksh," and "Coush": These three plants are also named *Perideridia gairdneri*, *Lomatium canbyi* and *Lomatium cous*. They can also be called "weeds."

For a gardener, farmer, rancher, or restorationist, "weeds" are any plant that "doesn't belong." This declaration is made regardless of any value the plant might actually have as food or medicine for people, or as a companion for the planned crops, or as a key player in a natural response to disturbance. The modern, control-obsessed mind, focused on goals, production, and order,

is unable to accept unplanned elements in a design, and must strike out at them. That this is a strike at Life itself is unrecognized. The dire and life-threatening consequences of this blind-shooting “doesn't belong” philosophy—which include rapidly depleting resources, dangerously polluted water and air, an increasingly top-heavy and unstable system of human consumption—were not only predictable, but actually predicted. We were warned, and here we are, grasping at straws of “sustainability,” when in reality the system cannot be “sustained” in any recognizable form.

By contrast, subsistence-based indigenous human cultures have a much different relationship to ecosystems and all their living creatures, including the “weeds.” If human life is to continue for many more generations at all, it will only be if this knowledge can re-seed within human culture at large, take hold, and grow. This is in much the same way that the isolated stands of old growth forest (and isolated stands are all that are left) might yet act to seed surrounding regeneration. But is there enough left? Of sustainable humanity, or of old growth forest? Or of coral reefs or of prairie or of steppe? That remains to be seen.

In the meantime, it is vital to learn as much as we can from the few and the little that remain. This summer, I met a Shoshone-trained elder who has been living a traditional, migratory, subsistence existence for the past three decades, out in the wilds, and I experienced joyful disillusionment with what I learned from her. I call the disillusionment "joyful" because I realized that being parted from one's illusions can be a positive thing.

The philosophy of "dream it and it will happen, if only you believe and have the right intentions, and every little thing's gonna be alright" so prevalent in American culture—especially in the New Age subculture—is pure hokum, and living that way can only be sustained by grand self-delusion. No, as humans our intentions do not create reality. If they did, millions of people around the world would cease being starved, imprisoned, and bombed (much of it on the US taxpayer bill) simply by "having the right intentions" to make it stop. Do not these uncountable suffering souls dream of an end to their torture? Does it continue because they are not pure enough of heart? Are only US Americans good enough to make it work? What disgusting conceit.

The Shoshone-trained elder I met was named Finisia Medrano, aka "Tranny Granny," and she would turn off most civilized Permacultists with her obscenity-laced speech, anti-American screeds, and down-to-gritty-earth common sense. What's ironic of course is that "The Hoop" is a “permaculture” quite deep, profoundly so. Too

deep for most PDC* grads to comprehend, due to cultural divides. Indeed, the chasm between the indigenous and techno-consumer cultures and their attendant viewpoints is uncrossable for all but a few. This, if nothing else, I learned from spending time with Finisia: that there are ways of understanding life and all its relations that are quite simply beyond me, and will most likely always remain so. Losing this illusion might have been her greatest gift to me, conveyed through the "weeds" she showed me.

I—and most people reading this publication, who have been inculcated by what Finisia calls "Occupied America"—cannot and never will see the world the way that a native non-Colonizer can and does. We must simply accept this as the way of the world. Yet, if we are at all concerned about the survival of life on earth, even just ourselves, we must pay attention to these alien (to us) and alienated (for them) cultures and their world-views, and we must try to learn from them, even though much of it will go against everything we have been brainwashed to believe.

"Yampah," "Luksh," and "Coush." These are just three of the many plants that were food and medicine for the Native Americans which are now classified as "weeds" by the Colonizers because they are found in places where they "don't belong," have no use, or are in the way: in farm fields, on livestock range, or mixed in with invasives slated to be sprayed to death. They are illegal to plant on public land. These are three plants that Finisia introduced me to. Meeting them, interacting with them, and consuming them, did something to me that changed me. They touched me somewhere inside, awakening a hint of awareness that has long lay dormant. They are wild foods. Their growth habits, flavors, and energetic punch are distinctly undomesticated. They gave me a small taste (pun intended) of what has been called "re-wilding."

"Re-wilding" has been a buzz-word for some time. Like all buzz-words—"urban farming," "sustainability," and yes, "permaculture"—any meaning originally conveyed has been smothered through their popularity. Mummification through meme-ification, if you will. People use them to sound current, without concern for their own charade. We have whole clubs of naked emperors, with everyone tacitly agreeing not to point that out. In this context, Finisia is the one of the few people I've ever met who is either a) clothed, or b) proud of her nudity.

Regardless, when Finisia used the words "re-wilding" and "permaculture" to describe the ways of The Hoop, I heard those words as if for the first time, because they had meaning. No poseur is she, and for this she has lived a life of abuse. "I'm the dog everyone loves to kick," she has said. She has been harassed,

**Permaculture Design Course, the bread and butter of the movement.*

jailed, threatened, and chased off innumerable times, all for trying to follow the traditional, sustainable lifestyle of this land's original human inhabitants. The kind of lifestyle to which humans will have to return in order to avoid extinction. A lifestyle of seeding, cultivating, and eating many wild foods, not only "Yampah," "Luksh," and "Coush."

Finisia does not limit herself to these native plants. She is interested in any edible plants that can be re-wilded, including domesticated vegetables, and she has been experimenting with whatever she can get her hands on. The “is-it-native?” purity test does not interest her. She has seen the effects of “invasive” plants such as Cheat Grass, but makes no efforts to eradicate them. She just seeds the Yampah in the cheat-grass, believing that it will take over again on its own.

There's no debate about Climate Change as far as Finisia is concerned. In her decades on the land, she has seen how ecosystems are changing and becoming inhospitable for what had been growing there previously. Therefore these plants need to be moved to places better suited to them. Of course, this means intentionally “invading” an area with a “non-native,” but in her view, these plants are “refugees without legs,” and we—humans—must be their locomotion. The picture she painted revealed to me the folly of restoration work that attempts to return a piece of land to its so-called “pristine” state before the European Invasion; first, because Climate Change means that the mix of plants from a century or two ago will no longer thrive there as they did, and second, because the restorationists almost always leave humans out of their ecosystems, even though the indigenous people were integral, inseparable elements. What are “preserves” preserving? We know what Indian Reservations are “reserving”: exile and poverty. That's where we're trying to lock up our last best chance of communal survival, and ignoring it as hard as we can.

Finisia mentioned that—despite the ongoing genocide of the remaining Native Americans—“Long House” has declared that “it is time to open the bundles.” As far as I can tell, this means that Native American elders have decided that skills and knowledge need to be shared with whomever will listen because the crisis facing the earth is too great to keep secrets anymore. So, Finisia has been trying to teach. But, she says, she has an “availability/credibility” problem. That is, she is credible only when she is living The Hoop, eating the native foods, remaining wild *in* the wild. But she is not available then. If she does make herself available, away from The Hoop, then she loses her credibility. The dichotomy of “theory versus practice” doesn't apply here because there is only practice, albeit one rooted in deep wisdom. Like the

"weeds" that form the basis of the indigenous diet, one can know them only by giving oneself over to them, and all that comes with them, which is feral. All else is casual disregard.

This view, that actuality of knowledge can only be found in experiential immediacy—a view that is understood by any number of spiritual and indigenous traditions—is completely and utterly at odds with the egocentric, superficial, virtual reality of life in the US For example, think of the number of people you know who really believe that social media is a legitimate form of "community." The notion is absurd. There is, as Gertrude Stein put it, no *there* there. Ones and zeros are producing shapes on a screen, with no materiality, no vitality. The rest is in the imagination, which increasingly mistakes its pixillated illusions for real substance, to its own sad detriment.

Theodore Roszak put it well in "Where the Wasteland Ends": "The loss of transcendent energies in our society... has not been experienced as a loss at all, but as an historical necessity to which enlightened people adapt without protest, perhaps even welcome as a positive gain in maturity." Indeed. And including pretentious "earth-based spirituality" in a permaculture design course does service to neither permaculture (in its non-buzzword potentiality) nor to the dying flickers of transcendent energies we are snuffing out. Holistic comprehension can not be attained by copy-catting rituals and sonorously murmuring magic words from a culture totally divorced from ours, especially when that separation is being enforced *by* us with such strident and perverse insolence.

"Weeds," we spit whenever we see something that "doesn't belong." We do the same to the people among us who don't toe the lines, even though those lines do nothing but mark the border of an entrapping cage where we are beaten into obedience. Most people are happy to crack the whip whenever they can, all the while convincing themselves that there's nothing else they can do, that it's for their own good, and isn't that what everyone else is doing anyway? The authentic is an endangered species because we are stamping it out. People like Finisia are few and far between because we are striving for their extinction. The train is going over the cliff, and we are urging the engineer to speed up. "Weeds," we shout out, and reach for a sharp tool, a bottle of poison, or a social construct with which to eradicate.

But we're not all dead yet. So for now, any individual can still dismiss daydreams and taste the tangible. That is what I, anyway, found when I met "Yampah," "Luksh," and "Coush."

Agriculture & its Discontents, Part 3: The Ecological Devastation

Every farm field was once a habitat: a meadow, a marsh, or a forest. Each place was *home* to the plants, animals, insects, fungi, bacteria and others who lived there and each place was the playground for the multiplicity of intertwined relationships among all of these creatures. But this amazing complexity is replaced by barren monotony, often suddenly and with mechanical means. For many of the living things in this scenario, there is no escape. Plants cannot run away, of course, but neither can a butterfly in a cocoon, a tadpole in a pond, or a mycelial network in the soil. Those with mobility who are not killed in the transition are made homeless and might end up throwing another community out of balance. And this is just how it starts.

Like one piece in a puzzle of thousands, one particular piece of habitat connects with its neighbors in many ways and they are inevitably affected by its displacement from their midst. A hive of bees loses several patches of nectar-producing flowers, cannot feed all its young, and a bear has less honey; a colony of burrowing rodents is ravaged and their reduced numbers provide fewer meals for the fox; a female nut tree is cut down and no longer catches pollen from her male mates to make food for the squirrel, weevil and human gatherer-hunter. As a region is transformed by agriculture, holes are punched in the ecosystem that join together and metastasize over nearly every last inch of the greater landscape.

Once there was a creek—born bubbling in pine shade in the hills, conversing noisily with boulders and fallen logs on the slopes, then hushed and unhurried wandering through the wetlands of the valley floor—a creek that had hosted a run of Salmon from the sea every year. The mighty fish strove against the current, splashed through the clear, cold waters and sheltered in its shady meanders where they spawned, laid eggs in the gravel and died or were eaten by the eagle. But now the watercourse is exposed by clear-cuts on the hills, its banks are trampled and denuded of vegetation by cattle in the valley, its wetlands are

drained, its course straightened, and its flow choked with silt from the eroding fields. The Salmon's spawning grounds are gone, but they don't make it this far anymore anyway; their ancient route is blocked by dams built for power and irrigation.

Downstream, the creek enters a larger stream which feeds a river which joins a watershed that drains hundreds of thousands of acres and empties into the sea. Here is the wider world: acre after acre of wiped-out habitat, the former denizens mostly dead and gone, a few now entirely extinct from the planet. Here, whole forests are razed and milled, complete grasslands turned under by the plow, entire riparian ecosystems transformed into ditches. The crops are arranged in rows, the better for mechanization. The areas of the parcels are calculated using formulas devised by Euclid, "the father of geometry," for this very purpose.[72] The humans toiling in them are overworked, underpaid and treated as disposable.

Here, in the wider world, a tremendous amount of poison is dumped, to artificially accelerate growth and to kill "pests" and "weeds" (things that didn't exist before agriculture). Chemicals hijack the winds and strike other targets, contaminating soils and washing into the waterways and out to the ocean. Some travel through the food chain of the few wild creatures left, stunting and sickening them as they go. Some cling to the crop's skin or anchor in its tissues, exporting itself to our dinner plates.

Here, on these denatured acres, an immense monster squats with endless appetite, devouring the landscape unceasingly, defecating putrid toxins, and ravenously demanding more. To deliver the required imports, pipes are laid, wires strung, and asphalt rolled out. Far away, maybe on the other side of the ocean, minerals are mined, fuels extracted, metals smelted, plastics produced, and chemicals refined, wiping out more habitats.

Here, which is to say, nearly everywhere, greenhouse gases are expelled into the atmosphere in such huge amounts—from the multitudes of machines that move through the fields, from the dense concentrations of domesticated animals belching and farting in their pens, and from the vast network of transportation, industry and technology that supports it all—that the climate of the planet itself is being changed.

We are assaulting—both figuratively and literally—the mother of all habitats. No, scratch that. What we are assaulting, plain and simple, is our mother.

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By the numbers, the damage done to the environment by agriculture up to this point is severe and far-reaching. One might hope

that mere prudence, if intelligence lacks, would recommend restraint, but all trends currently indicate a worsening of the situation, with no improvement in sight. What follows are a few facts about soil depletion, fertilizers, pesticides, irrigation, genetically modified crops, Climate Change, and animal agriculture. Each of these topics have been the subjects of entire books, PhD dissertations, and documentaries, so in all cases the information presented is greatly (and hopefully not grossly) summarized.

Soil depletion

You can't farm without soil (hydroponics notwithstanding) but soil is the first casualty of agriculture. This is true even of horticulture (non-plow agriculture) which, especially in the tropics, exhausts the fertility of a parcel within a year or two, requiring it to lay fallow for some years. In rain forest regions, the common technique to prep land for agriculture is slash-and-burn, which wreaks absolute havoc on a habitat. But for abusing soil, nothing beats the plow, from the original ox-drawn and human-led tool of the Neolithic to the contemporary fuel-powered and unmanned GPS-coordinated behemoth of the 21st Century. As it turns out, forcibly breaking down a soil's structure with blades and removing the vegetative material that holds it together results in quite a lot of it eroding into waterways and blowing away in the wind. The remainder rapidly loses its inherent fertility as irrigation washes out minerals and pesticides wipe out vitalizing micro-organisms. In some instances, soils are purposely reduced to sterile substrates for precisely calibrated applications of chemical "inputs." All very "scientific" to be sure, though hardly rational.

Jonathan Watts gives some details in the *Guardian*:

> *A third of the planet's land is severely degraded and fertile soil is being lost at the rate of 24bn tonnes a year, according to a new United Nations-backed study that calls for a shift away from destructively intensive agriculture. ...Heavy tilling, multiple harvests and abundant use of agrochemicals have increased yields at the expense of long-term sustainability. In the past 20 years, agricultural production has increased threefold and the amount of irrigated land has doubled, notes a paper in the outlook by the Joint Research Centre (JRC) of the European commission. Over time, however, this diminishes fertility and can lead to abandonment of land and ultimately desertification. ...The JRC noted that decreasing productivity can be observed on 20% of the world's cropland, 16% of forest land, 19% of grassland, and 27% of rangeland.*[73]

Topsoil, once gone, is not quickly or easily replaced. According to the UN's Food and Agriculture Organization (FAO), in 2015:

> *Generating three centimeters of top soil takes 1,000 years, and if current rates of degradation continue all of the world's top soil could be gone within 60 years... Unless new approaches are adopted, the global amount of arable and productive land per person in 2050 will be only a quarter of the level in 1960... Soil destruction creates a vicious cycle, in which less carbon is stored, the world gets hotter, and the land is further degraded... We are losing 30 soccer fields of soil every minute, mostly due to intensive farming," Volkert Engelsman, an activist with the International Federation of Organic Agriculture Movements told the forum at the FAO's headquarters in Rome.*[74]

The role of microbes in the earth is often over-looked but they are truly the *sine qua non* of healthy soils. Their main food source is carbon, but carbon is becoming scarce in agricultural soils for a number of reasons. First, post-harvest "stubble" is often burned off to facilitate the next planting rather than being left to compost and return its nutrients to the ground. That carbon literally goes up in smoke. Second, plowing depletes carbon through disturbance. Third, the transfer of carbon from atmosphere to soil through plant photosynthesis is greatly reduced by livestock overgrazing. Says Professor John Crawford of the University of Sydney: "Simply put, we take too much from the soil and don't put enough back."[75]

Geologic evidence demonstrates that soil loss is not a recent phenomena in the history of agriculture, and that it dates back to the beginning of the Neolithic Revolution in the Near East. Sediment cores from the Dead Sea show that, around 11,500 years ago, erosion from the surrounding area started occurring at a rate 3-4 times greater than in previous periods when the factors were only climatic and tectonic. This timing exactly matches with the implementation of sedentary horticulture in the area.[76]

Fertilizers

In the most general sense, a fertilizer is any substance applied to a crop which contains nutrients that encourage plant growth. Rustically, peeing in the garden is a bona fide form of fertilizing, since urine contains nitrogen. Agriculturally, fertilizers are classified as "organic" when sourced from biological materials like plants, animals and fungus and "inorganic" when manufactured from minerals or synthetic chemicals. Examples of organic fertilizers are manure, compost, kelp meal, oyster shells, cottonseed meal, alfalfa meal, blood meal, bone meal and feather meal. The

most commonly used inorganic fertilizers are urea, diammonium phosphate, potassium chloride, anhydrous ammonia and aqueous solutions of ammonia and ammonium nitrate.[77] While the nutrients in organic fertilizers are gradually released as the materials break down, the nutrients in inorganic fertilizers are available right away. Add this advantage to lower price and easier application and the popularity of synthetics is explained.

Please note that "organic" as in fertilizer is different than "organic" as in farming. For a farm or a fertilizer (or vegetable or an animal, etc.) to be labeled as "organic" as opposed to "conventional," it must follow certain standards and pass a certification process. For example, as a fertilizer, manure is classified as organic (as opposed to inorganic) but unless it is *certified* as organic (as opposed to conventional) it cannot be used on crops being raised as organic. To add additional confusion, organic standards also allow the limited use of *in*organic fertilizers.

Synthetic inorganic fertilizers are generally highly soluble in water, a factor that makes them so effective and also so dangerous. With precipitation and irrigation, chemicals in the field are easily dissolved and washed into local watercourses as "run off." They are also "leached" from soil into the groundwater where they taint aquifers or migrate into watercourses as well. This sends them downstream, where they join more effluence along the way. Major rivers around the planet are laden with this runoff and "dead zones" have formed and are expanding where they enter the oceans. Though nitrogen and phosphorus, which inorganic fertilizers contain, are key for plant and animal growth, their overabundance in water can cause dangerous "blooms," when algae or cyanobacteria experience rapid, run-away growth. The dense concentrations lead to high mortality rates and the consequent decomposition of so many tiny dead bodies consumes the oxygen in the water, leading to a state described as "anoxic" or "eutrophic." Additionally, some cyanobacteria produce neurotoxins that at their normal populations do not cause widespread harm, but are problematic at the scale of an algal bloom. Both conditions—eutrophic and neurotoxic—can cause mass mortality events for fish, birds, turtles and mammals.[78]

The dead zones are increasing in size, writes Julia Conley in an article entitled, "New Study: Big Ag, Climate Crisis Key Drivers of Ocean 'Dead Zones' Quadrupling in Size Over Last 60 Years":

> *The increased use of chemical fertilizers by the industrial agriculture sector over the past several decades ... has prompted large-scale run-off of sewage and other byproducts entering ocean waters, causing deoxygenated dead zones to quadruple in size since 1950—now covering an*

area roughly the size of the European Union. ... Low-oxygen dead zones make the ocean less inhabitable for marine life, suffocating creatures and reducing the area where they're able to thrive.[79]

In *Science* magazine, Denise Breitburg explains:

In estuaries and other coastal systems strongly influenced by their watershed, oxygen declines have been caused by increased loadings of nutrients (nitrogen and phosphorus) and organic matter, primarily from agriculture; sewage; and the combustion of fossil fuels. In many regions, further increases in nitrogen discharges to coastal waters are projected as human populations and agricultural production rise.[80]

It should be noted that nitrogen in an organic form, such as manure (including manure that's certified organic as opposed to conventional), can also cause eutrophic conditions in bodies of water. Too much nitrogen is too much nitrogen, no matter the source.

Pesticides

A dizzying array of chemicals are used to eradicate or control agricultural "pests," which can be plants, animals, insects, molds and microscopic pathogens. Many pesticides are literally "dizzying" for humans when inhaled or consumed, or are far worse, causing cancer, birth defects and death. Farmers and farmworkers are particularly susceptible. "In rural areas of developing countries, 3 million farmers suffer annually from serious pesticide poisoning and 25 million farmers suffer from mild poisoning, resulting in approximately 180,000 fatalities among agricultural workers annually."[81]

According to Wikipedia:

in 2006 and 2007 [the last years for which such figures seem to be available], the world used approximately 2.4 megatonnes (5.3×109 lb) of pesticides, with herbicides constituting the biggest part of the world pesticide use at 40%, followed by insecticides (17%) and fungicides (10%). In 2006 and 2007 the US used approximately 0.5 megatonnes (1.1×109 lb) of pesticides, accounting for 22% of the world total... As of 2007, there were more than 1,055 active ingredients registered as pesticides, which yield over 20,000 pesticide products that are marketed in the United States.[82]

That sounds like a lot of megatonnes—and no denying that it is—but the figure doesn't speak to the relative toxicity of the different pesticides used. For example, one pound of fungicide "A" might be ten times more toxic than a pound of insecticide "B."

Conversely, insecticide "B" might have more cascading effects throughout the ecosystem. Regardless, the aggregate effects of those megatonnes in the environment are well-documented, regardless of any disingenuous claims by the chemical industry. One morbid indicator of how well-known it is that pesticides are deadly: one third of suicides throughout the world are committed by ingesting them.[83]

Since inorganic pesticides are products of "Science!" you might assume they are effectively deployed. But you'd be wrong. Incredibly, "[a]lthough pesticides are directly applied in soils and plants, *only 1% of pesticide sprayed is delivered to the intended target*" [my emphasis].[84] By dint of their particulate nature when sprayed, pesticides are easily carried away by the wind and end up contaminating soil and water and poisoning other creatures. Subsequently, at the large scale they are used, pesticides degrade habitat, reduce biodiversity and magnify extinction rates. Ironically, pollinators required for food production are frequent victims. As with war, one can question whether non-target damage can honestly be described as "collateral"—"being aside from the main subject, target, or goal; tangential"[85]—when it is *inevitably*, one could even say *characteristically*, a "subject" of nearly every attack, never *truly* "tangential." But nature can be resilient, and targeted plants can and do develop herbicide resistance over time, meaning they survive being sprayed. Unfortunately, the agriculture industry's response is to jack up the amount of herbicide and develop new poisons.

Glyphosate, the active ingredient in Monsanto's Round-Up was declared the most heavily used herbicide in history in February 2016.[86] (I don't know if those numbers took into account the heavy use by the US, in the war on Vietnam, of Agent Orange, which was also manufactured by Monsanto, among other companies.[87])

Evidence has been piling up for years, and around the world, that demonstrates the dangers of glyphosate-based products. "Symptoms of exposure to glyphosate include eye irritation, burning eyes, blurred vision, skin rashes, burning or itchy skin, nausea, sore throat, asthma and difficulty breathing, headache, lethargy, nose bleeds, and dizziness" and it has been associated with "increased risks of the cancer non-Hodgkin's lymphoma, miscarriages, and attention deficit disorder." In laboratory tests, glyphosate has caused genetic damage to human and animal cells.[88] Farmers living in areas where glyphosate is used have experienced higher than normal rates of miscarriage.[89] "Glyphosate-containing herbicides can cause genetic damage in fish, and also disrupt their immune systems... can cause genetic

damage in insects... [and] can harm amphibians in a variety of ways, including causing genetic damage and disrupting their development." Additionally, birds and spiders are among the animals affected by habitat loss when host and food plants are killed by glyphosate.[90] Monarch butterfly populations have fallen in part because their main food source, Milkweed (genus *Asclepias*), is being wiped out by glyphosate:

> *Since 1999 their numbers have declined 82%. What could have caused this? During their larval stage monarchs, which can be found from the US central states to the east coast and into southern Canada, feed exclusively on milkweed plants. We observed in 2001 that many monarchs were feeding on milkweeds in agricultural fields—more than 80% of monarchs from the Midwest. Since then, milkweeds in and around agricultural crop fields have gradually been eliminated, through a combination of spraying with Roundup (glyphosate) herbicide and increased planting of corn and soybeans genetically modified to be resistant to the herbicide.*[91]

It is a testament to Monsanto's political power that the herbicide has so far avoided any meaningful regulatory limits.

Organochlorine pesticides (OCPs) were the first class of synthetic pesticide to be used in agriculture. As insecticides they functioned by subjecting the insect to convulsions, paralysis and "eventual" death. OCPs were found to be carcinogenic (causing cancer), mutagenic (causing genetic mutation) and causing serious endocrine disorders for mammals, fish and birds. Dichlorodiphenyltrichloroethane, better known as DDT is an infamous example, banned in the USA in 1972, and worldwide in 2001.*[92] Most other OCPs are no longer legal to use in agriculture[93] though DDT is still permitted for reducing outbreaks of malaria (by exterminating mosquitoes).[94] Unfortunately, OCPs are quite persistent in soil, and some that have been off the market for more than thirty years are still present in the environment, and continue to claim victims.

Some inorganic pesticides are both hydrophobic—non-soluble in water—and lipophilic, meaning they are easily absorbed by fat. The result is that when animals ingest such pesticides, they are not flushed out by urination and instead are stored in their tissues. Similarly, plants that take up these substances collect

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* *DDT was banned for most agricultural use worldwide by the Stockholm Convention on Persistent Organic Pollutants, a United Nations treaty signed in 2001 and effective starting May 2004. The treaty "aims to eliminate or restrict the production and use of persistent organic pollutants."*

them in the oils in their seeds. Through a process known as "biomagnification" or "bioamplification," levels of toxins increase up the food chain. For example, a plant tainted with pesticides is eaten by a mouse who is eaten by a snake who is eaten by a bird of prey. The resulting accumulation in the bird is at a higher concentration than would occur through direct exposure to the toxin. In a marine environment, the toxin is consumed by tiny plankton who are eaten by small fish who are eaten by bigger fish, and so on, with the highest amounts in top predators like swordfish and sharks. Bald Eagles are a top-tier predator species whose numbers declined rapidly in the USA in the 1960's but whose populations rebounded after DDT use was banned. Another well-known example is the California Condor, who nearly went extinct.[95]

But despite the cessation of sale and use of certain pesticides, including many OCPs, "decline[s] in birds, wild bees, and aquatic organism populations have been continuing" probably due to "newly synthesized pesticides that are present in every kind of habitat on the world."[96] Long-term effects are impossible to predict with complete accuracy, so every new product is a potential grandkid-killer.

As a personal anecdote, I will mention that my paternal grandfather, who earned a masters degree in agriculture from the University of Minnesota, worked for the Extension Service showing farmers how to apply DDT in their orchards. This was in the 1950's before its danger was commonly known. He ended up dying at an early age, years before I was born. Of course at this date it's impossible to connect his death to his chemical exposure, but I have often wondered.

Irrigation

Irrigation damages the environment from the points of source to delivery, and the bigger the project, the worse it is. First, anytime water is diverted from one place to another, there is always at least one loser: the immediate locale from which it was taken. Whether it is a spring, river or lake, the effects of use will make their mark, sooner or later. A spring that is siphoned off in whole or in part no longer provides as much water to whatever channel had formed on its downhill side, where hydrophilic (water-loving) plants and animals would have lived. Of these, some will die when the flow decreases. Further down the slope, the creek fed in part by the spring now has less volume, causing the temperature of the water to rise. If the water is too warm, certain fish (such as Salmon smolt), cannot survive. Fewer Salmon is less food for Bears who eat them, and less nitrogen introduced into the local

environment through their scat. Less nitrogen means lower soil fertility which means fewer plants which means less leaf material for herbivorous animals, fewer flowers for nectar-loving insects like butterflies and bees, and not as many seeds for rodents and birds.

Meanwhile, the crop being irrigated from the spring might not even be food. In northern California, rivers have been running too low for the Salmon because of the wine and *Cannabis* industries. In other words, we are prioritizing getting drunk and high over the lives of other creatures. Such trade-offs are emblematic of agriculture. That these acts are not considered theft or assault is demonstrative of mere cultural creed, not the honest administration of logic.

Irrigation can also adversely affect the land where it's applied. All water contains some minerals which are deposited on the soil surface and which over time can build up and become detrimental for plant health. This started happening back in the Neolithic; writes Chellis Glendinning: "By 2000 BC, there were reports of 'earth turned white,' a clear reference to salinization."[97] Salinization is addressed, in turn, by purposely *over*-irrigating (depleting a water source elsewhere), in order to leach the deposits out. If successful, they are flushed into the ground water or nearby watercourses, which of course merely moves the problem.

While irrigation projects can lower water tables in the areas where the pumping happens, they can also raise them further downstream, which leads to various ecological issues: water-logged ground that is *too* wet for agriculture; less leaching that leads to higher salinity; stagnant water that encourages water-borne diseases like malaria; and higher levels of pesticide and fertilizer toxicity in local drinking water, as washed in from upstream.[98]

Reservoirs built to collect and store water for irrigation are environmental disasters for the rivers they block, both up and downstream from the dam. A few of the problems:

- the ecosystems behind the dam are obviously submerged underwater, killing most of what lives there that can't get away;
- migrating fish seeking their spawning grounds are blocked;
- human-regulated flow interrupts the previous pattern of seasonal flooding and receding, which delivered nutrient-rich sediments essential to habitats along the river;
- reservoir water is usually colder and lower in dissolved oxygen than river water and can have adverse effects downstream when it is released;
- compared to the rivers they blocked, reservoirs are stagnant, leading to higher than normal growth of algae and other aquatic weeds;[99]

- due to increased stagnant water and other changes in flow, large water projects can be vectors for "malaria, bilharzia and other tropical diseases;"[100]
- large reservoirs can even affect seismic activity due to the sheer weight of their reservoirs and to changes in the surrounding water table;[101]

Genetically Modified Crops

Genetically modified (GM) crops are held out by their proponents as the key to a sustainable agricultural future. They have certainly become prevalent. As of 2010 in the USA, "as much as 86 percent of corn, up to 90 percent of all soybeans and nearly 93 percent of cotton were GM varieties." Other GM crops include potatoes, rice, sugar cane, canola (for oil), sugar beets, peppers, squash, flax, chicory, peas, papayas, alfalfa and Kentucky bluegrass.[102] The two most common forms of genetic modification are for pesticide resistance and for insecticide production. Neither has lived up to promise, and both have deleterious effects in the environment.

In the first case are "Round-Up Ready" crops, which can withstand application of glyphosate-containing herbicides used to kill "weeds;" pesticides can be sprayed with far less care or precision and in larger amounts since they won't kill the money-maker. "Glyphosate use has skyrocketed in recent years because of the widespread adoption of genetically modified corn, soy, and cotton varieties that Monsanto developed to be resistant to glyphosate, according to the Center for Food Safety. Although the companies promoted glyphosate-resistant crops as a way to *reduce* herbicide use, there's actually been a sharp increase in use on corn, soybeans, and cotton since 2002, thanks to the emergence of resistant weeds. Farmers are battling glyphosate-resistant weeds with more glyphosate and other herbicides"[103] [emphasis in original]. As of 2014, "nearly 200 million pounds are dumped on American soil each year, including the agricultural sector, home gardens and yards."[104] So the development and planting of Round-Up Ready crops has led to more herbicides entering the environment, with all the harm they bring.

In the second case—genetic modification for insecticide production—are *Bt* crops, which contain an insecticidal toxin, *Bt* (*Bacillus thuringiensis*), in every one of their cells that kills any "pests" who eat it. Specifically how it works is that *Bt* dissolves in the insect's intestines and activates. "The toxins then attack the gut cells of the insect, punching holes in the lining. The *Bt* spores spills out of the gut and germinate in the insect causing death within a couple days."[105] (Not exactly "humane," though I know that concerns very few of us.) The *Bt* toxin is not discriminating,

however, and kills the larvae or caterpillars of many kinds of insects, including those that are beneficial for agriculture. Limiting its exposure only to the target "pest" species is impossible. As with Round-Up Ready crops, *Bt* crops were marketed as a way to use less pesticides. But even if farmers have been spraying less, that doesn't equate to less poison in the environment. In fact, "the amount of insecticide produced by the plant is in many cases far more than the amount of chemical insecticide spray that is displaced."[106] Additionally:

> *Pests are rapidly evolving resistance to the* Bt *toxins in GM* Bt *crops. Even when* Bt *toxins are effective in killing the target pest, secondary pests that are not controlled by* Bt *toxins are moving into the ecological niche. Both developments are forcing a return to chemical insecticides.*[107]

Because the *Bt* toxin is present in every cell of the plant, it enters the diet of every human or animal who eats those plants. The biotech industry has repeatedly declared that *Bt* only harms insects, but this claim has been disproven by a raft of scientific research. Mammals fed *Bt* crops have experienced a number of adverse reactions including effects of toxicity in internal organs, weight gain or loss, reproductive organ damage, and disturbances to blood biochemistry and the immune system. Also, "Bt toxin proteins have been found circulating in the blood of pregnant women and in the blood supply to their foetuses."[108]

Since 1996, when GM crops were first grown on a widespread commercial basis, hundreds of incidents of GM contamination have occurred. These include cross-pollination by GM-crops of neighboring non-GM crops and wild relatives; establishment of feral populations of GM crops that have "escaped" from fields; seed mixing (non-GM seed with GM seed, or unapproved GM seed with approved seed); and contamination of animal feed (including pet food) with GM ingredients. By far the most number of incidents have involved the tainting of the human food supply. No international body monitors these incidents, so in 2005, GeneWatch UK and Greenpeace International launched the online GM Contamination Register, which tracks publicly documented cases.[109] As of February 2017, the register contained 448 incidents from 65 different countries. Who knows how many other cases are hushed up or simply never discovered.

GM crops have been a big success in one way. As Colin Todhunter, a journalist who frequently writes about agriculture, and often focuses on GM issues, put it:

> *We just have to look at the outcome of GM technology since GM crops were commercialised over 20 years ago. Has it*

reduced pesticides use? No. Has it increased yields? No. Have companies who control the technology and its associated proprietary inputs (e.g. Roundup/glyphosate) made a financial killing? Certainly.[110]

Climate Change

Agriculture is a major contributor to Climate Change due to the significant amount of greenhouse gases it produces. The majority of these gases come from four different sources:[111, 112, 113]

- *Deforestation for land-clearing*. Forests are "carbon sinks"—that is, they store carbon dioxide (CO_2)—so when the trees are cut down, much of the CO_2 dissipates into the atmosphere. Tilling cleared land produces additional CO_2, which the soil releases when it is disturbed.
- *Rice cultivation*. The customary flooding of fields causes anaerobic decomposition, which produces methane (CH_4). CH_4 produces about 20 times more warming in the atmosphere than CO_2 in the short term (a timeline of less than a century).
- *Enteric fermentation by cattle*. CH_4 is a natural byproduct of the digestive process of ruminant animals such as cows, who number in the millions.
- *Fertilizer application*. Nitrous oxide (N_20) is created when synthetic fertilizers react with the soil. 60-80% of all anthropogenic N_20 emissions are agriculturally sourced. N_20 is about 300 times more warming than CO_2.

Additional sources of greenhouse gases from agriculture are produced by burning savannahs, manure management methods,[114] fuel burned by farm machinery, the factories that produce agricultural chemicals, and by post-harvest food processing.[115]

Although human-induced greenhouse emissions did not become a drastic factor in the global climate until the industrial age, human activities had subtle but measurable warming effects starting in the Neolithic. Ice cores show "anomalous gas trends," specifically of CO_2 and CH_4, starting 8000 years ago when deforestation became widespread for agriculture, ship-building and metal-smithing. Large-scale rice irrigation, with its CH_4 emissions, commenced about 3000 years later (5000 years ago).[116]

But isn't more CO_2 good for plants? After all, they need it to grow. So won't higher CO_2 levels result in bigger plants and, ergo, more food for us? As it turns out, it's not that cut and dried.*

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* *No pun intended! "Cut and dried" is one of many figures of speech we use regularly without thinking about its agricultural meaning. In this case, the connotation of "definite" originally referred to prepped firewood or hung herbs (*Collins COBUILD Idioms Dictionary, 3rd ed. *[2012] via idioms.thefreedictionary.com).*

- Pumped up plants are less nutritious. According to one study: "Rising CO_2 revs up photosynthesis, the process that helps plants transform sunlight to food. This makes plants grow, but it also leads them to pack in more carbohydrates like glucose at the expense of other nutrients that we depend on, like protein, iron and zinc."[117]
- Plant growth is dependent on a number of different elements *in particular ratios to each other*. Nitrogen, for example, is also essential. The amount of nitrogen in the soil varies from place to place, but no matter how much there is, at some point it will fall short of what's needed by a given level of rising CO_2. When that happens, any additional CO_2 is extra and goes unused by the plants.[118, 119]
- Changes in chemistry caused by elevated levels of CO_2 can make plants more vulnerable to insect attack. This has been observed contemporaneously—with soybeans, one of the world's staple crops[120]—and historically: the fossil record shows that 55 million years ago, during a period when CO_2 rose rapidly, insect foraging of leaves increased by over 50%.[121]
- Not all plants grow bigger with more CO_2. Maize (aka Corn), for example, does not, due to differences in how it photosynthesizes.[122] Additionally, higher temperatures (such as are accompanying Climate Change) are linked to decreased viability of Maize pollen, which leads to smaller kernels.[123]
- Evidence has been emerging that non-food plants that compete with crops—aka "weeds," "noxious" plants or "invasives"—are reacting more positively to increasing CO_2 levels than food plants.[124] Such heightened competition can be expected to lead to lower yields and increased use of pesticides.
- Finally, even if we put aside these disadvantages, bigger plants that grow faster require more water, a resource that is becoming rapidly more scarce from overuse.[125]

Animal Agriculture

Deserving special mention is the sector of agriculture that is devoted to raising animals for meat, dairy, eggs and fiber. This sector has a large influence on the environment, greatly out of proportion with the number of humans it serves or—as is the case in the wealthier nations—it *over*-serves. The numbers that follow are drawn exclusively from the Food and Agriculture Organization of the United Nations, which published a report in 2006 called "Livestock's Long Shadow—Environmental Issues and Options." The title refers to the "very substantial contribution of animal agriculture to Climate Change and air pollution, to land, soil

and water degradation and to the reduction of biodiversity," writes Samuel Jutzi, Director of the FAO's Animal Production and Health Division, in the report's preface. For those with genuine curiosity about the topic, this 416 page document offers a wealth of data and citations, augmented with many tables, graphs and maps. What I excerpt here are only the barest and most general of the facts related to these issues.

Geographic footprint:

> *The livestock sector is by far the single largest anthropogenic user of land. The total area occupied by grazing is equivalent to 26 percent of the ice-free terrestrial surface of the planet. In addition, the total area dedicated to feedcrop production amounts to 33 percent of total arable land. In all, livestock production accounts for 70 percent of all agricultural land and 30 percent of the land surface of the planet...*[126]

Deforestation and soil degradation:

> *Expansion of livestock production is a key factor in deforestation, especially in Latin America... 70 percent of previous forested land in the Amazon is occupied by pastures, and feedcrops cover a large part of the remainder. About 20 percent of the world's pastures and rangelands, with 73 percent of rangelands in dry areas, have been degraded to some extent, mostly through overgrazing, compaction and erosion created by livestock action.*

Climate:

Regarding carbon pollution, "Livestock's Long Shadow" states that "the livestock sector is a major player, responsible for 18 percent of greenhouse gas emissions measured in CO2 equivalent" which would put it on par with the transportation sector. This stat has been frequently quoted since the report was released, often with the implication that eating meat is as bad as driving a car in terms of emissions. While this makes a great talking point, it turned out not to be factual, with 14.5% being closer to the mark when more accurate methods were applied.[127] That the majority of this results from deforestation, though, remains a serious and sobering point that should not be minimized. Burger production does cause clear-cuts. Further, the report correctly notes that "livestock are also responsible for almost two-thirds (64 percent) of anthropogenic ammonia emissions, which contribute significantly to acid rain and acidification of ecosystems."[128]

Water:

The livestock sector uses over 8% of water used by humans annually, mostly for irrigating feedcrops.

> *It is probably the largest sectoral source of water pollution, contributing to eutrophication, "dead" zones in coastal areas, degradation of coral reefs, human health problems, emergence of antibiotic resistance and many others... Global figures are not available but in the United States, with the world's fourth largest land area, livestock are responsible for an estimated 55 percent of erosion and sediment, 37 percent of pesticide use, 50 percent of antibiotic use, and a third of the loads of nitrogen and phosphorus into freshwater resources.*[129]

Biodiversity:

> *Some 306 of the 825 terrestrial ecoregions identified by the Worldwide Fund for Nature (WWF)—ranged across all biomes and all biogeographical realms, reported livestock as one of the current threats. Conservation International has identified 35 global hotspots for biodiversity, characterized by exceptional levels of plant endemism and serious levels of habitat loss. Of these, 23 are reported to be affected by livestock production. An analysis of the authoritative World Conservation Union (IUCN) Red List of Threatened Species shows that most of the world's threatened species are suffering habitat loss where livestock are a factor.*[130]

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Why did we do it?

The immediate results of the Neolithic Revolution were declines in human health and the general quality of life. These were followed by oppressive social structures based on inequality, powered by slavery and expanded through warfare. Not too long after followed environmental consequences, such as the desertification of the Near East. Long story short, the transition to agriculture was a disaster, and this would have been obvious at many points along the way from the very beginning. So why, then, did humans do it?

Many different hypotheses have been put forward over the years, and Jacob L. Weisdorf, of the University of Copenhagen, presents and dispenses with the major ones in his 2005 article, "From Foraging to Farming: Explaining the Neolithic Revolution."[131] Weisdorf also leaves us with a few ideas that are still being explored. A summary of his work follows.

The "Stage" hypothesis paints agriculture as the highest rung of achievement on a ladder of progress with gathering/hunting at the bottom and pastoralism in the middle. First proposed by the Greeks—who believed the stages were ultimately cyclical—it was embraced by the Victorians as they found it illustrative of their concept of "progress" and the supposed inevitability thereof. Scientists stopped supporting this hypothesis by 1930, and since then have sought to identify what external pressures could have motivated the transition. Despite this, and as mentioned earlier, the contemporary, popular perspective of agriculture remains essentially Victorian, though with the additions of higher rungs for industry and hi-tech.

In the 1930s, the "Oasis" hypothesis was proposed, which suggested that climatic changes related to the end of the last glacial period—namely dryness—drove humans to seek refuge in oases and river valleys where they domesticated plants as a survival strategy. This hypothesis was eventually rejected because a) the climatic changes were too gradual to force such a move and b) agriculture was adopted in other areas of the world without those climatic circumstances.

In the 1960s, the "natural habitat" hypothesis emerged, based on the idea that agriculture was "a response to opportunity rather than necessity," and that people started farming because they were living in bountiful places and had leisure time to explore new methods. However, as anthropological research demonstrated that farming was much harder work than gathering-hunting, this idea lost favor. Who, after all, would spend their leisure time seeking a lifestyle with less leisure time?

From the 1960's through the 1980's, a number of new theories were floated that claimed that rising human population and dwindling wild resources were responsible for the switch. The "marginal zone" hypothesis suggested that farming was a response to more people in areas with marginal or scant resources. However, archaeological evidence shows that agriculture began in "resource-abundant" locales. The "overkill" hypothesis posited that the extinctions of particular animals, especially megafauna, motivated agriculture as an alternative means of sustenance. But the animal extinctions in question did not coincide in place or time with agriculture's beginnings. Finally, the "population pressure" hypothesis said that humans turned to farming because their numbers had risen too high and had led to starvation. The problem with this theory is that evidence of nutritional stress in skeletons does not show up until *after* agriculture was adopted.

Since the 1980's, new theories have been proposed that are still under consideration. For example, the "human/plant symbio-

sis" and "people/plant interaction" hypotheses imagine processes in which plant-human codependencies resulted from unintentional plant-breeding. That is, through accidental selection, humans domesticated plants that could not live without human interaction and which, in turn, humans could not feed themselves without.

Other scientists emphasize climatic changes at the end of the Paleolithic, specifically the "Younger Dryas,"[132] a period of cooler, drier conditions that lasted from ~12,900 to ~11,700 years ago. The trends of the Younger Dryas reversed the worldwide warming that had been happening since the Last Glacial Maximum began receding 7000 years previously (20,000 years ago). Because the onset of the Younger Dryas was quite abrupt—transitioning within a decade or even less—wild plant populations could have declined rapidly, necessitating their purposeful cultivation and subsequent domestication.

However (and finally moving on from Weisdorf), there is scant evidence for the cultivation of domesticated plants during the Younger Dryas. Of the Neolithic "founder crops,"[133] Emmer wheat (*Triticum dicoccum*), Einkorn wheat (*Triticum monococcum*) Barley (*Hordeum vulgare/sativum*), Lentils (*Lens culinaris*), Peas (*Pisum sativum*), and Chickpea (*Cicer arietinum*) have not reliably been dated back to before 10,600 years ago.[134] That being said, wild progenitors of some of these plants were being harvested, cooked and stored as far back as 23,000 years ago[135] and distinguishing between wild and domesticated forms can be challenging. With Einkorn, for example, researchers look at two aspects of the seed's morphology (shape) to make the call: its size—smaller in wild, larger in domestic—and the scar where the seed broke off from the stem—smooth in wild, rough in domestic.* [136] This can be subtle stuff, for sure, and seems a weak peg to hang a big idea on.

Regardless, all of the above theories are focused on the Neolithic Revolution and its crops on the Eurasian continent, but the domestication of plants and adoption of agriculture in the Americas took place as much as 6000 years later, with very different circumstances of geography, climate, flora and fauna, etc., and with no apparent input from the outside.

This might very well be a situation where the facts will always remain a mystery. Though the truth is a different matter...

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* *The rougher scar results from the fact that domesticated seeds "held on" to their stems until being intentionally dislodged by threshing, rather than "shattering" easily, as in the wild form. The lack of shattering made it easier to harvest large amounts at once.*

Giving Love to Every Little Root That's Still Growing

Interview with Bobby Fossek

I met Bobby Fossek in Cove, Oregon, in July 2017. Bobby and his family live at the Ascension School Camp & Conference Center in Cove, Oregon, which is owned by the Episcopalian Church. Episcopalians in the US have renounced the Doctrine of Discovery and are striving to make reparation to Native Americans, so the diocese in eastern Oregon invited Bobby to restore traditional first foods onto the property. Bobby also engages in wildtending throughout the surrounding areas with his partner and their daughter. They are part of a resurgence among younger Native Americans throughout North America who are revitalizing their cultures and traditional practices. I found them quite inspiring. In January 2018, Bobby and I spoke on the phone about these subjects. What follows is a transcript, edited for clarity and length.

Kollibri terre Sonnenblume: What's interested me so much the last couple of years living in the Pacific Northwest is being able to come into contact with some traditional practices, pre-agricultural practices, that still seem pretty intact. They were interrupted—for want of a better word—only pretty recently, in the last 150 years or so. In Europe those things have been gone forever. There's no memory left. But in the Pacific Northwest, the invasion arrived so much later than the rest of the continental US that it seems like there's more left of the old ways. So you're from the area where I met you, in eastern Oregon?

Bobby Fossek: Yes, I grew up on the Umatilla reservation with my dad. He's an enrolled tribal member there. My mom is from Lagrande, up in the Blue Mountains. You've been there. So I grew up in the Blue Mountains, is what I tell people, because I was always back and forth between being in the valley and the reservation.

KtS: Did either of your parents practice any of the things that I've known you to practice, with the planting and the harvesting and processing, et cetera?

BF: Not so much. I've been teaching my mother lately. She has some Native descent from the area and she feels a strong call towards medicines and plants so we've been learning together. My father was raised traveling around, camping a lot with my grandma, going to powwows a lot, so most of the knowledge that he's retained is focused around hunting. He's a big hunter so that's the area of our traditional wisdom that he holds and that he passed on to me. He took me out. He always had me out in our traditional areas, calling it hunting but a lot of time it was just getting to know the landscape, getting to know the patterns. He didn't remember all the names of the plants so I've been piecing it together from what I know from my family and friends and relatives around the reservation and what I've learned over the years from various sources.

KtS: Have your main teachers been from the reservation?

BF: I'd say I've learned a lot of what I know that way. My partner goes to the Long House and helps with the feasts and the gathering quite a bit so I kinda started learning about it from the Long House. I started to go to the Long House when I was about 17, off and on, going to the feasts and the services on the weekends. My dad would show me the plants that he thought were food but he wasn't exactly sure which ones were which so going to the Long House I learned about the foods from the elders and the women who gather there. And of course, I learned a lot from Finisia [Medrano], someone who's lived with the foods and the land for a long time. Really inspired me and helped me improve what I was doing.

And then I worked at the native plant nursery on the reservation which helped me get a feel for all the individual pieces of that puzzle: which are the keystone plant species of the area and what they do and what they're used for and how they benefit the environment and the ecosystem; what their specific role is: cleansing the water, shading the river, storing moisture in the dry soils, or whatever the case may be. So the native plant nursery was a big help. A lot of that was knowledge compiled from elders over the years about what plants were used and important and how they were used and what the ecosystem used to look like. That was a big deal—hearing stories of what it used to look like pre-agriculture.

Because like you said, it's only been a short time for our tribes up here and our reservation. They wanted to put our peo-

ple elsewhere but our people fought to make sure that we stayed home. They were trying to stamp out our culture, but they inadvertently created a stronghold for it. They put our reservation in the heart of our homelands here in the foothills of the Blue Mountains where a lot of the bands traditionally wintered. So back in the forests and stuff, the songs and the ways of life were kept alive. My great grandma and grandpa moved onto the allotments but it was kind of a blend of farming and still going out to gather the traditional foods. That knowledge—quite a lot of it—was preserved. Not nearly all of it, but enough to keep us engaged and keep us moving forward, carrying on those old ways.

*KtS: So there actually is something unbroken that you've been able to connect wi*th?

BF: Right. Still a pretty strong spiritual faith and also physical practices, which are all one and the same, you know.

KtS: I think that for Europeans, what you just said—about the physical and the spiritual being the same—doesn't make sense.

BF: Right. Well that's kind of the difference in mindset. From the get go, people came here, they thought we were just idling and wasting time and had no god and no connection to God, but really it was always this intrinsic knowing that everything—that same breath of life that animates us—animates everything around us so we're all interconnected. So, living in a good way, where you're gathering what you need, but living in a way that is regenerative so that your children's children's children will still have those foods and that way of life. So just the act of gathering your food was sacred, done prayerfully, songs sung for the different foods, done in a very prayerful manner.

KtS: The planting back was always part of it?

BF: It seems like it. There's not a whole ton of focus put on that around the reservation and I don't hear about it much at the Long House. They *do* teach that these plants need that interaction; just by simply going out and digging them in a good way, you're helping to regenerate them because the seeds fall back into the soil and what not. But I have heard several stories about tribes gathering and how exchanging seeds was a big part of that, so that leads me to believe that moving plant genetics around was a part of life. It was like everything else they brought to the table—or to the blanket. At some of these old digging sites, there are foods there, plants there, that are said to only be in the Columbia River Gorge but they're up here in the Blue Mountains. So really things were being moved around.

KtS: Tobacco is originally from Brazil. And of course the maize and squash and bean complex is from central America but made it all the way up to what they call New England. I don't think there's anything controversial about plants having been moved around historically. Nowadays there's people who have concerns about plants being brought into other areas and calling them "invasive" but it seems like there was a different mindset before that didn't have that same separation.

BF: Right. I would imagine that there was some sort of discernment—knowing the characteristics and the spirit of the plant, what it's going to do to the ecosystem and what to put where. I can't imagine that it was done without any thought given to it.

KtS: So, you have this job where you're working at this camp out there and you're responsible for maintenance, inside and outside.

BF: Yeah I'm the maintenance guy here.

KtS: So as part of that, you're taking care of the grounds and you're able to do planting there.

BF: Right. That was seemingly one of the reason they brought me in. I grew up going to the camp. My father married an Episcopalian woman and this is an Episcopalian center here. So I came back to volunteer and visit when I'd gotten back to Oregon after being gone. They were really striving to learn how to honor the original people of this land and the ecosystem and so they brought our family in and brought us into the dialogue to see what that means to us. Of course you ask ten people from our tribe a question and you'll get ten different answers but to us that meant honoring the ecosystem because we can't have our life without a healthy ecosystem. So I began implementing some different plantings. There'd already been someone who was devoted to native plants and wanted to get them in here. So she got it started and there was a little bit of stuff growing here—some Red Osier, some Service Berries, some Choke Cherries, Globe Currants. Some of the keystone plant species. So I started bringing more in.

Just here at this camp we have a riparian zone along the stream that was a traditional Salmon spawning stream. Even my uncle who is only in his 60's remembers coming and gaffing Salmon out of this stream as a child. Now you'll see one every know and then. I talked to a friend who does Salmon surveys and snorkels around and she said she's seen a couple Salmon in this creek but no big numbers like there used to be. So we've got that riparian zone, a wetland, some dry zones that are desertifying a little bit from extensive mowing and everything else—

KtS:—from being farmed, basically? Or?—

BF: Yeah this whole campus was a big farm. The guy who started it was one of the first settlers in Cove, Samuel French. It was a farm that supplied the miners with Plums, Cherries, wheat and beef, mostly. And so he made a bunch of money selling supplies to the miners... This guy grew the food and his friend in the barn next door dried the food and then they sold it to the miners. It was pretty farmed-out piece of land and now it's still mostly lawn, watered and mowed. But I'm doing what I can to create little niches, or to work with the existing niches to boost the diversity and health.

KtS: Included in that is bringing back some of the native foods?

BF: Right. Because this valley here was originally a big gathering place. All the local tribes used this area, primarily for Camas. With the reclamation, they diverted all the stream channels for the homesteaders, and completely changed the valley. Now it's mostly hay and mint and sugar beets and alfalfa and wheat.

KtS: But it would've been a wetland before, a lot of it?

BF: Yeah. The Grand Ronde River snaked through it and Catherine Creek that comes from the south snaked through it and they flowed through the valley draining out into Elgin and eventually out to the Snake River. So the whole valley was a series of meandering streams, ponds, wetlands. Some of the first settlers thought it was a huge lake when they first got here but it was July, and the blues and purples of the Camas blooming looked like water. There's a wildlife refuge where there's a little fraction of what it was like, and other places where we can still go to gather Camas and Tule and some of our traditional wetland plants. We talk about the little bit of the culture being left alive and it's kind of like a tree that's been girdled except for one little strip. It's still living. There's these little pockets here and there in the Blue Mountains which include the Wallowa Mountains and the Elkhorns where the diversity is fairly intact. I wouldn't say it's anything like it *was,* because there were thousands upon thousands of sheep grazing this whole entire country not that long ago but there's still some of that diversity intact. This is where we're going in and gathering root stock and seed stock—depending on the plant and its growth characteristics—to move to places both public and private that have been farmed out, to begin rebuilding diversity, rebuilding the ecosystem.

KtS: What is sometimes called "restoration"?

BF: Yeah. I kind of like that word but I've been looking at it lately and been thinking, how are we ever going to *restore* it to anything? We have the stories and those are important to us, to hear about what the land used to look like, so we can strive to bring it back. But I've been back an forth with that use of that word.

KtS: There's that idea of restoration being "going back" to something, but of course that's an impossibility in a literal sense; too much has changed. I don't know if you have heard of the writer Roxanne Dunbar Ortiz. She wrote "An Indigenous People's History of the United States"

BF: No I haven't.

KtS: She's a good writer. You'd probably enjoy her. I can't remember what tribe she's from—somewhere in the Southwest. She's a university professor and she writes books. But she uses a term "bring the past forward" that I like better than "restoration" maybe. It seems like you have to deal what's there now. For example, the stone fruits that are out there—the plums and the cherries and the apricots. I guess some of the plums are native, but the apricots and the cherries weren't. But they're useful, so with your own work of gathering and this and that, you've been including those new plants too.

BF: Yeah. I'm pretty selective about where I put them but I have been recognizing them. It's hard to wrap your mind around what an old way looks like but our ultimate goal is resilience and abundance and diversity in a healthy manner. So we look at these things that seem to fit into an ecosystem and that feed people and wildlife. But I'm fairly selective. I don't just plant them everywhere, but I've definitely adopted those into my life.

KtS: At the beginning of the conversation I asked you how the weather is there and you said there wasn't snow [even though it's January]. We were talking about Climate Change. How does that impact what you're doing?

BF: Yeah that's a big deal for me. Like I said before, you talk to different people and you're going to get different answers, but for me, I'm making it important to take time to slow down and really read the ecosystem and read what's going on and not jump to any conclusions right away. Because in the beginning when two-leggeds first came, we didn't know how to eat. We were like infants. So these foods, starting with the water and the Salmon and the roots and the berries, they started offering themselves to us in exchange for us to always speak for them—even when the time comes that we can't even communicate with each other—that we'll always speak for them and take care of the ecosystem. That's going to look different. Also learning from the past. Our people

have always been adaptive and resilient. It's about being adaptive and moving with the shifts. Because if you fight that flow, it's just going to take you with it.

I'm no scientist, by American standards, but we're watching these climate zones shift. Here in this Grand Ronde area, no one ever stayed here in the winter. That would have been thought to be foolish. Now there's civilization here and *I* live here but the way the weather patterns are, it's like things are shifting up in elevation and also shifting northward. The habitat ranges for things are expanding and changing. What I've been working on is bringing plant genetics from these lower elevation areas—like over on the west side of the Blue Mountains down in some of those lower elevation ares where it can be 110 degrees for long periods of time, where they have adapted to a hotter, drier climate—and gathering those genetics and moving them up to slightly higher elevations, that are also becoming dryer. I'm trying to encourage those harder genetics to come into those areas so that we can kind of be ahead of the drought. Because we find areas where the roots are just shriveled and so it seems like some of the genetics don't have that ability to quickly adapt. It's all happening so fast. Whether or not it's going to help, it feels to me in my heart that it needs to be done. It's all so early that it's hard to say whether or not its the right thing to do, but right now it seems to me like the right thing to do and it seems like an obligation to help these plants succeed.

Things like the oaks. Because of the Climate Change, their habitat is proven to be expanding into this area of northeast Oregon that is prime habitat, according to some scientists. So we're moving things like the Oregon white oak to create more diversity of habitat. Every plant species is reacting to the Climate Change differently. For instance all of our industrial forests of conifers, because of the drought, are being attacked by beetles and they're drying out and burning. So by moving these fairly drought-hardy, fire-resistant genetics to the different areas, when succession happens, there's not just a void of desert.

KtS: I hadn't heard about that: that the oaks weren't so common in this area before.

BF: Yeah. Our tribes here and on the Columbia Plateau ecoregion, we traveled regularly down to Cascade Locks and that area, so as soon as you get to the Dalles you're starting to run into oak groves. So they were a part of some peoples' lives. As far as whether they were grown out here a long time ago, I'm not sure, but their habitat range is expanding so we're trying to move them and my hopes are that—as some of these other species are dying

out and the forests are changing—that we can already have some established genetics here and create more diversity in food.

Because here in this area, one of our main food sources and nutrition sources were the Salmon. A lot of people still eat Salmon regularly. We [*he and his family*] don't because of Hanford. For many years Hanford has been polluting the Yakima River and the Columbia River and affecting the fish. The fish have high levels of mercury. And whatever else with Fukushima. These fish go live there in the ocean and come back so they're just marinating in toxicity and coming back up the rivers. So as far as *I'm* concerned that's not a viable staple food anymore. I think it's important to do the work to keep the cycles happening. But I'm not turning my back on the Salmon. I'm still living for those foods and those animals.

That's another thing: bringing in more diversity of foods like acorns and different nuts that can begin to supplement our need for omegas and different fatty acids and proteins. But also to create shade for the rivers and stabilization for stream banks and all that good stuff. To me it seems like a win-win. We're diversifying our habitats and our food source and also protecting those fish species. We're up here in the headwaters. Most people say the headwaters of the Columbia are all the way up in Canada, but I look at it all these mountains around here as being headwaters too. All these springs and streams that bring the cool, clean water there. A lot of these streams have been farmed out along their banks. The runoff and the pollutants go into the rivers. It just makes its so hard for these fish to live their cycle. So what plants do what and which are appropriate to put where, to help clean the soil and the water and to shade the water?

KtS: The cattle have been problematic in this way too, haven't they?

BF: Yeah. Poor management practices. I can't say that every rancher or farmer is the same. I know a lot of ranchers and farmers who are trying to make sure they can support themselves and their family but still regenerate soil health and whatnot. But yeah, especially in the past, when settlement first happened, it was just like strategic stripping of the land. I think some people didn't know. I think some people did it intentionally as an aspect of genocide, just like killing the Buffalo. Killing the Salmon, killing the Elk: kill the food source and they're not going to be able to live out here anymore, you know, the Indians. So they grazed sheep and cows and pigs and erased a lot of habitat zones. A lot of people don't want to have to find a way to run a water to a trough so they keep their cattle grazing down by a river for long periods of time, so eventually there's no vegetation

holding the banks together, shading the water, filtering the water. A lot of these rivers have been straightened out and diked to prevent flooding so that natural meander—which creates those big deep pools that are cool and slow: the spawning grounds—have been replaced with a straight channel that runs fast. Running fast and carrying all that sediment down and then the sediments deposit. Some rivers go to a lake and some continue, so those lakes fill with sediment. So much sediment runs into the river that the eggs get choked out and don't have a chance to hatch. All these different things.

Also the depredations. The genocide of the Wolves and Grizzly Bears and everything else. The Elk populations didn't have any pressure, so the Elk herds would just sit at a stream bed for long periods of time until all the vegetation is gone. Whereas in the past, the Wolves would keep the Elk in check, keep them moving, keep their herds in healthy numbers, cull out the sick and the weak ones. So the herd is really strong and vigorous, always on their toes and moving, so they didn't ever stay in one spot. You watch the Wolves and it was just like watching a cow dog moving the cattle. The Wolves herd those Elk and move them around and then take one or two. So the lack of predators was a big deal. It's still a huge controversy. So many people hate the Wolves. They're scared. Some of them have lost livestock or whatever, you know, but it's a tough subject. Without an ecosystem, your kids aren't going to be able to raise in any cattle.

KtS: The fear and the hatred of Wolves in European culture goes back a long ways. It goes back back before the invasion of the Americas. It goes back to old fairy tales where the Wolf in the woods was always the bad guy. That one's really deep-set in the culture. To some degree it's amazing to find any European-descended people at all who will defend the Wolf.

BF: For us, the Wolf was always a relative, an ally. He would signal us when Cougars were lurking around camp. They signaled people when big herds were nearby. There's something going on there where we were communicating with Wolves, working together. People say they kill for fun but it's almost like they're paying their helpers. They'll kill an animal and leave it there and within minutes all the ravens, magpies, other animals are there, eating the meat because they can't take down an animal themselves. It's two different worldviews. One that is in fear of the natural world and one that strives to understand it and respect it and live in symbiosis with it.

KtS: When it comes to European-descended people here who are interested in learning about some of these things or have a cu-

riosity about it, sometimes there's—and I'm sure it's sometimes deserved—accusations of cultural appropriation.

BF: Right. This subject is sore for me because I'm a mixed breed anyway. Grew up on the rez as a mixed breed kid and so I was always in a cultural-identity crisis anyway, trying to decide whether I'm white or whether I'm Indian, or what. And so sometimes feeling like it's not my culture to carry on. But then on the other hand feeling like this is my ultimate duty to carry this culture on. So the cultural appropriation thing has been a touchy subject for me and I'm not sure exactly how to approach it or what that protocol is. Like I said before, talk to ten people from the rez or to ten tribal members and they'll give you ten different answers. So in *my* understanding, I appreciate when people want to learn in a way that they can use their privilege. That's all I'm doing is using whatever privileges I can get my hands on to fulfill my obligation, my duty, to strengthen what's left so that if there's any hope for the future there'll be something to keep them alive. So anybody that's respectfully on a similar trajectory and they're wanting to learn and help, I'm happy to share knowledge back and forth. I find myself really grateful. I've learned a lot from non-native people. I think when it gets to the point where it's like heavily capitalizing off of indigenous culture or ways of life then it gets weird for me. Only in the '70s was it even legal for us to pray. It wasn't until the '70s in this country, in *America*, quote-unquote, that we were able to *pray*.

KtS: The [American Indian] Religious Freedom Act?

BF: Yeah, without having fear of prosecution or whatever. And so it's pretty offensive to see people that claim these cultural practices and they're just doing it as a way of making a bunch of money or whatnot. So it's really case-by-case, every moment analyzing, checking in with myself. Because there are native people who do that too, whose hearts are in a bad place, or whatever the case may be. They're abusing their cultural identity and ways of life to fuel their addictions or whatever. So it's really a matter of respect whenever you're doing something. Everything we do, I'm always trying to consult with different people from my tribe. "Hey, I just want to make sure I'm doing this respectfully." I want to make sure I'm not doing it wrong or whatnot. It's always doing it with an open heart and open mind. It's one of our key teachings: having an open heart and open mind when we're about to do something, doing it in a prayerful way. Honoring where it came from. Always remembering that a lot of people had to make a lot sacrifices for us to have anything. To stop that tree from being *completely* girdled, a lot of people laid their lives down. A lot of people devoted their entire life. A lot of people were murdered,

killed. A lot of people lived in such stress and oppression. Basically, there were a lot of sacrifices made so that we could even know what a Biscuitroot is, so that we could remember our songs or any part of our language. There are people who had to undergo incredible trauma and a lot that didn't make it out of it alive. And so for me it's honoring that and remembering that.

It's also a tough subject because there's people who I think were *trying* to be respectful but the cultural conditionings of the society are—there's so may conditionings in our society, that it's hard for us to even be respectful to *anything* because we're just brought up in this society that was built on top of genocide and rape and murder. I think there's people who have good intentions but then they get accused of cultural appropriation so then it's hard for them to know: "Well I *want* to live in a good way and I *try* being this or that." I think it needs to be talked about. I like to just keep it focused on the honoring, the respecting, where it came from and why we're even able to have it: those who scarified so much so we could be here today, carrying on like this.

KtS: In your estimation, do you think that there is increasing interest in the younger people on the reservation for relearning these older ways?

BF: Oh, definitely. There's been a huge resurgence of young people being moved to step up and move forward, and they understand that they're the future and they're doing a lot of good work. I'm just blown away by some of the young people and what they're saying. There's some young people who don't want anything to do with it of course, but there's a lot of people who are devoting their lives right out of high school to do this. Fifteen years ago or so, the tribes started their own school, their own charter school. They had their own preschool, and now they have a K through 12. Language and cultural stuff is a big part of their education. So there's children coming out of high school who can speak a lot of the language and know a lot of the customs. They're shaping their lives to use their individual powers to help the people and the land.

KtS: Learning the language is a big deal. There's so much culture that's conveyed through language.

BF: Yeah, language is very important. A lot of the foods, and the places, there's something different about the language where it's more speaking to the *essence* of everything , speaking to that interconnectedness, just through basic talking. Whereas a lot of the English language we speak today was built as a means of tricking people and engaging in a sort of piracy.

KtS: Is there anything else you feel like you'd like to share?

BF: It's tough because just by being *for* indigenous lifeway and habitat, in a way you're immediately being *against,* obviously, large-scale agriculture: all these things that are damaging our land and the resources and the lifeblood of the land so there won't be anything for the future. And then there's a lot of people who I have a lot of love for who are fifth-generation ranchers, so it's important for me to try to find the way. And then a lot of Native people became cowboys because that was the best way they could find to walk between two worlds. So they could still be out with their horses out on the land, oftentimes digging roots and eating wild foods while they're checking on their cows or whatnot. So just trying to find that balance where we're all moving forward together. Which is tough. I can't be attached to changing anyone's mind. Some people are just going to hate me and that's okay.

KtS: In some case, you're not even dealing with people *but with corporate structures.*

BF: That's what gives me a lot of grace and patience for folks because I realize that they're just kinda following along, they don't even realize. They're just working for a corporation. They don't own their farm. Technically the bank owns it. Just working for that machine.

KtS: Like tenant farmers. Around [the town of] Halfway [Oregon], I was hearing that a lot. There would be the appearance of a family ranch but they're just the tenants now for a larger corporation that's running it. I brought it up because you're not just dealing with neighbors who, over time, you could change their mind or they could see what you're doing and change what they're doing. But when you're dealing with a corporation, you can't change a corporation's mind.

BF: Right. I'm young, I'm still earning all the time. What I've come to realize in my life through my connection to this old culture here on this land is that there's many cycles where this sort of energy of an insatiable appetite shows up and obviously we're going to want to fight against it, but our best bet is just to keep doing our work and watching and being observant because it's not going to last. It's inevitably not going to last so whether we fight against it and help it to die off a little bit sooner than it already was, it's still going to do the damage. So our best bet is to watch and see how it works and take all those pieces and return them back to the land in a way that can rebuild and regenerate for the future. And looking at the old ways, and looking ahead, but looking at the present moment and what we have and uti-

lizing what's around us to create abundance and diversity. Just that knowing alone helps me in each moment when something comes up: Oh yeah, I'm just watching another aspect of this machine that's obviously broken and not working. And understanding how to act in that moment also comes with it.

And that's, I think, why I'm here at this camp. Because I'm the maintenance guy but I get to do all this planting too and interact with all these kids who are from all over eastern Oregon. For some of them, nature is a wheat field. That's nature to them: a wheat field or a herd of cattle. So I try to get them out into a place where there's actually a living ecosystem, where there's three or four different species of plant in one spot, some part of the habitat here. And that alone blows their minds. Letting them know that we're a part of a living web. And doing it with a Christian organization is sort of like decolonizing Christianity from within. Episcopalians are all pretty open-minded, open-hearted people. But there are lots of farmers and a lot of ranchers, so I have offended a lot of people in my time here, too. But I've also made them think, which I think is more important than feelings.

KtS: I'm glad to hear you say that. That's, in some ways, one of the most controversial things you've said in this conversation. There's really an obsession, I'm sure you've noticed, with peoples' feelings. [Chuckles.]

BF: Right. I want to be respectful. But when it comes to the ecosystem and the children of the future, I have a hard time not just being honest.

At this point, the interview proper ended and we chatted for a few minutes in a less focused way. But I must include one last statement:

BF: I'm not going to wait around for the government to make reparations or make things right. To me it's grassroots. What can I do as an individual, using everything in my power to do what I can? And to see the youth doing the same thing. Sometimes all there is, is to tell them, "You're doing great!" and if they hear that every few steps of the way, they'll keep going.

One of the very first things in life I tried to figure out was the whole reservation thing. My dad explained to me the history of Native folks and settlement and all that in pretty good detail and so from a very young age I was always seeing through the dense reality, past it into the ecosystem and into a more symbiotic lifeway, longing for that to come back and to move forward into that. It seemed like a far-fetched dream, like a fantasy. But now I think the way things are surfacing, I'm witnessing the value of those grassroots efforts in the form of just little bits of support. To keep giving love to every little root that's still growing.

A Glimpse of the Past and a Taste of the Future

Dispatch from a wildtending trip to Hell's Canyon

Since giving up farming, my interest in sustainable diets has only changed focus, not waned. Turning away from the domestic, I have been exploring wildcrafted food and medicine, including plants traditionally used by Native Americans. So this spring,* when my former farming partner, Clarabelle, invited me to visit northeast Oregon with her for the early summer harvest season of wild foods there, I was thrilled.

We spent six weeks in and around Hell's Canyon on the Oregon/Idaho border, an area that's abundant for foragers and has been for millennia. Fruit trees, berry bushes, wild roots and medicinal herbs can be found in profusion, mostly on public land. Most of this flora is native but some was introduced through European colonization. All of it is threatened to one degree or another by misuse of the land, both contemporary and historic, and by Climate Change. Indeed, every place we explored offered us a glimpse of the past and a taste of the future.

Once you cross to the east side of the Cascade Mountains from the west, you are in ranching country. Nearly every acre of land is dedicated first and foremost to the cow. Most of the native sage-brush steppe ecosystem—along with its native denizens, flora, fauna and human—have been impacted or replaced by grazing and feed-growing. Even in the National Forest, cows and signs of their presence are ubiquitous.

Eastern Oregon is an arid place, so irrigation is required for raising cattle and its feed. The contrast is often stark between the bright green fields—sometimes circular in shape from center-pivot watering systems—and the dusty steppe land, dotted with grey-green sage brush. Sprinklers shoot misty sprays. often in the hottest part of the day when the majority of water is lost to

* *2016.*

evaporation. Streams are channeled and divided into ditches along the roadsides, where herbicides are used to keep the vegetation down.

The activity of the cattle industry is visible everywhere. Hay is cut, bailed and stacked in pole barns or out in the open and covered with tarps. Grain silos rise as tall as church steeples (and are no less sacred, given their importance). Barns, out-buildings and little houses shelter tractors, pumps and people.

Fences crisscross the landscape, interrupting migratory routes and otherwise interfering with wildlife. For example, Pronghorn Antelope are injured when they try to squeeze between the strands of barbed-wire, a problem that could be solved if only the top-most wire was barbed, but it would require a Marshall Plan-scaled project to retrofit the thousands of miles of fence that are currently strung. Sage Grouse, which are low-flying birds, are hurt when they collide with the fences, most often during pre-dawn courtship rituals when visibility is low. All this being said, fences also play a necessary role in protecting springs and streams from the stomping depredation of cattle, especially in remote areas where nobody's watching them.

One spot that is not as heavily impacted is the Malheur National Wildlife Refuge, which was made famous in the winter of 2015-16 when its offices were taken over by a ranchers' militia.[137] They chose this location because they want the federal government to turn over all pubic lands to the states (or to the counties of the states) so they can ranch, mine and log on such lands. After witnessing the heavy-handed (and hoofed) impact of cattle on such a large amount of real estate east of the Cascades, my opinion of their cause became even dimmer. Really? They've got to take *everything*? What disgusting greed.

❦ ❦ ❦

Our next stop was Halfway, Oregon, a small town without even one stoplight. Ranching is the dominant feature of the landscape in the valley where it's sited, but most ranchers are just operators rather than owner/operators. That is to say, a few large companies own most of the industry and locals are paid to run particular parcels. Government is the largest employer in Halfway's county, Baker. So much for rugged individualism.

When it comes to groceries, the area is a food desert. A few properties have vegetable gardens—many of them impressively large by urban standards—but other than these, very little land is given over to raising food for humans, which is nearly all acquired from conventional grocery stores. The closest natural food store is in Baker City, over 50 miles away. But we had come

prepared with our own healthy supplies and were there to harvest the wild food.

A friend of ours was staying in a cabin outside town and invited us to join him out there and use the property as a camp for our foraging activities. Many wildflowers were blooming, tended by bees and butterflies. Clarabelle and I were also very pleased that there were three cats! Smokey Joe, Mama Cat and Dusty Jim.

Sticking mostly to nearby National Forest land, where pesticide spraying is rare, our daily runs netted us buckets and buckets of Saskatoons, Cherries, Plums and Apricots. The Saskatoons and Plums were native, but the Cherries were from bird-planted feral trees and came in several shades of red from bright lipstick to shimmery near-black. The darkest ones were my favorite. Reputedly, Apricot trees in the area were originally planted by Chinese immigrants who worked as miners in the 19th Century, but more on that history later.

Back at the camp, we processed our hauls several ways. Sundrying was our most common method since dehydrated fruit is stable in storage, easy to transport and retains the majority of its vitamins (compared to canning, for example, that requires cooking and results in boxes of heavy, breakable jars). We dried berries whole, larger fruits halved and made fruit leather with an old-fashioned hand-cranked food mill. We also canned some jelly and other preserves. Since some of our harvests were so large that there literally wasn't time in the day to process everything in these ways before it went bad in the heat, we also made wines and meads with both wild and store-bought yeasts.

Some other folks were in the area doing the same thing we were and we visited their camp in Hell's Canyon. There, the plums were incredibly plentiful. There were also Blackberries and lots of Elderberries. Everyone was set up next to the Snake Lake Reservoir, which was green with algae from agricultural run-off. I took one look at it and decided I wouldn't touch it, even though it was so hot out. Clarabelle rinsed off her legs and they were itchy afterwards. The reservoir is also contaminated with heavy metals from mining activities. The dam itself inundated a riparian ecosystem and continues to wreak havoc on fish. So much that was once so beautiful is now so messed up. Grrr...

Clarabelle knew some of the folks in Hell's Canyon from previous adventures. Since we had shut down our farming efforts, she had been spending time traveling with people dedicated to "rewilding" and had met them in that context.

"Rewilding" is a loose counter-cultural movement focused on reviving skill-sets that predate civilization (that is, the urban-agricultural complex) and also on freeing the self itself from the con-

straints of social domestication. Rewilding is a kissing cousin of anarcho-primitivism, a philosophy that has fascinated me since I first read Chellis Glendenning's classic, "My Name is Chellis and I'm in Recovery from Western Civilization," almost twenty years ago.

Rewilding is usually based on Native American methods and lifeways. In the Pacific Northwest and Great Basin, this entails learning about "the Hoop," which was the traditional migratory lifestyle of many tribes, in which they moved from place to place over the course of the year to gather, hunt and tend in season.

The "tending" component is a key activity often missing not only from the popular understanding of nomadic cultures but also from many anthropological conceptualizations. Its function, however, was essential. The Hoop was not merely about wandering around picking berries and catching game—just taking and not giving; it also included different methods of plant propagation including seeding and root division, as well as the shaping of landscapes to encourage both flora and fauna. Setting fires was a common technique, along with some earth-moving. When exploring a place where such activities once took place, the signs can still be read by those who are looking for them.

For example, Clarabelle took me to some old Native American gardens in the Wallowa-Whitman National Forest. In a ridgetop meadow flanked by pine forests, were dozens and dozens of mounds of regular size and spacing. Between the mounds were zones of rocks, many of which seemed to be fitted together almost like puzzle pieces. Out of the cracks between the rocks grew a species of Biscuitroot (genus *Lomatium*, of which there are many species). At that time of year (July) they had already flowered and gone dormant: their stalks were brown, their leaves desiccated, and their umbels empty of seed. Didn't look like much.

But when we pried up and pulled away the stones, we easily exposed the plants' perennial roots: round, dark brown, and ranging in size from a pea to a marble shooter. The puzzle-piece placement of the stones now seemed intentional. If harvested earlier, the seeds would have been very effectively planted when they fell to the exposed soil and were covered by the rocks when they were replaced, resulting in an easy harvest the new plants in following years. Now I was impressed.

That this was indeed an old garden site of the Native Americans—in this case, the Nez Perce—seemed confirmed when Clarabelle ran across an old grinding stone, now covered in moss, that would have been used for making flour from the dried roots. Apparently, such stones were more commonly found in the past but have since taken as souvenirs or to put in glass cases for display. Back in the day, they were left on site as there was no need to haul

them around or fear for their theft. We left the stone where she found it.

The roots of this Biscuitroot need to be peeled right away, whether one is eating them fresh or drying then for grinding or storage, so we got to it at our camp. It took me over four hours to peel what I had harvested in two, and the total amount was perhaps sufficient for one meal. Obviously, the Nez Perce dug and processed them more quickly, and their labor would have involved a community of more than two individuals.

But the Nez Perce were driven out of the area almost a hundred and fifty years ago and forced to reside in an area comprising only 10% of their ancestral homeland. They were more fortunate than many tribes, whose reservations were located hundreds of miles from their original homes, such as the vast majority of Native Americans east of the Mississippi. But for the US government, this was more a matter of convenience than benevolence, so I'm not handing out any kudos here.

The Nez Perce called themselves "Nimíipuu" (often spelled "Nee-Me-Poo"), which means, "our People." "Nez Perce" is the name given to them by the French and literally means, "pierced nose," though this adornment was not common among them. Contemporary members of the tribe use one or the other or both names.

The Lewis and Clark expedition encountered the Nez Perce in 1805, had a positive impression of them, and left their horses with them when they decided to finish their journey to the Pacific Ocean by river. In 1855, seven years after "Oregon Country" was acquired from the British, the Nez Perce signed their first treaty with the US, which created a reservation for the tribe by ceding nearly half of their ancestral territory to the US. By the terms of the treaty, which Congress ratified in 1859, the tribe retained their hunting and gathering rights in the ceded areas.

This state of affairs would not last long. When gold was discovered on Nez Perce land in 1860, European and Chinese colonists flooded in. The US government refused to deal with these trespassers as law-breakers and instead called another treaty council, which shrunk Nez Perce lands by another 90%. Some bands of the tribe refused to negotiate and walked out. They became known as "non-Treaty Indians," a label they still use today. In fact they hold an annual pow-wow in Joseph, Oregon, that attracts attendees from near and far.

The new treaty became known as the "steal treaty" and led directly to the "Nez Perce War" of 1877, which lasted from June to October. During the conflict, the Nez Perce, led by several individuals including the famous Chief Joseph, fled and fought for nearly 1200 miles through four states in an attempt to reach

Canada. Forty miles short of the border, however, the majority surrendered due to hunger and hardship. They were sent to Kansas and Oklahoma, though most were able to return to the Nez Perce reservation in Idaho eight years later.[138]

The mistreatment and theft didn't end there. The General Allotment Act of 1887[139] instituted a policy in which reservations were divided up by the Federal Government and allotted to individuals and families, though such privatized ownership was alien to Native American culture. Once this division took place, leftover land was considered "excess" and sold to European colonists. In this way, the Nez Perce lost all but 90,000 acres, scattered in individual portions. This policy assaulted not just the geographical integrity of the tribe but also its cultural bonds. To this day, the Nez Perce must work to assert their sovereignty.

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Clarabelle took me to an apricot grove in Hell's Canyon. As stated earlier, it is believed that the apricots in the area were originally planted by Chinese immigrants in the 1800's. They lived in or passed through the area as gold-seekers, either working independently or employed by mining companies. They also brought other plants, including the Tree of Heaven (*Ailanthus altissima*), that they call "chouchun" (臭椿, Chinese for "foul-smelling tree"), which is commonly used in Traditional Chinese Medicine.

The experience of 19th Century Chinese immigrants in Oregon is another chapter in the narrative of exploitation and racism that makes up so much of US history.

According to Richard Cockle, writing for the *Oregonian*:

> *Chinese workers began immigrating to the 'Gum San' or Golden Mountain—their term for the frontier-era American West—during the California Gold Rush of the 1840s, historians say. Their numbers probably peaked at an unofficial 132,300 in 1882, [author R. Gregory] Nokes says, and some scholars believe they made up fully a quarter of Oregon's population as early as the 1870s.*[140]

As long as the supply of gold was abundant, it seems, the Chinese were accepted. When it began to run out, however, greed and then xenophobia took hold and anti-Chinese sentiment began to raise its ugly head, not just in Oregon, but all along the West Coast. Locals of European background, sometimes with the backing of the elected officials and sometimes not, began driving out the Chinese, who settled in cities like Portland.

The Federal Government brought down its fist with the Chinese Exclusion Act of 1882, which forbade the immigration of laborers

from China.[141] This helped fuel the fires of prejudice to new intensity and acts of discrimination against Chinese increased.

Arguably the worst case of violence during this period occurred in Hell's Canyon in May of 1887, when a camp of 34 Chinese miners was attacked by a group of white horse thieves. The resulting massacre is well described by Michael Nove:

> *The gang members ambushed the Deep Creek miners as they worked. Armed with high-powered rifles, the killers systematically took one life after another, shooting at their targets from the surrounding cliffs. One of the Chinese men survived the initial onslaught only to be captured and stoned to death as he tried to flee. Some of the victims' bodies were then thrown into the river, others into the boat used by the miners, which was then set adrift with holes punched through the bottom. One of the accounts published years later indicated the gang members killed another mining crew that arrived the next day at the massacre site to visit the Deep Creek crew. This, and a possible third killing spree, is why the actual number of victims is unknown.*[142]

"It was really a savage act of racial hatred,"* said historian P. Gregory Nokes, author of the book, *Massacred for Gold: The Chinese in Hells Canyon*.[143]

But in the time since then, a living testament to the historical presence of the Chinese has been thriving in the form of the Apricot trees that they planted. They grew continuously in the area, producing their own form of gold on branches that sagged under its weight, each nugget containing a seed. Considering that Apricot trees can live for well over a hundred years, it's probable that the trees we harvested from are separated by fewer generations from their original plantings than are any current living descendants of the immigrants themselves.

We filled buckets and boxes with about 200 pounds of fruit altogether from various locations and dried them in the sun, halved and pitted on screens, or milled them into mush that we spread out on parchment paper for fruit leather. Being that this was also a seed-gathering mission, we rinsed, dried and bagged up the seeds to plant elsewhere and in so doing will carry on the original immigrants' mission that started over a century and half ago. Now that I know more of the story of those who first brought the trees there, the bitter notes in the sweet flavor of their fruit have a resonance beyond my taste buds.

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* *Point made, but "savage" is an ironic word choice, considering that such behavior is far more typical of those who are "civilized."*

The legacy of the evicted Native Americans and slaughtered Chinese: this past is prologue to the present that Clarabelle and I found when we visited the area. In the two counties where we spent the majority of our time, Baker and Wallowa, Native Americans make up only 1.1 and 0.6% of the population, respectively, and Whites 94.6% and 96%. Asian-Americans comprise about 1/3 of 1% of both counties.[144,,145] As for the Whites, whether they are direct, blood-line descendants of the original pioneers or not, they remain beneficiaries of the historical brutality, as do all people of non-Native origin in the US. Which includes me and most likely the majority of people reading this.

What to do with this privileged position? Attempts to answer that question have consumed entire books, and my own thoughts about what to do are constantly evolving, so I will only touch on them here, with what currently comes to mind.

First, learn the facts and accept them. When living in or visiting a place, research the history of it. Don't shy away from the ugliness you might find, and celebrate the beauty that's there. Accept it. And by "accept" I don't mean "approve," but rather "don't deny."

Second, support efforts to prevent new crimes. Are there Native Americans in the area fighting to have treaty rights recognized? Grassroots environmental activists resisting the latest corporate push to destroy ecosystems for profit? Offer what you can to such struggles.

Third, examine the big picture of the social forces of destruction and creation and—most importantly—dig into your own inner participation in them, much of which is likely unconscious or subconscious. A logging company seeking to cut down more forest is a problem, but larger still is the edifice that empowers that company—Capitalism—and its millennia-old cultural foundation —Patriarchy. I am speaking here of the crisis of consciousness that afflicts humanity: our disconnection from life's inherent vitality. Our ecocidal actions are the product of this crisis, and indeed would be impossible without it.

All our lives, we have had our minds prejudiced and our hearts poisoned by these big picture social forces, as delivered by our families and friends, our churches and employers, our government and media. With different voices, the same chorus is repeated: Conform. conform, conform. There is no alternative. Follow the rules or face the consequences. You will be lonely/poor/damned if you don't.

This brainwashing—and that's all it is—must be utterly rejected and completely rooted out. The path to this liberation is ultimately solitary because no one can get into your head but you.

As the layers are unpeeled—little by little or in quick, dramatic succession—your best choices will reveal themselves with clarity.

In my case, one choice has been to explore and participate in "wildtending"—that is, to learn about traditional food and medicine plants of the Native Americans and how they were harvested, processed and propagated, and to practice those skills myself. In this day and age, this logically includes plants that were introduced by human invasion and which have gone feral, like the Cherries and the Apricots. Like me, they are here now, by accident of birth, making their way as best they can. This journey focuses not just on practical knowledge and skills but also, necessarily, on the self and its nature. How have I been domesticated? How have I been an agent of domestication? How do I free myself and others? Some would call this quest "psychological" and others "spiritual" but the label is unimportant to me. Likewise, I am uninterested in joining any particular scene or school or of engaging in purity tests either as their object or executor. Such structures and methods are manifestations of the same crisis of consciousness.

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In the Wallowa-Whitman National Forest, we found two fields full of Yampah (genus *Perideridia*), an important staple crop for many Native American tribes throughout the West. It most often grows in rocky soil and the roots can be quite challenging to dig up. Clarabelle had a special tool for this task called a "cuppen," the design of which is based on traditional Native American digging sticks. Hers was made of titanium, which was certainly helpful for opening up the stony ground. We fried some up for dinner that night in a cast-iron skillet on a Coleman stove in olive oil. They taste a little like carrot, but fixing them this way made them the best french fries ever!

At about 5000 feet elevation, we found a spectacular meadow, measuring many acres in size, with a noisy stream running through it. Despite the remote location, there were cattle there, too, but not too many and their impact was minimal compared to other places we visited. The meadow was ringed by trees, both pines and firs, and forest fires had clearly swept through lightly in the last decade. As a result, post-fire herbaceous plants were growing in the area, some of them medicinal. Such natural succession is too often interrupted by logging, spraying and replanting.

One was "Oshalla," which is a common name for more than one species in the genus *Ligusticum*, and is a medicinal herb for respiratory issues. The root is the part that's used, but we also dried some of the foliage since it had a strong flavor and aroma.

This plant was much easier to dig than the Yampah, as its roots form a clump rather than growing in a long tap-root.

Another medicinal plant we found that occupies a post-fire niche is Cascade Canada Goldenrod (*Solidago elongata*). This one is good for treating allergies, fevers, sore throats and coughs as a tea and for kidneys as a tincture, according to herbalist Susun Weed. Weed also mentions that it's a myth that people are allergic to Goldenrod pollen, which is too sticky to become airborne. Instead, she suggests, people react badly to the pollen of Ragweed (*Ambrosia artemisifolia*), which blooms at the same time and has a superficial resemblance to Goldenrod to people who don't know plants well.[146]

My favorite part of the trip was our week-long stay on the western rim of Hell's Canyon. It was some of the most beautiful country I've ever seen in my life. Hell's Canyon is the deepest river gorge in North America, delving down 7,993 feet. Despite its spectacle and uniqueness, it is not a popular destination, and we saw only a handful of other people there. We found an established campsite with a fire-ring among pine and fir trees about 20 feet from the edge, and that's where we stayed, sleeping in the open air.

We harvested Huckleberries and Black Elderberries and processed them on-site, drying the Huckleberries in baskets hung from trees and cooking the Elderberries into a syrup combined with brandy for preservation. Elderberry syrup is a traditional European herbal concoction for driving off winter illnesses when they try to establish themselves. We also dug Sweet Root, aka Western Sweet Cicily (*Osmorhiza occidentalis*), another herbal medicine, and tinctured the roots.

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Seed collecting was equally as important as fruit-picking and medicine-harvesting for us. We collected from Yampah, Biscuitroots, Wild Garlic and others. Clarabelle also gathered from companions of these food plants, such as the wild buckwheats.

Where will these seeds be planted? Wherever they might do well. That won't just be in areas where these plants have historically grown and have since become more scarce—which would be called "restoration"—but also in new locations where they might do better as climatic zones shift. Climate Change is real, as borne out not only by science (where there is a 97% consensus) but by the stories and memories of people and cultures who have been paying close attention. So yes, the Yampah has thrived in these particular meadows for the last 100 centuries, but should it now also be seeded at higher elevations and further north?

For hundreds of thousands of years, people fed themselves from the land, wildtending it with keen observation and deep dedication. If any humans survive the oncoming calamities, that's how they'll have to do it again. Perhaps some of the seeds that Clarabelle and I gathered will play a part in providing nourishment for these souls, as yet unknown and unnamed, in a future that we tasted this summer.

Afterword: What now?

> *We can either passively continue on the road to utter domestication and destruction or turn in the direction of joyful upheaval, passionate and feral embrace of wildness and life that aims at dancing on the ruins of clocks, computers and that failure of imagination and will called work. Can we justify our lives by anything less than such a politics of rage and dreams?* –John Zerzan

Farming is killing us. That's no exaggeration. And we must stop doing it. That's undeniable. Of course that means drastic collective changes on a global scale, but in the service of survival, we must do what's necessary. Drastic is not the same as "impossible." Unsurprisingly, the agricultural mind rejects the idea of ending agriculture, but its arguments deserve no hearing. The track record of the last 11,500 years is clear. Farming has been a failure.

"What else are we supposed to do?" is the wrong question. It's not even a question, really. It's a statement of insistence disguised with interrogatory punctuation. The false claim being made is that "there is no alternative." But without supporting evidence, this assertion of dogma has to hide behind a question mark. Beware those who speak this way. If you hear yourself saying it, stop and give yourself a sharp look.

The real question is: "What can we offer?"

What we have forgotten in agricultural societies is that life is all about *reciprocity*. One could say that before anything is taken, something needs to be given, or that every request should be accompanied by an offer, but to our contemporary ears, this sounds like a tit-for-tat, and to our accounting minds, it looks like two columns to balance. But those are false impressions. There is no such calculus here. The real relations to reconcile are pre-Cuneiform, unquantifiable with tick marks or spreadsheets. To comprehend this, we've got to break the spell we're in.

In an interview in this book, Bobby Fossek said: "It's two different worldviews. One that is in fear of the natural world and one that strives to understand it and respect it and live in sym-

biosis with it." Inherent in wildtending, and in other gathering-hunting lifestyles, was such awareness. Let me stress that what I am talking about here is not another system of beliefs, but a different way of *perceiving* the world. The agricultural mind, inculcated by the materialism of both monotheistic religion and reductionist science, has shorn the world of its innate vitality in its *beliefs* and then claims that such are "the way it is." That's incorrect. To insects whose eyes perceive the ultraviolet spectrum, the flower has a totally different appearance than it does to us. They do not *believe* that the flower looks like it does; they are actually, and simply, seeing something real about the world that we do not.

However, the gap between us and insects is much wider than the one that divides us from our wildtending human siblings, past and present. The honeybee's different range of trichomancy is physiologically intrinsic and there's nothing we can do about that. We have no such excuse for our blindness to the things other humans see and have seen. Denying our capabilities doesn't make them go away; it just makes them more difficult to exercise. In the time and place we now find ourselves, that's a deadly handicap. Everything we *can* do, we *must* do. If we are going to ask the world to give us what we need for survival, we must ourselves be living a life of giving. That's "reciprocity."

Wildtending is reciprocal. Its actions, collectivity, and scope all exist as endless exchange.

Agriculture is the opposite: extractive; taking without giving. There's only so long that can go on, and if the Americas hadn't existed, it might very well have ended already. As it is, the monster was able to feed itself for another 500+ years, and has swollen into a bloated mess of tremendous size and ugliness. We'll see how much longer it goes if left unattended. At some point it either runs out of fuel or is suffocated by its own toxic excretions.

Which returns us to the question: "What can we offer?" Ultimately, reciprocity must again be our collective way of life, and by "ultimately" I mean today. Isolated, individual choices will not suffice. While there is nothing else to do, we will make them, and should make them as *consciously* as possible, of course. But what that means, in part, is never forgetting that lifestyle choices are made primarily for ourselves, and the best they can do is to help us see and live more clearly. Gaining clarity is essential but we should not mistake it for significant material change. It is not.

Living in reciprocity with the other beings on this planet—human and non-human—is a necessity regardless of planetary outcome. The act of nurturing is a salve for all parties involved, even if we are merely comforting the dying.

About the Author

Kollibri terre Sonnenblume is a writer, photographer, tree-hugger, animal-lover and cultural dissident at large somewhere in the western USA. Kollibri farmed from 2005-2014, making a living first with an urban CSA and then a seed and herb company. Other works include "Wildflowers of Joshua Tree Country" (a botanical field guide), "Adventures in Urban Bike Farming." (a memoir), and "A Photographic Love Letter to the Flora and Fauna of the Mojave Desert," "The Troubles of 'Invasive' Plants" (a zine co-authored with Nicole Patrice Hill), "Roadtripping at the End of the World" (a collection of essays and interviews), and "From Outside" (a "greatest hits" of essays). Kollibri earned a Bachelor of Arts in "Writing Fiction and Non-fiction" from the St. Olaf Paracollege in 1991.

Keep up with Kollibri's latest at macskamoksha.com

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