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This month's Museletter begins with a message to all those around the country taking part in the [#Occupy movement](#). You may be interested to know that PCI sent a contact of ours, activist/videographer Ben Zolno, to meet with demonstrators on Wall Street and to distribute some copies of my book [The End of Growth](#). We want to learn more about how this analysis might resonate with folks in the movement.

The second piece this month comes from [The End of Growth](#) and is the final piece we will be serializing from the book.

MEMO TO THE #OCCUPY MOVEMENT (A Post Growth Economy)

Here's a fact that's hard for most Americans to swallow: **economic growth is over**. Given the finite nature of our planet and its resources, the recent trend of global economic expansion was destined to end. No stimulus package or slashing of social programs is going to flip the economy back to an expansionary trajectory. We've hit the proverbial wall, and this will be the defining reality of our lives from now on.

The growth-seeking political-economic system has failed us. Today that system is dominated by Wall Street. "Goldman Sachs rules the world," trader Alessio Rastani told us in a now-viral BBC interview. I met people like Rastani in researching my book, *The End of Growth*. At one lavish conference, 800 global investors packed a hotel ballroom to consider climate change. There was no talk of how to avert or mitigate floods and droughts. Instead, the discussion focused on profiting from warming with — no joke — weather derivatives. These folks were just doing their job, despite any private feelings of concern, remorse, or dread. And each was getting paid enough to single-handedly fund a midsize school district.

Both Wall Street and Washington are trying to do something impossible: grow human consumption forever in a world of limited energy, minerals, water, topsoil, and biodiversity, all while protecting and expanding the riches of the top one percent. If economic growth is over, that means we can no longer count on a rising tide to lift all boats. Under these conditions, extreme income inequality is not just unfair, it is socially unsustainable.

It's strategic to bring protest to Wall Street rather than Washington. We must go directly to the crime scene — not with a request for

reforms, but with an arrest warrant from the people.

You courageous people in the #occupy movement are absolutely right in saying the system is broken, greedy, and unfair. But when our discussion turns to replacing the current system, we've got to embrace a bigger view of reality than the one held by stock traders and politicians. It's not just our wealth they want to control, it's our vision for what is both possible and necessary. **We need a post-growth economy** that works both for people (all of them) and for the rest of nature: a localized economy based on renewable resources harvested at nature's rates of replenishment, not a fossil-fueled global economy driven by the imperative of ever-higher returns on investment.

There **will** be life after growth — and it can be a better life if our nation's priority is the quality of life of our people and the integrity of the biosphere, rather than stock prices and corporate profits.

With support,

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Our Problems are Resolvable In Principle

We've just seen how the economy could be put on the right track. But sorting out the economy is not enough to save the world; that would be just the first step.

The world's environmental dilemmas are likewise amenable to resolution, at least in principle. As support for that statement one can point to piles of "how-to-save-the-world" environmental articles and books—in fact I can point to *literal* piles of such books here in my little home office. Which suggests a way to approach writing this section of the book: rather than painstakingly assembling a balanced overview of an immense and wide-ranging literature, perhaps all that's really needed is for me to look around and grab a few titles off the shelves.

The first one that comes to hand is Lester Brown's *Plan B 4.0: Mobilizing to Save Civilization*. [1] In some ways we need go no further: Brown has provided a masterful overview of the world's 21st century threats (oil and food security, rising temperatures and rising seas, water shortages, etc.) and the ways to contain or overcome them—by eradicating poverty, conserving resources, reforming the world's food system, raising energy efficiency, and developing renewable energy. There it is, folks: that's all you need to know. Just go out and do it. (Brown's very latest book, *World on the Edge: How to Prevent Environmental and Economic Collapse*, which I didn't have at the time of this writing, appears to be an updated and improved version of *Plan B*.) [2]

Ah, but how could we stop with just one book? Next in the stack is one I couldn't resist: my own largely neglected previous volume, *The Oil Depletion Protocol: A Plan to Avert Oil Wars, Terrorism and*

Economic Collapse. It outlines a simple framework for guiding world policy regarding oil—and, in principle, all other non-renewable natural resources. Since we know that we cannot continue increasing rates of extraction forever, it makes sense to conserve such resources by deliberately reducing extraction rates now. If we did this in a coordinated way, we could keep resource prices from fluctuating destructively, reduce the incentive for nations to compete for dwindling supplies, and help jumpstart the inevitable transition to renewable alternatives.[3] What's not to like about that?

A third book that comes easily to hand is Albert Bates's *The Biochar Solution: Carbon Farming and Climate Change*. Bates has long been a prophet regarding climate change and is a veteran organic farmer; in this book he provides an excellent overview of a widely-researched technique for removing carbon from the atmosphere while building soil—a win-win solution if ever there was one.[4]

But wait—there are some problems we haven't addressed. How about transportation in an oil-constrained future? Take a look at *Transport Revolutions: Moving People and Freight Without Oil*, by Richard Gilbert and Anthony Perl, or *An American Citizen's Guide to an Oil-Free Economy* by Alan Drake, a veteran proponent of rails as being far more efficient than highways.[5] The problem of overpopulation must be mentioned again here—but we have already discussed the admirable and effective work of Population Media Center in Chapter 5; for more on solutions, see Bill Ryerson's chapter "Population: The Multiplier of Everything Else" in *The Post Carbon Reader*. [6] Conflict resolution methods and new governance models are covered in Roy Morrison's *Ecological Democracy*. [7] And the crisis in biodiversity is addressed in an article in a recent issue of *Solutions* magazine—"Facing Extinction: Nine Steps to Save Biodiversity," by Joe Roman, Paul Ehrlich, et al.[8] The looming crisis in the world's food systems is tackled in a report I co-wrote with Mike Bomford a couple of years ago, "The Food and Farming Transition." [9]

I could keep going. The list of critical problems facing civilization is nearly endless, but each one of those problems has been addressed with proposals and model projects aimed at mitigating it. These are the tools we want to have lying around as crisis hits, though they'll only be useful if we actually pick them up and learn to wield them.

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This chapter began with a rather dark "Default Scenario," yet we went on to see that there are solutions to the economic problem it portrayed; moreover, as we've just noted, there are potential answers to all our other critical problems as well. If civilization fails, it won't be for a lack of good ideas. Some of these have been around since the 1970s—a few since the 1870s. Which brings up the question: Why, if so many solutions are available, does my "default scenario" for the future look so dreary?

Perhaps the suggestion that "Our problems are resolvable in principle" needs to be followed by an "if" clause and a "but" clause.

The "if" clause: *If we are willing to change our way of life and the fundamental structures of society*. Many people assume that solving

our problems means being able to continue doing what we are doing now. Yet it is what we are doing now that is creating our problems. Every “solution” mentioned above comes at a cost in terms of fundamental changes in individual and societal behaviors and priorities.

The “but” clause: *But our society as a whole is not inclined to do what is required to solve them, even if the consequences of failing to do so are utterly apocalyptic.* This statement seems bizarre on its face. Who would prefer to see economic collapse, the exhaustion of precious natural resources, the disappearance of millions of species, the failure of food systems—and resulting misery and death for millions upon millions of humans? Well, no one, if we put it that way. Yet the choices are not always so clear-cut, and we humans are hard- and soft-wired with genetic and psychological programming that can make it very difficult for us to undertake costly short-term behavioral change in order to avert future catastrophe.[10]

It may be cynical to say that policy makers will do the right thing only after all other alternatives have been exhausted.[11] But for the solutions we have been discussing, this does seem to be more or less the case. And this is true not just of policy makers, but the majority of us worker bees as well.

Paul Ehrlich and Robert Ornstein made a pioneering effort to understand our species’ inability to pre-respond to impending, foreseeable crises in their book *New World New Mind* (1989), which describes the mismatch between the human nervous system and the complexities of our modern world.[12] While early hunter-gatherers evolved quick reflexes to cope with immediate threats in a limited environment, people in modern industrial societies face long-range problems not readily apparent to the five senses—growing population, climate change, resource depletion, and proliferation of debt. At their cores, our fight-or-flight brains just aren’t up to dealing with these kinds of slowly developing dilemmas, even though our more advanced cerebral faculties enable us to define both challenge and potential solutions.

A more recent book, *American Mania: When More Is Not Enough*, by neuroscientist Peter Whybrow, digs deeper and reflects more recent research.[13] Whybrow notes that evolution equipped us to seek status and novelty, and to engage in conspicuous consumption. In our species’ past, there were perfectly good reasons for these tendencies: they helped us survive and achieve reproductive success. But today, in a world of over-consumption, they keep us locked into behaviors that actually undermine our survival prospects.

Within our brains, dopamine plays a key role in governing motivation and stimulating the senses of reward and pleasure. On the primordial savanna, we got a hit of dopamine every time we discovered a tasty root or bagged a prey animal; today, stock trading lights up the same brain circuitry. But what helped us survive in one situation imperils us in the other. On the savanna, our early ancestors always needed the next meal, and then the next, and so the dopamine response evolved to be transitory. But today this means that, for the stock trader, no amount of profit is ever “enough.” When we modern urbanites get a dopamine “hit” from a new car, a bigger house, or an end-of-year

bonus, we may know intellectually that Earth simply can't keep supplying us with ever-increasing flows of such goodies, but it's hard to stop. We may even say we are "addicted" to shopping or some other aspect of consumption—but what we are really addicted to is the feeling it gives us.

According to Whybrow, Americans are particularly susceptible because they are descended from immigrants with a higher frequency of the "exploratory and novelty-seeking D4-7 allele" in the dopamine receptor system; these immigrants, after all, were individuals who were willing to cross an ocean to pursue opportunity. Americans, he argues, are therefore disproportionately prone to impulsivity and addiction. Whybrow doesn't condemn Americans, whom he describes as "a self-selected group of hard-working opportunists with an insatiable hunger for self-improvement"; he merely points out that consumerism got its start in the U.S. for reasons that have to do with biology as well as history.

Addiction is closely related to habituation: repeated use of an addictive drug typically leads to higher levels of tolerance. The same is true of dopamine-generating activities. Withdrawal from those activities leads to lower dopamine levels, so continuous acclimation to those activities is required to keep dopamine at normal levels, while a higher "dose" of activity is needed to get achieve the "high" that came the first time around. In his article "The Psychological and Evolutionary Roots of Resource Overconsumption Revisited," Energy blogger and former hedge-fund manager Nate Hagens writes:

"After each upward spike, dopamine levels recede, eventually to below the baseline. The following spike doesn't go quite as high as the one before it. Over time, the rush becomes smaller, and the crash that follows becomes steeper. The brain has been fooled into "thinking" that achieving that high is equivalent to survival (even more so than with food or sex, which actually *do* contribute to survival) and the "consume" light remains on all the time. Eventually, the brain is forced to turn on a self-defense mechanism, reducing the production of dopamine altogether—thus weakening the pleasure circuits' intended function. At this point, an "addicted" person is compelled to use the substance not to get high, but just to feel normal—since one's own body is producing little or no endogenous dopamine response. Such a person has reached a state of anhedonia, or inability to feel pleasure via normal experiences." [14]

Just as our brain circuitry can addict us to overconsumption, it also keeps us from responding to slowly accumulating environmental threats. Hagens points out that our brains are adept at calculating risks and rewards, and at applying discount rates according to the timing of events. We give the present predominantly more weight than the future when making decisions: an immediate reward is worth more to us than one promised next year, and an immediate threat will provoke more avoidance effort than one certain to emerge down the line. So even though the cost of averting climate change (in terms of loss to GDP) would be less than the eventual cost of climate change itself, we are generally unwilling to pay that smaller,

immediate cost.

The limits to our ability to change behavior to avert crisis come not just from our individual brain wiring but from the psychology of organizations. While people within organizations individually have the characteristics we have been discussing, organizations themselves tend to develop their own defenses against change.

Political organizations, for example, tend to foster a culture in which insiders (politicians) are encouraged to tell outsiders (the people) what the latter want to hear, while withholding information about problems that cannot be solved without substantial sacrifice, or problems that cannot be blamed on other, competing politicians.

Both political and commercial organizations tend to elevate short-term priorities. For corporations, quarterly profits are the prime motivator, while politicians make decisions based on the next election cycle. Ironically, however, absent an immediate military threat, government policy tends to evolve very slowly, regardless of the urgency of the environmental or economic issues facing it.[15]

On top of all this, there are entrenched interests—people and institutions that profit from the system the way it is, don't want to give up those profits, and have the means to shape policy and public opinion. This is hardly a trivial point: billions of dollars are spent strategically in lobbying and public relations by corporations and wealthy individuals with the goal of shaping, delaying, or eliminating environmental legislation or reforms of the financial industry.

All of this would seem to suggest that human beings are simply incapable of conserving resources and that we are genetically wired to use the planet up and drive ourselves to extinction. But that's not entirely true. There are countervailing human tendencies exemplified in the traditions of indigenous peoples who made decisions based on the likely impacts on the seventh generation yet to come. Traditional societies planned ahead, made a virtue of thrift, and in many cases even held voluntary poverty as an ideal.[16]

These kinds of cultural values evolved slowly in response to environmental limits. During the past two centuries of rapid economic growth, such values have tended to be lost and forgotten. Peter Whybrow explains why:

“Selfish behaviors are reward-driven and innate, wired deeply into the survival mechanisms of the primitive brain, and when consistently reinforced, they will run away to greed, with its associated craving for money, food, or power. On the other hand, the self-restraint and the empathy for others that are so important in fostering physical and mental health are learned behaviors—largely functions of the new human cortex and thus culturally dependent. These social behaviors are fragile and learned by imitations much as we learn language.”[17]

All of the solutions to our growth-based problems involve some form of self-restraint. That's why most of those solutions remain just good ideas. That's also why we will probably hit the wall, and why the

outcomes described in the previous chapters of this book are likely. The sustainability revolution *will* occur. The depletion of nonrenewable resources ensures that humankind will eventually base its economy on renewable resources harvested at rates of natural replenishment. But that revolution will be driven by crisis.

The crucial question is, how serious will that crisis have to be to get our collective attention and force us to change our behavior? Will the crisis be so severe as to destroy the very basis of civilization? If so, we will have lost everything worthwhile that human beings have achieved during our past few centuries of struggle, invention, and inquiry. It need not be so, and by working now to ensure that the tools that are needed to enable the economy and society to adapt to the post-growth era are sharpened and available, we can create the conditions for a rapid response when our collective internal discounting mechanisms finally adjust to the scale of the crisis facing us.

Nevertheless, if some scale of impact is inevitable, this poses profound immediate challenges for individuals, families, and communities. How should we be preparing?

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