

The Great Simplification

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[00:00:00] **Nate Hagens:** Welcome back to Wide Boundary News. There has been so much regular news of late, I haven't had time to do a Wide Boundary installment. six stories today drawn from this week's news cycle, but viewed out a few orders of magnitude so we can see what's actually going on, along with some uncomfortable questions that came up for me, when preparing this.

[00:00:24] And the thread running through all of these is similar. There is a gap between the version of reality being broadcast at us and the version that is actually unfolding underneath, and some aspects of this gap are small and some are ginormous, and they all matter to the wider story of the more than human predicament.

[00:00:45] Let's get into it.

[00:00:51] Number one, the US Department of Energy last week put out new promotional educational materials announcing what they're calling the golden era of energy dominance. Big charts, the word Trump printed inside the chart's bars, and the headline claim is that the United States now produces more oil than Saudi Arabia and Russia combined.

[00:01:17] That claim is technically accurate, but also misleading depending on how you count, and the Department of Energy's spin on the information is, in my opinion, not so dissimilar than propoganda. The USA production number bundles in crude oil, natural gas, plant liquids, biofuels, and refinery processing gain.

[00:01:41] The Saudi and Russian numbers in comparison are typically on a narrower crude-only basis, which is the higher quality energy stuff. So the chart

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technically isn't fabricating anything, but is quite the selection bias, which is exactly how data integrity erodes over time. Digging deeper into this data in a narrow boundary sense, and what is reported in the news a lot of late is the US is a net oil exporter.

[00:02:11] but this is technically false. We are a net product exporter, and much of the product is natural gas liquids, typically called NGL, which result in products like baggies that we put our sandwiches in, not gasoline or diesel products. In the past two years, the USA averaged importing over six million barrels a day of oil, and we exported around four million barrels.

[00:02:41] we're producing around thirteen, and our total consumption is around twenty. So the wide boundary statement here is we are both an importer and an exporter of complexity Which is fraught with risk, and stay tuned for what will be next week's episode with Art Berman to unpack this. Of course, petrostates have always had reasons to massage the truth.

[00:03:07] OPEC countries famously revised their reserve numbers upward in the 1980s when the quota system started rewarding bigger paper reserves. The Soviet Union published overly cheerful production data for decades. But here's the wider boundary view. We're somewhere near the top of the carbon pulse, give or take.

[00:03:30] Navigating the next twenty or thirty years is going to require honest data about where we are actually on that curve and many other things. This means clarity and honesty and integrity about reserves and decline rates, the energy needed to get energy out, and the gap between what we're pumping and what we're claiming we can pump.

[00:03:54] And if the data feeds become politically, useful branding tools, what happens to the analysts like me and the public that depend on them? The Energy

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Information Administration is still one of the few global sources trying to do honest accounting, and private analysts already pay for the proprietary databases the public can't see.

[00:04:21] So for everyone else, the picture is going to get increasingly fuzzier. So here's an uncomfortable question: Is it possible or even likely that we someday pass the peak of the carbon pulse but never quite know because the data is either privatized or skewed, and the people who could push back have lost access to the actual underlying numbers?

[00:04:49] How much of our future depends on being told the truth about where we are on these curves, and who exactly, is in charge of telling it? I suppose even a wider angle, question, how much of our future depends on being told the truth, full stop? Okay, point number two, for today, I wanna talk about Iran.

[00:05:14] I struggled to pick a specific news item, for this section since it's become a constant undercurrent of this moment. There are dozens of headlines every day. There's probably a dozen new things have happened, since I got up this morning I wanna look at the implications of this war at its widest scope, starting with the energy shocks soon to come to the USA, but already, are here in Asia and Europe.

[00:05:43] Most people learned about the oil shocks from the 1970s. Prices spiked, consumers substituted or went without, people got uncomfortable, and there were dramatic transformations in energy policies around the world. But ultimately, the shock was absorbed and the world moved on as usual. That worked when most barrels burned in homes and small cars, and heating oil could easily be swapped to natural gas.

[00:06:13] And recovery was simple because there were still lots left in the ground, especially in the US, and investment then kickstarted as a response to

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the crisis. Fast-forward to 2026, each barrel of oil and gas is responsible for more productivity in more critical industries like aviation and shipping and agriculture, and especially petrochemicals.

[00:06:39] None of those substitute easily or quickly. So today, price has less impact on demand than it used to, so the same shock will be even harder for our institutions to adapt to and cause even more hardship for people. And critically, there are fewer economically viable reserves now in the ground, meaning the investment and production response that happened in the 1970s is unlikely today.

[00:07:08] There will be some, but we'll have lower and lower biophysical returns, meaning less final energy available to the human, discretionary economy. This makes what's left above ground increasingly important. So here are a few specifics worth knowing. The United States Strategic Petroleum Reserve is now at multi-decade lows, even without an emergency.

[00:07:34] It's at multi-decade lows and stock markets are at all-time highs. OPEC Plus, spare capacity is contested and probably overstated. The Strait of Hormuz still carries around a third of globally purchasable oil flows, which is much more than just the twenty percent the news headlines report. That system has less shock-absorbing fat than most people assume.

[00:07:59] And if we widen the boundary on an Iran flare-up We stop seeing just Iran and the Strait of Hormuz and near-term energy price spikes. We start viewing a carbon pulse graph, the shape of humanity's fossil fuel journey, and it looks different, with this vantage. The first half was about discovery and extraction and decline rates and tertiary recovery and, infield, water, floods and the like.

[00:08:32] The second half will likely be more about war, sanctions, capital flight, EROI cliffs, and, social license and monetary and currency regimes. Geology did shape the upslope and technology, but from here, the above ground factors are

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likely to shape what's ahead. So Iran is but one node in that bigger picture, and the next ten years are gonna be full of nodes like this, raising prices and thus reducing demand, increasing war risk, and, resetting the game theory of energy security, all these at once.

[00:09:20] So the question becomes: How will we, as individuals, as nations, change the way we use energy once we start thinking about it like a security commodity again? And for a future Wide Boundary, segment, I wonder what does this portend for globalization? Okay, next item. In recent news, while there is not much coverage on the Nth order effects of this war, one complexity cascade the news has picked up on is fertilizer shortages.

[00:09:54] The Persian Gulf supplies around thirty percent of traded urea, a quarter of the world's ammonia, a fifth of phosphate, and with the strait closed, there are now three million tons a month not getting to fields and pushing up prices for the remaining available supply. Farmers facing higher costs apply less fertilizer.

[00:10:16] Because nitrogen response in plants is not linear, yields in the future will drop more than the percentage cut in fertilizer. We're seeing that in the news, but there's another food supply cascade receiving less coverage. About a billion people depend on LPG or kerosene for cooking fuel, and another over two billion people still cook over open fires or, simple stoves, and they've been trying to transition to gas cooking fuel for the health of their lungs.

[00:10:52] India imports sixty percent of its LPG, and ninety percent of that comes via the Strait of Hormuz in the Middle East. Sub-Saharan Africa, almost a billion people used to use charcoal and firewood, but have been transitioning to that same cleaner gas from the now closed Strait of Hormuz. So that trend towards cleaner cooking has reversed.

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[00:11:18] LPG prices in Asia hit four-year highs, last month. households in Mumbai are lining up at three AM for gas cylinders. In Kenya, families who finally got onto gas are now back on charcoal, because charcoal, unlike imported gas, is always there, or mostly always there. A decade of progress has been unwinding in two months.

[00:11:47] Then the financial side of this is also relevant. Sri Lanka, Pakistan, Egypt, as some key examples, are paying for fuel, fertilizer, and food all at once. At the same time, their currencies are declining and their debts are coming due. So each of these externalities from the US-Israel-Iran war is shrinking the cushion for these countries and the people within them further.

[00:12:13] So while we talk about rising prices in the Global North, which, yes, are going to cause discomfort, our governments will still be able to pay the price, and we will still get what we need, maybe just less. For less wealthy countries, they will face the externalities of this war through literal shortages that mean the difference between clean air and polluted air, and in some cases, eating or not eating.

[00:12:41] So every framework we have for human progress in the world was calibrated for and due to the upslope of the carbon pulse. None of these frameworks has a plan for the downslope or even the plateau at the top. If all of our models and goals assume that there will be more energy for everyone to climb up, what happens when resources get scarce and the Superorganism calves in half between East and West, each side taking what it needs and leaving less and less for those unable to pay?

[00:13:18] Okay, item number four, in recent news. This one is close to home for more reasons than one After a long legal battle, the Boundary Waters Canoe Area in northern Minnesota was just opened up for mining. For those of us who care

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about the intact natural systems and the long-term unbroken, landscapes, this was a real emotional blow.

[00:13:42] I have spent some amazing solitude, and time in nature in that refuge, in those lakes. What's being mined? Copper, nickel, and cobalt, the same minerals being framed as essential for the transition to a more sustainable world. The contradiction is right there in the headline. To save the climate, we're being asked to sacrifice the wilderness.

[00:14:09] This brings up a critical but rarely spoken point, which has been weighing on me a lot this year. Most of our environmentalism today is calibrated for problems of the upslope: CO2 emissions, plastics in the oceans, endocrine-disrupting chemicals. The price system never accounted for these externalities as the carbon pulse grew and expanded.

[00:14:37] On the downslope, the scale of those kinds of externalities may start to ease. Less industrial waste, fewer emissions, less plastic output. That is an important reprieve in theory. However, the downslope will create its own pollution. Resource nationalism will bring extraction and production home.

[00:15:04] Globalization will, by definition, retreat, which means we will no longer be able to outsource our extractive externalities to the DRC or the Atacama Desert or Inner Mongolia, or elsewhere anymore. There is a historical analog in the post-Soviet environmental collapse. When the central state weakened in the '90s, regulation evaporated.

[00:15:31] However, demand for cash from extractable resources did not. Russia and Ukraine and the Caucasus all showed what less industrial output actually looks like when it's paired with hungry mouths and failed institutions. The result was not pristine. and I'm told in many places, the environment was much worse than what came before.

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[00:15:56] Here is a key point. Most of our environmental movement today is staffed and funded and intellectually framed for the upslope battle of the carbon pulse. The downslope battle is going to look different and arguably much bigger at the local and regional scale, and the Boundary Waters decision is just one whisper of what's coming.

[00:16:24] So here's an uncomfortable question and a relevant question: What can we do now while we still have institutions and attention and discretionary energy to prepare for very different pollution and extraction problems coming on the backside of the carbon pulse? This might be one of the key areas in planning and intervention ahead.

[00:16:50] Next story, in the news last week, yesterday, last night, this month, this year, is AI data centers. Microsoft signed another nuclear deal. Hyperscalers are reanimating retired nuclear plants and signing power purchase agreements that are many decades long. New forecasts, for twenty twenty-seven to have over one trillion in physical infrastructure and data centers, which it is now estimated, US electricity demand is gonna increase by ten to twelve percent by twenty thirty.

[00:17:25] The numbers keep getting revised upward, not down. The global metabolic system that we've spent the last century building has spent, not so metaphorically, its entire life primarily feeding its muscles, cars and steel and concrete and fertilizer and freight and suburbia and supply chains. But now, suddenly, we are allocating a lot of food to its brain.

[00:17:55] Human brains are about two percent of our body mass, but use twenty percent of our metabolic load. Outsized capability for that outsized cost. And the honest question is whether AI compute capability justifies this metabolic load or whether it is just becoming a runaway organ. We don't really know yet, and neither do the people building it.

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[00:18:24] But what worries me, among the other nineteen things, is the asymmetry between time horizons. We're building thirty-year energy infrastructure to feed eighteen-month model generations on the assumption that energy and materials and water and ecosystem functionality and all the things will stay cheap and abundant.

[00:18:47] And all this is betting on continuity in a system that isn't built for continuity, not remotely and national security framing is making this situation worse because AI is now being positioned in local councils and, other as a US versus China contest, which means it becomes a forced consumer of energy at any cost.

[00:19:13] The Pentagon and the hyperscalers want the same thing for different reasons, and they are likely to bid and win against everything else. So I'll follow this uncomfortable observation with an uncomfortable question: What does this all look like when the Superorganism runs out of food? Stranded compute is a very real possibility.

[00:19:36] Vast facilities designed and financed for an energy regime that no longer exists, sitting cold and dark. I wonder what ChatGPT would say to this. Last item today, and this one most of you won't have seen, and that's part of why it's worth sharing. The Holstein Association USA named its twenty twenty-five Star of the Breed last week, a cow named Oakfield Solomon Sunset from Western New York.

[00:20:12] According to the Holstein Association, she is an exceptional animal, repeatedly award-winning, and according to her qualifying record, she produced more than fifty-one thousand pounds of milk in a single year. Holy cow. Here is the wide boundary view. A Holstein cow in the year nineteen twenty-five produced four or five thousand pounds of milk a year.

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[00:20:38] Sunset produces ten times that amount. That tenfold increase came from a century of selective breeding stacked on fossil-derived feed and antibiotic regimes and refrigeration networks, and a continental logistics system that subsequently delivers her calories in and her milk out. A system designed for efficiency and extraction at all costs, not too dissimilar from the matrix, and ignoring the fact that Sunset is a living being experiencing this system.

[00:21:17] The modern Holstein cow is the carbon pulse made into flesh. This is the same logic as the Boundary Waters, story, just gets a bit more acutely gross. we've engineered our food system and the animals inside it for an energy regime that is soon ending. Sunset's body, her output, her productivity, all of it depends on inputs that are getting harder, more expensive, and less reliable What have we bred for in cows and in seed varieties and in supply chains and in cities and in financial systems that we will not be able to feed, medicate, or transport on the backside of the carbon pulse?

[00:22:07] And when viewing this story about this super cow, you likely take one of two viewpoints. First, one of human ingenuity and problem-solving and technology and efficiency and the onward march of progress, or a Frankenstein story of humans as collective hungry ghosts untethered from our ancestral awareness and conditions, how we've severed our relationship with, our empathy with, our understanding of, and respect for the natural world we're a part of, including other species, even domestic ones.

[00:22:47] I do personally wonder what percent of humans and what percent of TGS community fall into these two viewpoints, because both are correct. It's just a narrow and a wide boundary delineation. So laying these stories out together, I see something that I didn't see when I started preparing for this.

[00:23:11] Almost everything we've built, the institutions, the narratives, the political coalitions, was all calibrated for the upslope of the carbon pulse, a

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century of rapid expansion, abundance, and, future aspiration. That's the world we have in the news headlines today. That's the world we're still trying to operate on.

[00:23:34] But despite the stock market and the futures market painting a different picture, the physical world is starting to do something different. And every quarter, the gap between what our institutions are equipped to see and what's actually happening gets a little wider. Personally, I find this both unsettling but also clarifying.

[00:24:01] Unsettling because the maps our culture are using for the future will not be enough, but clarifying because once we see that gap, as individuals, as small groups, as organizations, we can start asking better questions, building better relationships, making more informed choices about where we put our time and our attention.

[00:24:27] And having a wider boundary view does not fix any of this. It only lets us see a few moves ahead, and that's most of what useful planning is in this moment, actually is, paying close enough attention early enough to do something about it while it's still cheap and possible to act. That's our work.

[00:24:51] Lots more to say. See you next week.