Chapter Twelve: Simplistic silver-bullet "solutions" and sound bites spun for culturally stunted attention spans - will not do! The imperative for intelligent responses.

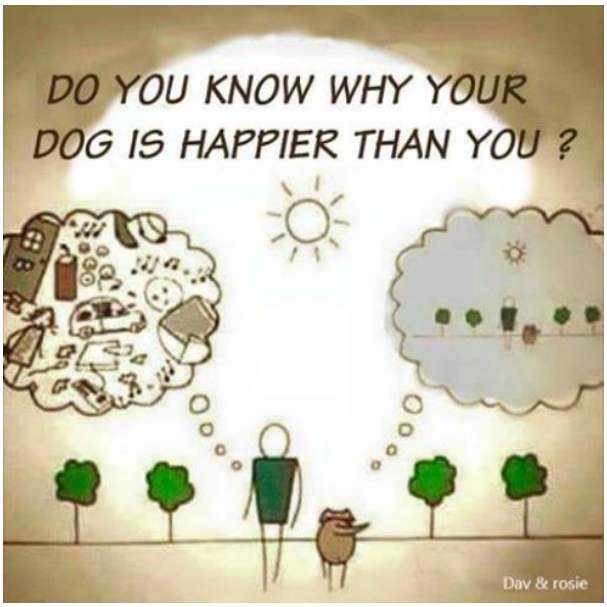
"A small body of determined spirits fired by an unquenchable faith in their mission can alter the course of history…Strength does not come from physical capacity. It comes from indomitable will…Live as if you were to die tomorrow. Learn as if you were to live forever." Gandhi

Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them. About the only thing you can't do is ignore them. Because they change things. They push the human race forward. And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do.

I have covered a blizzard of information in the previous 11 chapters, gathered from going on 20+ years of relentless study and writing. I hope I have succeeded in my goal of providing a comprehensive study of what we need to grasp as well as suggestions of enough intelligent responses that realistic hope emerges for the crazy ones, misfits and rebels in this sea of humanity, to push forward and find ongoing ways to prosper in harmony with nature. I hope I have not lost too many readers, in the blizzard of data or reasons for despair. This chapter is not intended to repeat much of what has preceded but to reinforce why pushing through now and proactively, is critical. This chapters' purpose is to fully acknowledge the myriad of reasons why change is so very hard, but also to provide impetus for those who choose to carry the torch, as they say; impetus for those who understand what they are up against but to push forward anyway. I have long found the following written by Mother Theresa inspiring – then again I know I'm one of the crazy ones, a misfit, a rebel trying to lift more than my body weight to address matters much bigger than myself from my small corner of the world.

This version was found written on the wall in Mother Teresa's home for children in Calcutta:

People are often unreasonable, irrational and self-centered. Forgive them anyway.
If you are kind, people may accuse you of selfish, ulterior motives. Be kind anyway.
If you are successful, you will win some unfaithful friends and some genuine enemies. Succeed anyway.
If you are honest and sincere people may deceive you. Be honest and sincere anyway.
What you spend years creating, others could destroy overnight. Create anyway.
If you find serenity and happiness, some may be jealous. Be happy anyway.
The good you do today, will often be forgotten. Do good anyway.
Give the best you have, and it will never be enough. Give your best anyway.
In the final analysis, it is between you and God. It was never between you and them anyway.



Perhaps the following psychology experiment helps provide perspective. Imagine this: If you start with a cage containing five monkeys and inside the cage, hang a banana on a string from the top and then you place a set of stairs under the banana, before long a monkey will go to the stairs and climb toward the banana. As soon as he touches the stairs, you spray all the other monkeys with cold water. After a while another monkey makes an attempt with the same result ... all the other monkeys are sprayed with cold water. Pretty soon when another monkey tries to climb the stairs, the other monkeys will try to prevent it. Now, put the cold water away. Remove one monkey from the cage and replace it with a new one. The new monkey sees the banana and attempts to climb the stairs. To his shock, all of the other monkeys react badly. After another attempt and attack, he knows that if he tries to climb the stairs he will be assaulted.

Next, remove another of the original five monkeys, replacing it with a new one. The newcomer goes to the stairs and is attacked. The previous newcomer takes part in the punishment with enthusiasm, because he is now part of the "group think". Then, replace a third original monkey with a new one, followed by the fourth, then the fifth. Every time the newest monkey takes to the stairs he is attacked.

Now, the monkeys that are punishing him have no idea why they were not permitted to climb the stairs. Neither do they really know why they are participating in punishing of the newest monkey.

Finally, having replaced all of the original monkeys, none of the remaining monkeys will have ever been sprayed with cold water. Nevertheless, not one of the monkeys will try to climb the stairway for the banana.

Why, you ask? Because in their minds...that is the way it has always been, so how could it possibly change?!

This, my friends, is partially how politics and group think operates... and it contributes to why proactively changing to react to a new, revolutionary macro trend is so difficult – even with highly favorable odds if the macro trends impact would be far greater than say the internet! There is plenty of metaphorical cold water, beatings (mental or even physical) and the like to go around, such that even attempting to think through and proactively reach toward 'getting it right' has become indescribably challenging. Nevertheless macro trends regarding the nexus of energy, water and food are so fundamentally important, so pervasive in almost all aspects of life and (in our view) imperative now for making the right adjustments, that the prizes could not be greater nor will be/are the potential market beatings for not reacting. Many have noted, only another "moon mission" like effort has any odds at all of averting much of what peak energy, water and soil has in store. We cannot be the unquestioning monkey on this one, but we hear from so many fronts these days…who has the time to read in to all the history and really understand the challenge and potential solutions? Certainly, there is growing numbers of people being proactive, but not nearly fast enough or with enough momentum.

The deliberations of the Constitutional Convention of 1787 were held. Anxious citizens gathered outside Independence Hall when the proceedings ended in order to learn what had been produced behind closed doors. The answer was provided immediately. A Mrs. Powel of Philadelphia asked Benjamin Franklin, "Well, Doctor, what have we got, a republic or a monarchy?"

With no hesitation whatsoever, Franklin responded, "A republic, if you can keep it."

"If a nation expects to be ignorant and free in a state of civilization, it expects what never was and never will be". Thomas Jefferson

"Liberty cannot be preserved without a general knowledge among the people, who have a right, from the frame of their nature, to knowledge, as their great Creator, who does nothing in vain, has given them understandings, and a desire to know; but besides this, they have a right, an indisputable, unalienable, indefeasible, divine right to that most dreaded and envied kind of knowledge, I mean, of the characters and conduct of their rulers. Rulers are no more than attorneys, agents, and trustees, of the people; and if the cause, the interest, and trust, is insidiously betrayed, or wantonly trifled away, the people have a right to revoke the authority that they themselves have deputed, and to constitute other and better agents, attorneys and trustees". John Adams

With that we go headlong into another layer of working to understand the energy puzzle, ramifications and next opportunity, this time with the aid of a documentary (see http://www.amazon.com/History-World-Two-Hours/dp/B005TK6QZ4) The "History of the World in Two Hours," is a spunky recap of what's been going on since the beginning, which really does, by the end, feel like everything you need to know about history. No analysis of troop movements in century-old battles here. No who cut off which wife's head in what European monarchy. Just the very-big-picture stuff: creation of complex elements; continental drift; fire; human migration; industrialization. And — here is the important part — how they all fit together.
"More than 12 billion years ago stars are already forming the elements that will spur the Iron Age," the narration says about the young universe. The history here may be compact, but it doesn't feel dumbed-down; this little program might also qualify as almost everything you need to know about physics, geology, paleontology and a few other key subjects.

"Within a fraction of a second the Big Bang creates all the energy that will ever exist," we're told. Everything that has come after that formative explosion has been a variation on the theme of finding and using that energy, whether the entity doing the finding is a coal-mining company or a primitive plant. Bringing matter and energy together is what has spawned bursts of innovation, whether we're talking about matter slamming together to form complex atoms or humans taking up residence near a water source and trading ideas.

The program gives attention to the usual suspects when talking about pivotal moments in history: ice ages, the first steam-driven machine, etc. But it also notes some game changers that might not immediately spring to mind: grasslands, for instance, which appeared seven million years ago and forced apes out of trees, with profound consequences.

"It's a landscape better suited to primates that can walk on two legs, keeping their heads up above the tall grasses to watch for predators," the narration notes. "Standing on two feet is a revolutionary advance because it frees up our hands — hands we will need to shape human history." That tidbit is heard over a picture of an ape hand that transforms into a human hand, then into a human hand holding a stone ax, a sword and then a pistol.

"Marvel, too, at the role played by a single family of plants upon which all of human history depends: the grasses. Wheat, barley, millet and rice are the agricultural titans of the Eastern hemisphere, while farming peoples of the West depended on native maize. Several million years earlier, the spread of grasslands in eastern Africa played an even more formative role for our lineage: inviting (or forcing) our ape ancestors to climb down out of the trees and embark on a bipedal way of savanna life, eventually aided by chipped stone and then fire. Grasses play a role, again, in the roots of the early Atlantic slave trade that provided heat-hardy forced labor to satisfy Europe's insatiable demand for cane sugar. Cereal/grass crops have the virtues of being fast growing, high in carbohydrates and yielding up to a ton of edible food per hectare cultivated. As a result, cereals today account for over half of all calories consumed by humans and include five of the modern world's 12 leading crops (wheat, corn, rice, barley and sorghum)" states Michael Pollan in his book Omnivore's Dilemma excerpted below.

As a culture we seem to have arrived at a place where whatever native wisdom we may once have possessed about eating and where it needs to come from (farm, food factory, other) has been replaced by confusion and anxiety.

How did we ever get to a point where we need investigative journalists to tell us where our food comes from and nutritionists to determine the dinner menu? The absurdity of the situation became inescapable in the fall of 2002, when one of the most ancient and venerable staples of human life abruptly disappeared from many American dinner tables. I'm talking of course about bread, derived from the prize of agricultural grasses.

Our taste buds still help, predisposing us toward sweetness, which signals carbohydrate energy in nature, and away from bitterness, which is how many of the toxic alkaloids produced by plants taste. Our inborn sense of disgust keeps us from ingesting things that might infect us, such as rotten meat. Many anthropologists believe that the reason we evolved such big and intricate brains was precisely to help us deal with the omnivore's dilemma and feeding that brain demanded carbohydrates and sugars.

Being a generalist is of course a great boon as well as a challenge; it is what allows humans to successfully inhabit virtually every terrestrial environment on the planet.

Many cultures codify the rules of wise eating in an elaborate structure of taboos, rituals, recipes, manners and culinary traditions, often not unlike the five monkeys, that keep us from having to reenact the omnivore's dilemma at every meal.

The cornucopia of the American supermarket has thrown us back on a bewildering food landscape where we once again have to worry that some of those tasty-looking morsels might kill us (perhaps not as quickly as a poisonous mushroom, but just as surely). Certainly, the extraordinary abundance of food in North America complicates the whole problem of choice. At the same time, many of the tools with which people historically managed the omnivore's dilemma have lost their sharpness here — or simply failed. As a relatively new nation drawn from many different immigrant populations, each with its own culture of food, Americans have never had a single, strong, stable culinary tradition to guide us. The lack of a steadying culture of food leaves us especially vulnerable to the blandishments of the food scientist and the marketer, for whom the omnivore's dilemma is not so much a dilemma as an opportunity. It is very much in the interest of the food industry to exacerbate our anxieties about what to eat, the better to then assuage them with new products. Our bewilderment in the supermarket is no accident; the return of the omnivore's dilemma has deep roots in the modern food industry, roots that reach all the way back to fields of corn growing in places like Iowa.

And so we find ourselves today confronting in the supermarket or at the dinner table the dilemmas of 'omnivorousness', some of them ancient and others never before imagined. The organic apple or the conventional? And if the organic, the local one or the imported? The wild fish or the farmed? The trans fats or the butter or the "not butter"? Shall I be a carnivore or a vegetarian? And if a vegetarian, a lacto-vegetarian or a vegan? Like the hunter-gatherer picking a novel mushroom off the forest floor and consulting his sense memory to determine its edibility, we pick up the package in the supermarket and, no longer so confident of our senses, scrutinize the label, scratching our heads over the meaning of phrases like "heart healthy," "no trans fats," "cage-free," or "range-fed." What is "natural grill flavor" or TBHQ or xanthan gum? What is all this stuff, anyway, and where in the world did it come from? Do I have time to dedicate to learn all this and understand?

We are also different from most of nature's other eaters — markedly so. For one thing, we have acquired the ability to substantially modify the food chains we depend on, by means of such revolutionary technologies as cooking with fire, hunting with tools, farming, and food preservation. Cooking/energy opened whole new vistas of edibility by rendering various plants and animals more digestible and overcoming many of the chemical defenses other species deploy against being eaten. Agriculture allowed us to vastly multiply the populations of a few favored food species, and therefore in turn our own. And, most recently, industry has allowed us to reinvent the human food chain, from the synthetic fossil fuel derived fertility of the soil to the microwaveable can of soup designed to fit into a car's cup holder. The implications of this last revolution, for our health and the health of the natural world, we are still struggling to grasp. The Omnivore's Dilemma is about the three principal food chains that sustain us today: the industrial, the organic and the hunter-gatherer. Different as they are, all three food chains are systems for doing the same thing: linking us, through what we eat, to the fertility of the earth and the energy of the sun. It might be hard to see how, but even a Twinkie does this — constitutes an engagement with the natural world. As ecology teaches, and the Omnivores Dilemma and this book has tried to show; it is all connected, even the Twinkie.

Ecology also teaches that all life on earth can be viewed as a competition among species for the solar energy captured by green plants and stored in the form of complex carbon molecules. A food chain is a system for passing those calories on to species that lack the plant's unique ability to synthesize them from sunlight. One of the themes of this book is that the industrial revolution of the food chain, dating to the close of World War II, has changed the fundamental rules of this game. Industrial agriculture has supplanted a complete reliance on the sun for our calories with something new under the sun: a food chain that draws much of its energy from fossil fuels instead. (Of course, even that energy originally came from the sun, but unlike sunlight it is irreplaceable.) The result of this innovation has been a vast increase in the amount of food energy available to our species; this has been a boon to humanity (allowing us to multiply our numbers), but not an unalloyed one. We have discovered that an abundance of food does not render the omnivore's dilemma obsolete. To the contrary, abundance seems only to deepen it, giving us all sorts of new problems and things to worry about.

There exists a fundamental tension between the logic of nature and the logic of human industry, at least as it is presently organized. Our ingenuity in feeding ourselves is prodigious, but at various points our technologies come into conflict with nature's ways of doing things, as when we seek to maximize efficiency by planting crops or raising animals in vast monocultures. This is something nature never does, always and for good reasons practicing diversity instead (See http://arstechnica.com/science/2016/04/most-of-lifes-diversity-belongs-to-bacteria-we-cant-culture/). A great many of the health and environmental problems created by our food system owe to our attempts to oversimplify nature's complexities, at both the growing and the eating ends of our food chain. At either end of any food chain you find a biological system — a patch of soil, a human body — and the health of one is connected — literally — to the health of the other. Many of the problems of health and nutrition we face today trace back to things that happen on the farm, and behind those things stand specific government policies too few of us know anything about.

When fields become unfertile, they must be abandoned because the soil does not support crops. Half the remaining cropland today globally is so degraded it takes twice as much fertilizer and three times more irrigation water to achieve recent crop yields.

Nature requires about 500 years to replace 25 millimeters (1 inch) of lost topsoil or humus. The minimal soil depth for agricultural production is 150 millimeters (5.9 inches) but many crops need deeper soils. Fertile soil is an endangered ecosystem that with degradation diminishes crop yields until the soil become unfertile. See http://www.theguardian.com/environment/2015/dec/02/arable-land-soil-food-security-shortage

The Environmental Working Group collaborating with the USDA found that the rich, dark soil in America's Heartland is being swept away at rates many times higher than official estimates. In some places in Iowa, recent storms have triggered soil losses that were 12 times greater than the USDA average for the state of 6 tons per acre a year. A single storm can strip 64 tons of soil per acre from cropland, according to researchers using new measurement techniques.

In our view, the articles and books we have highlighted in this collection of excerpts and articles making up this book are crucial to understand in these times, for many reasons, one being "a little knowledge is a dangerous thing". Another reason is we have a critical debate ongoing about when peak energy might occur. Given that the planet is finite and commercially ready solutions to take over all the heavy lifting for fossil fuels is not in place, then the details of such considerations, as Lloyds of London and many others warned many years and months ago, should be of high strategic priority. Further as we have long contended, a lot of dots must be connected to have a prayer of understanding what needs consideration and to execute an effective action plan. Simplistic Hail Mary's such as "seems shale oil and gas might save the day" is not reasonable risk mitigation and hope is not a plan any more than is "they" have plan. One must consider the implications of water, conventional reserve depletion, ongoing production rate potentials, what renewables can truly contribute, when and at what investment rate and so on. The bottom line to us, as we have contended, is that simplistic, silver-bullet solutions and sounds bites spun for culturally stunted attention spans, will not do. In fact, as we will review in this chapter, leveraging the excerpts of this collection puts forth arguments that we have begun the greatest shift since the start of the industrial revolution. This is due largely to energy impact and the opportunities that are every bit as good as the early days of the industrial revolution, for the minority, who best anticipate what might lie ahead and are intelligently proactive. Catch phrases, sound byte clairvoyance would be wonderful if only it were that simple. Most of us remain inundated with data and starved for understanding, but the better understanding we can gain, the better we can capitalize, especially with a plan that connects opportunity with the shelter index items of energy, water and food.

The objective of this book is to assist with developing intelligent responses coming from an in depth understanding and appreciation of why.

"Those who are possessed of a definite body of doctrine and of deeply rooted convictions upon it will be in a much better position to deal with the shifts and surprises of daily affairs than those who are merely taking short views" Winston Churchill

Leveraging from the book Prosperity without Growth: Economics for a Finite Planet by Tim Jackson

Exactly what is growing? One thing is GDP, the annual marketed flow of final goods and services. But there is also the throughput – the metabolic flow of useful matter and energy from environmental sources, through the economic subsystem (production and consumption) and back to environmental sinks as waste. Economists have focused on GDP and, until recently, neglected throughput. But throughput is the relevant magnitude for answering the question about how big the economy is – namely how big is the economy's metabolic flow relative to the natural cycles that regenerate the economy's resource depletion and absorb its waste, as well as providing countless other natural services? The answer is that the economic subsystem is now very large relative to the ecosystem that sustains it. How big can the economy possibly be before it overwhelms and destroys the ecosystem in the short run? We have decided apparently to do an experiment to answer that question empirically!

Spells are hard to break, especially if you have been under one for a long time. And it is all the harder if they didn't start out as fairy tales. For a couple of hundred years, economic growth really was enchanting. It brought problems, yes, but they were outweighed by steady improvements in many areas, not just in longevity but in opportunity. That spell threatened to break in the 1960s and early 1970s – once Rachel Carson had taken some of the shine off modernity, environmentalists and economists started producing a series of profound analyses, most notably Limits to Growth, by an MIT team, and Small is Beautiful from E. F. Schumacher. And these were influential enough that, by the end of the 1970s, polls showed Americans were at least evenly divided on the question of whether more growth was desirable. But thereafter such topics became largely ignored, deliberately so by the powers that be. Truths that suggested anything other than growth would not service debt and are not good for business.

Classical economists including Adam Smith designed our thinking framework for economics in a world in which global capital and trade were measured in millions, not trillions of dollars. But that was two and a quarter centuries ago. Land was plentiful, labour was cheap, energy was not a major factor of production and the scarce input to production was financial capital. The

capitalist thus achieved a social purpose and was feted and rewarded, not pilloried for causing the worst environmental, financial, and economic crises. How times have changed.

Protecting the 10 billion acres of remaining forests on earth and replanting many of those already lost are both essential for restoring the earth's health. Since 2000, the earth's forest cover has shrunk by 13 million acres each year, with annual losses of 32 million acres far exceeding the regrowth of 19 million acres. Restoring the earth's tree and grass cover protects soil from erosion, reduces flooding and sequesters carbon. (With smart policies and international commitment, **we can reforest the earth,** says Lester Brown.)

There is now an increasing awareness that something is very wrong, and that in fundamental ways, human society needs to change to solve any of the capacity constraints described above. From many directions, fingers are being pointed at the ongoing economic crisis, itself a result of crises in fuel, food and finance, and at the parallel crisis in our ecological and climate commons, suggesting that both share a common cause: our failed economic model.

Society faces a profound dilemma: economic growth is unsustainable, but 'de-growth' – or economic contraction – is unstable. But still how few will face it?

The Question of Limits is as old as the hills and in many regards not advanced in any regard. But its recent history can be thought of as having three distinct phases. Late in the 18th century, the Parson Thomas Robert Malthus raised it in his enormously influential Essay on Population. In the 1970s, it was raised again in a different form in the Club of Rome's Limits to Growth report. The third phase is the one we find ourselves in now: concerns over the environment, the economy and peak energy compete for attention. Raising the spectra of Malthus is dangerous, of course.

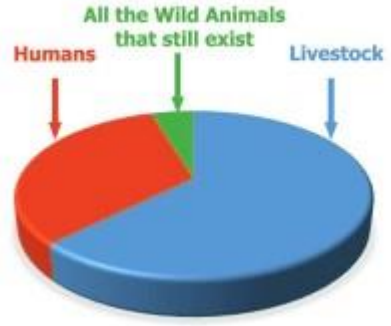
The global population is now more than six times the size it was in Malthus' day. And this is partly because the means of subsistence expanded considerably faster than population did – completely counter to Malthus' premise. The global economy is 68 times bigger than it was in 1800. Malthus missed completely the longer-term implications of the massive technological changes already taking place around him. Nor could he have foreseen that with development would come a considerable slowing down of the rate of population increase. Today, increasing affluence is driving resource throughput faster than population growth is. **The means of subsistence more than kept pace with people's propensity to reproduce, largely because of the easy availability of cheap fossil fuels.**

And yet the massive increases in resource use associated with a global economy almost 70 times bigger than the one in his day, might still have given Parson Malthus pause for thought. How could such increases possibly continue? That was the question asked by a group of scientists commissioned by the Club of Rome in the 1970s to explore the question of ecological limits. Donella and Dennis Meadows and their colleagues looked at exponential growth in resource use, population and economic activity since the industrial revolution and asked themselves a very simple question. How could these kinds of curves possibly continue in the way conventional economic projections supposed they would?

The Meadows argued that resource scarcities would push prices up and slow down the possibilities for future growth. Eventually, if material throughput weren't curtailed, the resource base itself would collapse and with it the potential for continued economic activity – at least, at anything like the scale anticipated by the "optimists". Collecting together as much data as they could find on resource extraction rates and available reserves, they set themselves the task of figuring out when the turning points would arrive – the points at which real scarcity might begin to bite. As it turned out, and as they themselves were later to admit, they also got it wrong. But not by anything like as much as Malthus got it wrong. Back in the 1970s, the Meadows expected to see significant resource scarcities before the new Millennium. That did not happen. Remember this was almost 40 years ago when basic data on natural resources were even scarcer than they are today. But the prospect of scarcity was not far behind their expectations. Most significantly, the peak oil debate had already emerged as a fiercely contentious issue by the year 2000. The 'peak-ists' argued that the peak in oil production was only a matter of years away, possibly already on us. Their opponents pointed to the massive reserves still lying in the tar sands and oil shales. Getting the oil out might be costly and environmentally damaging, but absolute scarcity was still a long way away, claimed the "oil optimists".

This brief sketch of ecological limits does no justice at all to the accumulating wealth of understanding about resource scarcity. I have only just barely touched on questions of rapid deforestation, historically unprecedented biodiversity loss, the collapse of fish stocks, water scarcity or the pollution and depletion of soil in many regards.

Biomass of all the land mammals on planet Earth:



We'll miss the world's biodiversity when it's gone.

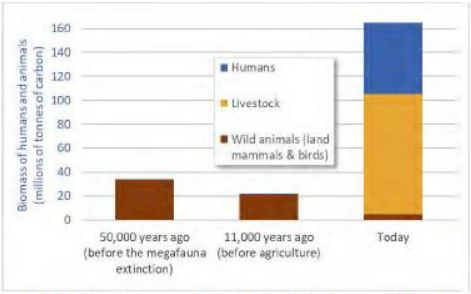


Figure 11-3. Mass of humans, livestock, and wild animals (terrestrial mammals and birds)
Sources: Yinon M. Bar-On, Rob Phillips, and Ron Milo, "The Biomass Distribution on Earth," *Proceedings of the National Academy of Sciences* 115 (June 2018); Anthony Barnosky, "Megafauna Biomass Tradeoff as a Driver of Quaternary and Future Extinctions," *Proceedings of the National Academy of Sciences* 105 (August 2008); Vaclav Smil, *Harvesting the Biosphere: What We Have Taken from Nature* (Cambridge, MA: MIT Press, 2013)

The reasons for collective blindness are (as we shall see in more detail later) easy enough to find. The modern economy is structurally reliant on economic growth for its stability and without it cannot service debt loads. When growth falters – as it did dramatically during the latter stages of 2008 and until now in 2022. Businesses struggle to survive. A spiral of recession looms. Therefore, questioning growth is deemed to be the act of lunatics, idealists, and revolutionaries.

The idea of a non-growing economy may be an anathema to an economist. But the idea of a continually growing economy is an anathema to an ecologist. No subsystem of a finite system can grow indefinitely, in physical terms. Economists must be able to answer the question of how a continually growing economic system can fit within a finite ecological system. The only possible response to this challenge is to suggest – as economists do – that growth in dollars is 'decoupled' from growth in physical throughputs and environmental impacts. But as we shall see more clearly in what follows, so far this has not achieved what's needed and there are no prospects for it doing so in the immediate future. The sheer scale of decoupling required to meet the limits set out here (and to stay within them while the economy keeps on growing in perpetuity) staggers the imagination.

Prosperity without growth is a very useful trick to have up your sleeve when the economy is faltering.

The uncomfortable reality is that we find ourselves faced with is the imminent end of the era of cheap energy, the increasingly volatile prospect of saw tooth energy and commodity prices; but ultimately (as has been the case since the 1970's) relatively steadily rising commodity prices, the degradation of air, water and soil, conflicts over land use, resource use, water use, forestry and fishing rights. And we face these tasks with an economy that is fundamentally broken and in desperate need of renewal.

Prosperity consists in our ability to flourish as human beings – within the ecological limits of a finite planet. The challenge for our society is to create the conditions under which this is possible working in harmony with nature.

Economic expansion in the emerging economies has accelerated the demand for fossil fuels, metals and non-metallic minerals and will inevitably reduce the reserve life of finite resources. These demands in their turn are intimately linked to accelerating environmental impacts: declining biodiversity, rampant deforestation, collapsing fish stocks, declining water supplies and degraded soils. The material and environmental impacts of growth were paramount in prompting this inquiry. **The economic crisis may appear to be unrelated; but it is not.** The age of irresponsibility demonstrates a long-term blindness to the limitations of the material world.

Our ecological debts are as unstable as our financial debts. Neither is properly accounted for in the relentless pursuit of consumption growth.

The prevailing vision of prosperity as a continually expanding economic paradise has come unraveled. It all worked better when economies were smaller. But if it was ever fully fit for purpose, it certainly is not now. Short-term fixes to prop up a bankrupt system are not good enough. Something more is needed. An essential starting point is to set out a coherent notion of prosperity that does not rely on default assumptions about consumption growth.

What is the 'psychic satisfaction' from an iPhone? A new bicycle? A holiday abroad? A birthday present for a lover? These questions are practically impossible to answer. Economics gets round the difficulty by assuming their value is equivalent to the price people are prepared to pay for them in freely functioning markets. It casts utility as the monetary value of market exchanges. The GDP sums up all these market exchanges.

Economic historian Avner offers: 'True prosperity is a good balance between short-term arousal and long-term security'. Sustainable is a lifestyle built for permanence.

On the one hand, continued growth looks ecologically unsustainable; on the other, it appears essential for lasting prosperity. Making progress against such an 'impossibility theorem' would be vital.

The best that economists and politicians hope for the G20 and world is that demand does recover and it's possible to begin paying off the debt. This could take decades. It took Britain almost half a century to pay off public debts accumulated through World War II. The Institute for Fiscal Studies has estimated that the 'debt overhang' from the 2008 recession could last into the 2030s and that was estimated before debt kept growing exponentially.

The 'dilemma of growth' can now be stated in terms of two propositions: Growth is unsustainable – at least in its current form. Burgeoning resource consumption and rising environmental costs are compounding profound disparities in social well-being. 'De-growth' is unstable – at least under present conditions. Declining consumer demand leads to rising unemployment, falling competitiveness and a spiral of recession. This dilemma looks at first like an impossibility theorem for a lasting prosperity. But it cannot be avoided and must be taken seriously. The failure to do so is the single biggest threat to sustainability that we face.

Put very simply, relative decoupling is about doing more with less: more economic activity with less environmental damage; more goods and services with fewer resource inputs and fewer emissions. Decoupling is about doing things more efficiently. And since efficiency is one of the things that modern economies are good at, decoupling has a familiar logic and a clear appeal as a solution to the dilemma of growth.

The intractability has tended to reinforce the idea that only technology can save us. Knowing that efficiency is key to economic progress, it is tempting to place our faith in the possibility that we can push relative decoupling fast enough that it leads in the end, to absolute decoupling.

The structural reliance of the system itself is on continued growth. The imperative to sell more goods, to innovate continually, to stimulate higher and higher levels of consumer demand is driven forwards by the pursuit of growth. But this imperative is now so strong that it seems to undermine the interests of those it is supposed to serve. The cycles of creative destruction become ever more frequent. **Product lifetimes plummet as durability is designed out of consumer goods and obsolescence is designed in. Quality is sacrificed relentlessly to volume throughput. The throw-away society is not so much a consequence of consumer greed as a structural prerequisite for survival.** Novelty and fashionable has become a conscript to the drive for economic expansion.

In a secular world, having something to hope for is particularly important when things are going badly. Retail therapy as it were.

Consumer goods, suggests anthropologist Grant McCracken, provide us with a tangible bridge to our highest ideals. They fail, of course, to provide a genuine access to those ideals, but in failing they leave open the need for future bridges and so stimulate our appetite for more goods. Consumer culture perpetuates itself here precisely because it succeeds so well at failure!

We need to identify opportunities for change within society – changes in values, changes in lifestyles, changes in social structure – that will free us from the damaging social logic of consumerism

Only through such changes will it be possible to get ourselves 'unhooked' from growth, free ourselves from the relentless flow of novelty that drives material throughput and find instead a lasting prosperity – the potential to flourish, within ecological and social limits.

One of the most striking features of the global financial crisis of 2008 was the consensus on the need to re-invigorate economic growth and unfortunately it continues unabated.

The call was for mechanisms that would 'kick-start' consumer spending and get the economy growing again. The reason is obvious enough. When spending slows down, unemployment looms large. Firms find themselves out of business. People find themselves out of a job. And a government that fails to respond in a popular way will soon find itself out of office. In the short-term, the moral imperative to protect jobs and prevent any further collapse is incontrovertible. The pandemic experiment allowed elites to bankrupt 50% of small business and reap huge rewards.

The clarion call from every side was to get the economy 'back on the growth path'. And this call was not just to increase the GDP. It was quite specifically to stimulate consumption growth: to restore consumer confidence and stimulate high-street spending. It was, in effect, a united call to re-inspire the dynamics that will continue to drive unsustainable throughput.

Those inclined to question the consensus wisdom were swiftly denounced as cynical revolutionaries or modern-day luddites.

It highlights the international consensus that emerged around a very simple idea. Economic recovery demands investment. The transition to a low-carbon society also requires investment. Let us put the two things together and create an investment package with multiple benefits. Specifically, a 'green stimulus' so the narrative went, had the potential to secure jobs and economic recovery in the short-term, to provide energy security and technological innovation in the medium-term and to ensure a sustainable future for our children in the long-term. Although this idea makes some sense, the default assumption of even the 'greenest' stimulus package is to return the economy to a condition of continuing consumption growth. Since this condition is unsustainable, it is difficult to escape the conclusion that in the longer term something very different is needed.

Put bluntly, the dilemma of growth has us caught between the desire to maintain economic stability and the need to remain within ecological limits. This dilemma arises because stability seems to require growth, but environmental impacts 'scale with' economic output: the more the economy grows, the greater the environmental impact – all other things being equal. Not that environmental impacts do not disrupt stability.

It is now widely accepted that technological efficiency is both an outcome from and a fundamental driver of economic growth. Proponents use this feature of capitalism to suggest that growth is not only compatible with ecological goals but necessary to achieve them. Growth induces technological efficiency as well as increases in scale. All that is needed to remain within ecological limits is for efficiency to outrun (and continue to outrun) scale. But historical evidence for the success of this strategy has long been deeply unconvincing. In short, efficiency has not outrun scale and shows no signs of doing so.

Never mind that decoupling isn't happening on anything like the scale needed. Never mind that most of our institutions and incentive structures continually point in the wrong direction. The dilemma, once recognized, looms so dangerously over our future that we are desperate to believe in miracles. Technology will save us. Capitalism is good at technology. So, let's just keep the show on the road and hope for the best. Critically though, these sectors will look rather different from the way they do right now. Manufacturing will need to pay more attention to durability and repairability. Construction must prioritize refurbishment of existing buildings and the design of new sustainable and repairable infrastructures. Agriculture will have to pay more attention to the integrity of land and the welfare of livestock. Financial intermediation will depend less on monetary expansion and more on prudent long-term stable investment. Most people do not get it yet, but they will be forced to.

"HUMANS FACE PROFOUND CHALLENGES —peak energy, a growth-addicted global financial system, gross inequity. Simply tweaking the way we do things will not be enough to help us muddle through. "Business as usual" is a perilous option bound to drive our species onto the proverbial rocks. We should not expect to survive with any kind of dignity if we continue what we are doing. Rather, we must radically shift the way we see, think, and act in relation to each other and the planet" says Michael Lewis and Patrick Conaty in their book The Resilience Imperative: Cooperative Transitions to a Steady-state Economy

The steadfast pursuit of economic growth is seldom questioned in our culture, and gross domestic product (GDP) remains a dominant measure of our well-being, but many question this viewpoint, deeply. Those questioning purpose is to make a modest contribution to advancing what John Stuart Mill, in Principles of Political Economy, positively proposed as a future "stationary state economy," a possibility also contemplated by John Maynard Keynes in his 1930 essay "Economic Possibilities for Our Grandchildren." Such a venture may seem an apostasy to many. We beg to differ even as we wish we did not need to!

Our capacity to learn, innovate, and adapt developed within nature's womb, and our diverse cultures took root there. Our lives have been imbued with meaning derived from the place we inhabit on the planet and our imaginings of how we came to be here. This is the heart of the human story, a story that reveals us to be resilient creatures. That resilience will be sorely tested as it has been for a while now. The gentle curve of time that shaped our social, economic, and cultural evolution was like a slow-motion film in comparison to the explosive period of volatile change that burst upon us in the 20th century. We were hunter gathers for 95 percent of our existence. Growing food has occupied but 5 percent of our time on the planet, and the industrial revolution is so infinitesimal as to be irrelevant in evolutionary terms. Yet since the mid-19th century, when we began the commercial exploitation of oil, that powerful store of ancient sunlight nature deposited over hundreds of millions of years, we have extended human influence over the planet so completely that both ourselves and the planet have forever been altered. Our ingenious capacity for innovation has unwittingly unleashed changes that put the ecosystems we depend on at risk and has thus endangered our own and other certainly a great many other species.

It is important to note that there are serious counterarguments to parts of this analysis. A major one is that rising oil prices will trigger innovation. Development of new supplies, the reworking of existing wells, and the exploitation of oil shale and oil sands

are all well underway. Pricing drives profit margins, which in turn drive investment. True; this is the way things work. Unfortunately, rising oil prices also trigger recession. At least five of the last six recessions corresponded with a spike in the price of oil, a crucial connection that receives scant attention outside of a few think tanks that take peak energy seriously. **Until we have pricing that reflects the true costs, there is a huge brake on long-term investment flowing into the alternatives and now oil and gas too. Thus, we are left with wild swings in the price of energy, which feed economic volatility, neutering our capacity for a generative movement toward a steady-state economy.**

In 1980, the size of the world's financial assets was equivalent to global GDP; in 2008, total financial assets were three times global GDP. In the 1960s, financial organizations accounted for 14 percent of corporate profits; by 2008 that had risen to 39 percent, further evidence that investment in the real economy is being abandoned.

The Bank of Canada was nationalized by the Mackenzie King government in 1938. King took the Keynesian message to heart and created interest-free money to help the country overcome the Depression, and the Bank of Canada still retains in its constitutional right to do so. In 2010, Canadians paid $165 million daily in interest charges on governmental debt of $519 billion — this is equivalent to $136 a week from a family of four. According to Richard Priestman and Connie Fogal, between 1939 and 1945 the Bank of Canada produced 62 percent or more of the national money supply interest-free. From 1945 to 1975 the Bank of Canada provided a significant proportion of capital for public needs — at a nominal rate of about one percent. A major source of low-cost capital to lend was the private Canadian banks that were obliged under Keynesian policies to hold statutory reserves interest-free in the Bank of Canada, which the public bank could then lend out for public works and benefits. Over many years this put over $120 billion in interest-free money at the disposal of the Canadian government. Inflation and speculative lending could be reined in by the Bank of Canada requiring the private banks to increase their statutory reserves to slow down credit expansion where necessary. Total federal debt in Canada was only $37 billion in 1975, and 22 percent was owed to the Bank of Canada. However, following the lead of Thatcher and Reagan, the Brian Mulroney government, which came to power in 1984, moved away from the statutory reserve system to so called "free markets" and the deregulation of the banking sector. Real long-term interest rates on Canadian government debt, which were 0.7 percent in 1980, escalated to 8.4 percent in 1984. After the policy shift, interest payable to the private banks on borrowing rose to levels from $5 billion to $8 billion a year on loans that had previously been virtually interest free. The use of the Bank of Canada to fund public projects has declined radically since. Interest rates on government debt rose to ranges of 6 to 18 percent in the 1980s, and the public debt soared to $408 billion in 1991 and then to $585 billion in 2000. For a fascinating view find old articles pertaining to this Lawsuit To Restore the Power of The Bank of Canada to Create Sovereign Money

President Franklin Roosevelt commented in his 1933 inaugural address to Americans: "Faced by a failure of credit, they [the banks] propose only lending more money."

If the consequences were not so tragic, we might think we were watching a farce. Just think about it. A deregulated and bloated industry designs opaque, predatory, and ultimately toxic financial products, wraps them up to sell in packaging that oozes security, and then spends six or seven years picking the pockets of millions of trusting consumers. Once the buyers start to understand the ruse, it blows up. The house of cards falls, small and large investors lose billions, and citizens and governments pony up to bail out the free-market banks that are "too big to fail." Government costs skyrocket, millions are thrown out of work, home foreclosures mount, government revenues plunge — and two years later the whole debate turns back to governments needing to tighten their belts and be responsible. Talk of financial reregulation is barely audible. Unearned bonuses return. Bank reserves are growing again, yet the credit crunch for the average citizen and small business remains.

Citizens at the sharp end of the subprime mortgage travesty, countries gripped by the Euro-crisis, those losing jobs, the evicted and the homeless, those whose pensions are being curtailed, small businesses unable to secure working capital, the war refugees, are all among the dislocated.

With this unholy trinity of environmental issues, peak energy and the banking casino economy framing our future options, it is easy to understand why it is so hard to see the world afresh. Especially when it seems so much of the discourse of elites and average citizens alike is embedded in well-honed myths and unexamined assumptions. It is as if we are driving toward the future with our eyes locked on a magical rearview mirror. However we tilt the mirror, and wherever we drive, comforting images of "progress" remain in view, locked in by a century of dazzling technological and economic achievement. Material goods, life spans and beauty-enhancing refits appear to multiply endlessly into the future. However, if humans had not learned how to harness oil and manipulate it in various ways, life as we know it today would be unimaginable. Modern transportation would not exist. Plastics would not exist. Pesticides, synthetic fertilizers and all manner of fuel-driven agricultural and irrigation implements would not exist. Our population would not have exploded to 7 billion, a 600 percent increase in 150 years. The dramatic economic growth we have experienced would not have occurred. Over most of human history, economic growth has been negligible. For millennia, we depended wholly on direct sunlight for the energy needed to meet our everyday needs. We lived, most often, in a steady-state economy.

We are enamored, rightly so in many ways, with the benefits stemming from remarkable discoveries, knowledge and advancement that have accompanied the last 200 years. Given this remarkable track record, why would we not expect /

wish that human ingenuity, scientific knowledge, technological invention and the ample natural endowment of an entire planet and even other planets would not deliver the goods well into the future?

In part, what impedes our breaking out of the box is the conviction that economic growth and prosperity are synonymous — too many believe that we cannot have one without the other.

Prosperity transcends material concerns. It resides in the quality of our lives and in the health and happiness of our families. It is present in the strength of our relationships and our trust in the community. It is evidenced by our satisfaction at work and our sense of shared meaning and purpose. It hangs on our potential to participate fully in the life of society. Prosperity consists in our ability to flourish as human beings — within the ecological limits of a finite planet.

The desire to change paralyzed by the fear of change

In science, resilience is defined as "the amount of change a system can undergo (its capacity to absorb disturbance) and essentially retain the same functions, structure and feedbacks." For nearly four decades, scientists have been studying the resilience of ecosystems. The degradation of ecosystems by human-induced stresses became more evident over this time.

Degraded ecosystems reach a critical threshold or "tipping point," at which they may rapidly and dramatically change. Life-giving services are lost in the process — fresh water or air quality, for example, or the natural capacity to sustain fisheries and control pests.

We are at a juncture of unprecedented dependence on a globalized and centralized system of production, communication and transport. This system is highly vulnerable to disruptions arising from declining energy supplies and increasing environmental problems. Our world is going to become much smaller as the pressure begins to fray global supply chains as clearly is happening in 2022.

In 1955 the sales turnover of the largest US Fortune 500 corporations accounted for one-third of gross domestic product (GDP); by 2004, it was two-thirds. Today, 51 of the 100 largest economies in the world are corporations, and the top 500 account for nearly 70 percent of world trade. In 2002, the top 200 had combined sales equivalent to 28 percent of world GDP, yet they only employed 0.82 percent of the global work force.

"The Roman arena was technically a level playing field. But on one side were the lions with all the weapons and on the other side the Christians with all the blood. That's not a level playing field. That's a slaughter. And so is putting people into the economy without equipping them with capital, while equipping a tiny handful of people with hundreds and thousands of times more than they can use". — Louis Kelso

When we look at the world through the eyes of the seers of the past and pioneers of the present, it does seem that we do indeed have the capacity to navigate our way through and to forge the Great Transition.

Iceland Was Right, We Were Wrong: The IMF

Source: etfdailynews.com

Jeff Nielson: For approximately three years; our governments, the banking cabal, and the Corporate Media have assured us that they knew the appropriate response but in the end even IMF admitted was right to declare bankrupcy.

…How can we understand the difference between extracting oil from conventional oil wells and shale oil you ask? "*Think of it as like comparing a fire hose to wringing out a sponge*." Or sucking beer out of the carpet at the end of a party.

Kunstler argues that two central beliefs (when combined) stop people from accepting the notion that there are limitations to growth, increasing economic hardship before us, and calamitous environmental change around us: "*When you wish upon a star…you'll get something for nothing!*" He calls this a "*toxic psychology…that has become baseline normal for the American public*." Kunstler states that we can't "*sustain the unsustainable,*" and we're got to prepare for "*intelligent responses*" instead of "*solutions and the hour is getting very late*."

Anyone who reads Kunstler's books and articles knows how biting Kunstler can be critiquing and in this book, he doesn't disappoint. – Disney Land guests who are "*overfed Americans waddling so innocently about in their JC Penney casuals*," But he also shows us a more tender side. We can feel his outrage at the wasted opportunity, misdirected trillions and the ticky-tacky bait and switch, that impacted those born at the turn of the last century. They travel to Disney Land now to relive what they most loved about where they were born – a place of shops and shopkeepers, the safety of walking around and greeting other people and feeling the neighborliness of small-town America. In short, they now pay to see a fake version of "*whatever had made their towns worth caring about.*" Even though he acknowledges that most of these same folks worked very hard to advocate for the very changes that eventually destroyed that way of life, he's put it in context in this book. Kunstler himself claims "*I feel that I am a hostage to this economy.*"

As a clinical psychologist reflected on Kunstler's writings wrote "I regularly work with couples who try to find meaning in a life that is filled with moving family members to and from school, work, the mall and the soccer field. Many nights, when they're "starving", they stop for a fast-food dinner, although they know better. Kunstler calls this a life devoid of "*repose and tranquility, the necessary conditions for reflection.*" We now pay people like me for the time to gain a 'considered life.' My clients know that something is wrong with this picture, but they blame themselves instead of cultural norms. Many make a middle or upper-middle class income and find themselves being too tired to make a decent dinner or to see friends, too exhausted or alienated from each other to have passionate sex or a meaningful conversation, or in too much chaos to create an organized and "homey" home life. Designer pillows and drapery don't make "homey." The act of tending to and living in a space actually *makes* it a home.

Those attending Kunstler lectures, he reports, beg for "*solutions,*" wanting to be fed "*rescue remedies*" that promise a continuation of an easy life, endless driving, cheap fast food, NASCAR and Disney World. "*Ordinary people already felt hopeless about the things they were conditioned to believe they had control over, such as the idea that gainful employment would find those willing to work,*" so when confronted with the harsh realities of Peak Everything and "*what is among the gravest problems that the human race has ever faced*" (like environmental catastrophe) they tune out. These issues appear to be "*best ignored, with the hope that it would go away, like a case of poison oak.*"

Intelligent responses, he argues (in addition to more classic arguments like more rail and working ports), includes "*putting us back in touch with elements of human experience that we thoughtlessly discarded in our heedless rush toward a chimerical techno nirvana – working together with people we know, spending time with friends and loved ones, sharing food with people we love, and enacting the other ceremonies of daily and seasonal life in story and song.*" Yet these very recommendations seem so banal as to be rejected as no proposal at all. Being human is so…ordinary, and ennui is the symptom of our time. Even airplane travel feels as "*boring and tiresome as sitting in the dentist's waiting room"* despite being eight miles up and traveling at 550 miles an hour. We've lost an appreciation for the real magic all around us and in us.

"The world seems to be looking for the big solution, which is itself part of the problem, since the most effective solutions are both local and systemic". — Paul Hawken, Blessed Unrest

"As soaring energy-induced increases in transport costs swing the economic pendulum from the global economy back to the local economy, we suddenly need to become generalists. We have to refocus on smaller, more local markets that may not be large enough to support the specialization that the broader global market previously provided". — Jeff Rubin, Why Your World Is About to Become a Whole Lot Smaller

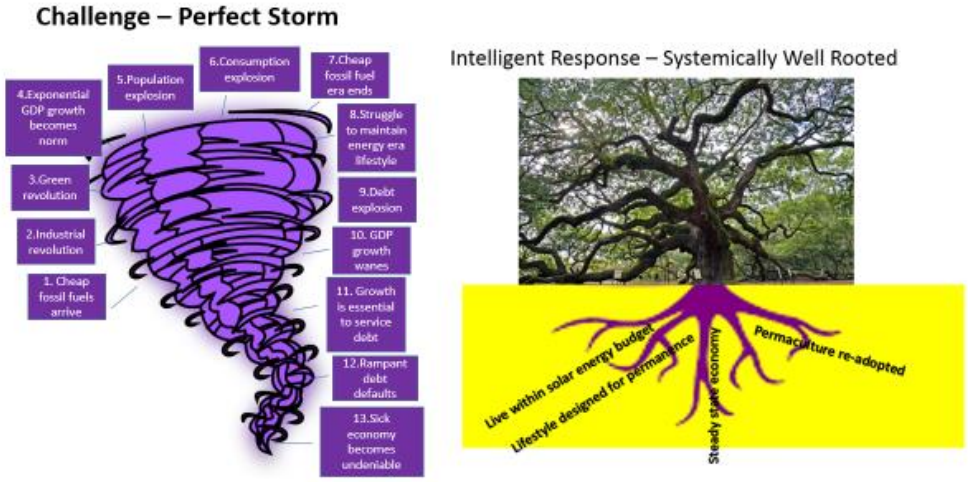
"A small body of determined spirits fired by an unquenchable faith in their mission can alter the course of history…Strength does not come from physical capacity. It comes from indomitable will…Live as if you were to die tomorrow. Learn as if you were to live forever." Gandhi

"Better to light a small candle than curse the darkness" says Wendell Berry, a long-time advocate of grassroots change and place-shaping activity that starts at home, suggests there are eight basic principles that point to some important aspects of the cultural shift we need to contemplate. Staying rooted where we are planted is his sage advice.

Overstressed ecosystems gradually lose their resilience, which is defined as the capacity of a system to withstand disturbance while still retaining its fundamental structure, function and internal feedback. There needs to be a concerted effort to regain and increase resiliency in all regards which means:

- Accept that human enterprise is structurally and functionally inseparable from nature. That is, human enterprise is fully embedded, totally dependent subsystem of the ecosphere – people live within ecosystems and must rapidly evolve communities to where we are increasing the resilience of these ecosystems.
- Recognize that the sustainability of the human enterprise on a crowded and resource-stressed planet depends on our ability to conserve the resilience of ecological systems. In this context, resilience defines the capacity of the system to assimilate disturbances without crossing a threshold into possibly less friendly, at best. A essential system is characterized by high resilience and is able to resist disturbance and continue to provide biophysical goods essential to satisfactory quality of life.
- Our solutions must recognize that our efforts must shift from reshaping nature in hopes of satisfying human demands to moderating human demands so that they fit within biophysical limits. We must do this in a way that is consistent with both the productive and assimilative capacities of ecosystems, and in a way that enhances the long-term resilience of the ecosystem.
- We must manage regional ecosystems to maintain/increase species diversity, systems integrity and optimal habitat for all species concerned.
- We must invest in redundant energy systems with an emphasis on sustainable renewable solutions.
- We must not work or think on a heroic scale. In our age of global industrialism, heroes too likely risk the lives of places and things they do not see.

• We must work on a scale proper to our limited abilities. We must not break things we cannot fix. There is no justification ever for permanent ecological damage. If this imposes the verdict of guilt upon us all, so be it.
• We must abandon the homeopathic delusion that the damages done by industrialization can be corrected by more industrialization.
• We must quit solving our problems by moving on. We must try to stay put and to learn where we are — geographically, historically and ecologically.
• We must learn, if we can, the sources and costs of our own economic lives.
• We must give up the notion that we are too good to do our own work and clean up our own messes. It is not acceptable for this work to be done for us by wage slavery or by enslaving nature.
• By way of correction, we must make local, locally adapted economies based on local nature, local sunlight, local intelligence and local work.
• We must understand that these measures are radical. They go to the root of our problem. They cannot be performed for us by any expert, political leader or corporation.



What does the above mean if we drill down below high level strategy statements to tactics needing to be deployed to make the strategy actionable via tactical intelligent responses?

Four intelligent responses regarding energy:

1. Promote and pursue energy literacy and knowledge – we need to understand problems thoroughly in order to pursue how to intelligently respond to these problems and in fact bring about permanent resiliency.
2. Pursue energy efficiency with urgency:
    a. Adopting cogeneration is a key initiative
    b. Retrofitting and reskinning buildings is of great importance
    c. Tele-commuting is of great importance especially as it contributes to ending urban sprawl.
    d. Pursue renewable energy adoption with urgency
        i. We must be vigilant and extremely cautious to avoid wishful thinking and so called silver bullets or magic wand solutions which in fact will not prove sustainable and will just make problems bigger.
3. Adopt local urban permaculture food production ASAP