

The Break of Day

On Normality

by Courtney White

Off and on for the past few years, whenever I could catch a break from the daily routine, I would indulge myself by musing on a question that had no real utility: *is this normal?*

By that I mean: can life at the start of the 21st century be considered *normal* by any stretch of the historical imagination? Are the nature and scale of our present national economies, for example, or their social and ecological consequences, *normal*? In other words, do they fall within some range of variation for “normal” human activity? For many political and business leaders, of course, the industrialization and globalization of our economy fits a pattern of ‘Progress’ that’s been in place since the Civil War and thus appears to be perfectly natural. But I wonder: is this pattern normal or is it an exception?

What about the size of the human population globally or its exponential rate of expansion – are they normal? What about our rates of consumption and waste, as well as our complete disregard of natural limitations? What about species extinction? Or global warming? Or how fat we’ve become? Is this normal or an anomaly? Or have we accepted these conditions as the “new” normal even though we understand them to be exceptional? If so, what does that mean for us or the planet in the long run?

Luckily, the grind of the day job doesn’t allow me to muse on this topic for very long, or else I might start drinking heavily. That’s because I suspect that the an-

swer to my question is not a happy one: *this isn’t normal*. Not by a long shot.

Take energy, for instance. The extraordinary infusion of energy calories in the form of cheap fossil fuel over the past 150 years, and the incalculable effect it has had on the project of civilization, is certainly *not normal*. It is, in fact, quite unprecedented – as are the consequences, both positive and negative, of this motherlode of oil riches.

Of course, all this energy has created an exceptional condition of prosperity and convenience that we don’t mind one bit. Life has steadily improved for nearly all Americans since the close of World War II, and most want it to stay that way. Besides, it *feels* normal now. That’s because sixty years of energy wealth, like any gold strike, has a way of creating its own sense of normality – fooling us into believing that *this* particular vein, unlike every other motherlode in history, will *not* run dry.

This is why the Arctic National Wildlife Refuge, among other places, will eventually be drilled. It’s not just rapacious oil companies or another bout of capitalistic ‘gold fever.’ It’ll happen because our “new” normal demands it. We will resist acknowledging the exceptionality of our economy until the last well has been sunk.

As I said, there are good reasons to start drinking heavily.

But there’s been a development recently that has



“Old” versus “new” normal. Boston, MA
(photo by ?)

lifted this entire question of “normal” out of the realm of indulgent speculation and placed it squarely in the real world of practical “dos and don’ts.”

You can hear echoes of it in the daily news headlines when words such as “uncharted waters” and “whole new ball game” are used by experts to describe the effects of record oil and gasoline prices, the housing/credit meltdown, and the spreading global food crisis. You can also detect it in the frustration and anger expressed by many Americans at their deteriorating economic circumstances.

The best way I can sum up this new development is like this: *there is no more normal*.

At Sea

Much of the unprepared path we face involves climate change. I am not going to argue here for or against the role of anthropogenic forces (industrially produced greenhouse gases) in global warming. Instead, I would like to focus on what climate change *already* means for our sense of ‘normality’ and its implications forthwith (have a drink handy).

By way of illustration, I’ll cite three scientific articles that I read recently.

In the first, titled “Climate Change and Forests of the Future: Managing in the Face of Uncertainty,”¹ three researchers say that current concepts of forest management, which are often based on a forest’s historical range of variability – a cycle of ecological ‘boom and bust’ over decades that is considered to be normal – are no longer adequate. As a consequence of climate change, they argue, managers can no longer rely on past forest conditions to provide targets for the future. All bets are off.

“The earth has entered an era of rapid environmental changes that has resulted in conditions without precedent in the past no matter how distantly we look,” they write.

Certainty in forest management has been replaced with uncertainty. This means we must manage our forests in new, creative and flexible ways. “Managing in the face of uncertainty will require a portfolio of approaches,” they write, “that focus on enhancing ecosystem resistance and resilience.”

These management approaches include: flexibility in decision-making, a willingness to take risks, the capacity to reassess conditions frequently, the ability to change course quickly as conditions change, actions that emphasize ecological processes rather than structure and composition, and an expanded land management toolbox (not to mention money to pay for all of the above).

The goal of these approaches is to create conditions that allow forests to retain as much of their original ‘shape’ ecologically as possible. This ability to ‘bounce back’ after a shock or surprise – to keep one’s shape – is called resilience. A wildfire is a good example of a



Caption: (photo by C. Conley)

shock to a forest system – and a good test of a forest’s ability to bounce back to health. Promoting resilience, say the authors, is the most commonly recommended option for foresters dealing with the uncertainty caused by climate-change.

“Resilient forests are those that not only accommodate gradual changes related to climate but tend to return toward a prior condition after disturbance either naturally or with management assistance,” they conclude.

In the second article, a group of water management experts declare dead the concept of *stationarity*². This is the idea that natural systems fluctuate within an unchanging envelope of ecological and climatological variability. Stationarity means *normal*, in other words,

which makes it the core premise on which water-resource engineering training and practice are based, they observe.

Before you can build a dam or plan to tap a river for irrigation, for example, you need to know how much water a particular watershed could deliver and when – which means rain, which means clouds, which means climate, which means predictability. Planning requires stationarity.

But it no longer exists.

“In the view of the magnitude and ubiquity of the hydroclimatic change apparently now under way,” they write, “we assert that stationarity is dead and should no longer serve as a central, default assumption in water-resource risk assessment and planning. Finding a suitable successor is crucial for human adaptation to changing climate.”

Stationarity is dead because global warming has altered the amounts of precipitation, rates of evapotranspiration, and rates of discharge of rivers, they write. This means, as with forest conditions, the past expectations of the natural range of variability no longer apply to the water cycle. And there’s no way to turn back the clock.

“Stationarity cannot be revived,” they conclude. “Even with aggressive mitigation, continued warming is very likely, given the residence time of atmospheric CO2 and the thermal inertia of the Earth system.”

We are at sea, in other words, regarding the future of our water supply. It gets worse (get ready with that drink).

The lead author on the third article, which is titled “Climate Change and Trace Gases,” is Dr. James Hansen, who is perhaps America’s preeminent climatologist. He is also the Paul Revere of global warming.

In a lengthy technical analysis, he and his colleagues argue that the Earth has been whipsawed between climate states for millennia, alternating between temper-



Ice rapidly melting on a Greenland glacier (www.gsfc.nasa.gov)

ature highs and lows on roughly a 150,000 year cycle. Cooling periods lasting 100,000 years were followed by quick jumps in global warming, resulting in a pattern that could be studied for its predictability – until recently, that is. The current run-up in temperatures, however, does not fit the pattern.

“Recent greenhouse gas emissions, place the Earth perilously close to dramatic climate change that could run out of our control,” they write. “Only intense simultaneous efforts to slow CO2 emissions and reduce non-CO2 forcings can keep climate within or near the range of *the past million years*.” [emphasis added]

But it was another conclusion that caught my attention. We live in a 12,000-year old period of time called the Holocene, which is noted both for its warmth and climate stability. This latter condition is unusual; historically the planet has either cooled down enough to expand the Laurentide and Fennoscandian ice sheets, or warmed up enough to reduce the size of the ice sheets covering Antarctica and Greenland over relatively short periods of time. But neither has happened for 12,000 years.

Until now. In fact, the warming of the past several decades, say the authors, has brought today’s temperature to or near the Holocene maximum. And given the rate of greenhouse gas emissions, that maximum is certain to be exceeded – if it hasn’t been already. And they note that the evidence is manifest: the current rapid melting of the world’s ice sheets.

“The Earth, and the creatures struggling to exist on the planet, has been repeatedly whipsawed between climate states,” they summarize. “No doubt this rough ride has driven progression of life via changing stresses, extinctions and species evolution. But civilization developed...during a period of unusual climate stability, the Holocene, now almost 12,000 years in duration. *That period is about to end.*” [emphasis added]

The end of the Holocene is upon us?

“Rapidly rising temperatures in the past three decades evidence that the Earth is now substantially out of energy balance and indications of accelerating change on West Antarctica and Greenland indicate that the period of stability is over.”

You can have that drink now.



“Little” normals - the only ones that matter. (photo by C. White)

On Shore

For the past year or so, I’ve employed the metaphor of a hurricane to describe our global predicament. The hurricane stands for the combined forces of change that are rapidly bearing down upon us – global warming, energy depletion, food security, water scarcity – all of which I’ve logrolled into something I’ve called the *Age of Consequences*.

I’ve written before, we need to do two things: work to lower the hurricane’s wind speed as much as possible (reduce greenhouse gas emissions, for instance) while simultaneously beefing up our defenses on shore. We don’t know precisely when or where the hurricane will strike, or how much destruction it will actually cause, but we do know that landfall is inevitable and so we must do everything in our power to prepare – such as build up local food systems.

But this “no more normal” business has added a big wrinkle to the picture.

Now I wonder: perhaps a hurricane is the wrong image. After all, hurricanes move along and eventually clear out, right? And after the rain and wind have stopped, doesn’t a community try to ‘return to normal’ as soon as possible? Once the sun comes out we get busy picking up the pieces of our homes and lives and begin the long process of getting back to way the way things were before the storm struck.

But what if the storm never stopped? Or perhaps more importantly, what if, under climate change, we weren’t exactly sure which ‘normal’ to return to?

This is where resilience comes in.

In ecology, there is a principle called the Adaptive Cycle in which a system (forest, swamp, desert, etc) passes through a sequence of phases over time, including rapid growth, maturation, breakdown, reorganization, and

rapid growth again. The critical moment is *breakdown*, such as what a fire – or beetle infestation – does to a forest. After the ecological disturbance has ended there follows a period of recovery and reorganization, followed by growth and maturation, such as new trees after a fire for example, and so on.

Resilience is the ability of a community to hold its shape after a breakdown. When communities aren’t resilient, they can cross ecological thresholds into a new state, such as when a forest becomes a grassland after a particularly intense fire. There are social thresholds too, such as the demise of so many farming towns in the Midwest during the Dust Bowl. Or what prolonged drought did to many prehistoric villages in the Southwest.

What, then, are the differences between communities that are resilient and those which are not? I think a place to start is with what I call the ‘little normals.’ These are things that have been remarkably persistent over the millennia: such as the way water moves across the land, or the love a parent feels for a child. The metabolism of a grass plant hasn’t changed significantly in millions of years; it needs rain and minerals, of course, to thrive, but otherwise it functions ‘normally’ – as it always has. It is the same for human communities too.

We still need food to live. We like to work and enjoy relaxing, as we always have. We need a sense of com-

munity, we like to belong, we prefer marriage and the family-scale household over anarchic social arrangements. We like to live in proximity to other people. We feel a deep affection for animals. We are moved by spiritual concerns.

These are examples of 'little normals' that I think remain largely unfazed by the changing nature of the 'big normals.' Global warming is a 'big normal' with big consequences, but it doesn't alter our need to be loved, to care for other creatures, or to be remembered. The global supply of oil may soon peak and decline, causing all sorts of rearrangements in our daily routines, but it won't change our need to eat, to play, or make music. Expanding population pressures and diminishing food stocks mean increased suffering globally, but they don't mean we stop laughing.

Resilience means seeking out the 'little normals' – the constants in human nature, including the behaviors, institutions, and durable scales, to paraphrase Aldo Leopold, that have stood the test of time – and reengaging with them meaningfully.

As an example, here's a quote from Dr. Fred Provenza that I found in classroom materials he prepared for his students at Utah State University this spring:

"With the advent of peak oil and the return to local economies...we will learn once again what it means to be locally adapted to the landscapes we inhabit. There will also be a need to produce livestock in ways that match seasonally available forages with production needs, and that match animals anatomically, physiologically and behaviorally to local landscapes by culling animals unable to reproduce with minimal help from humans and creating grazing systems that enhance the well-being of soils, plants, herbivores and people."

What Fred is describing is the foundation of what some of us have begun to call a new agrarianism – the integration of food, fuel, forests, wildlife, restoration, grassroots action, and many other local activities that make up the stuff of resilience and help us keep our shape in this era of uncertainty.

We know the storm is coming, and in many places it has already arrived. We know that there is no more normal from here forward in the big picture – and that things will be different at a variety of scales, perhaps very different. The question now is how to keep our

shape – how to avoid a catastrophic breakdown that pushes us over important thresholds from which a return is not very likely. The answer, it seems to me, lies among the "little normals" of our lives. This is where we should turn our attention.

It's where I will turn mine. ☺

[1] "Climate Change and Forests of the Future: Managing in the Face of Uncertainty" by C. Millar, N. Stephenson, and S. Stephens. *Ecological Applications*, 17 (8) 2007, pp. 2145-2151.

[2] "Stationarity is Dead: Whither Water Management?" P.C.D. Milly, J. Betancourt, M. Falkenmark, R. Hirsch, Z. Kundzewicz, D. Lettenmaier, and R. Stouffer. *Science*, vol. 319, no. 5863 (February 2008), pp. 573-574.

[3] "Climate Change and Trace Gases." J. Hansen, M. Sato, P. Kharecha, G. Russell, D. Lea, and M. Sidal. *Philosophical Transactions of the Royal Society*, no. 365 (May 2007), pp.925-1954.

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