

The Stone Age Didn't End Because We Ran Out of Stones

"If I'd asked my customers what they wanted, they'd have said a faster horse."

- Henry Ford

"...in September 2007 I was invited to speak at the China 'Green Car Congress'....the audience was mostly Chinese auto industry executives - some pretty tough-looking car guys....I thought hard and long beforehand about what to say to this group that might stimulate their thinking and give them perspective they hadn't heard before. In the end I decided to go right for the jugular. The basic thrust of my talk was as follows:

'Every year I come to China and young Chinese tell me, "Mr. Friedman, you Americans got to grow dirty for 150 years - you got to have your Industrial Revolution based on coal and oil - now it is our turn. "Well, on behalf of all Americans, I am here today to tell you that you're right. It's your turn. Please, take your time, grow as dirty as you like for as long as you like. Take your time! Please! Because I think my country needs only five years to invent all the clean power and energy efficiency tools that you, China, will need to avoid choking on pollution, and then we are going to come over and sell them all to you. We will get at least a five-year jump on you in the next great global industry: clean power and energy efficiency. We will totally dominate you in those industries. So please, don't rush, grow as dirty as you like for as long as you want. If you want to do it for five more years, that's great. If you want to give us a ten-year lead on the next global industry, that would be even better. Please take your time.'

At first, I could see a lot of these grizzled Chinese car guys adjusting their earpieces to make sure they were hearing me right: *"What the hell did he just say? America is going to clean our clock in the next great global industry? What industry is that?"* But as I went on, I could also see some heads nodding and some wry smiles of recognition from those who got my point: Clean power is going to be the global standard over the next decade, and clean power tools are going to be the next great global industry, and the countries who make more of them and sell more of them will have a competitive advantage. Those countries will have both the cleanest air and the fastest-growing businesses - not a bad combination."

Prices and Innovation

"The person who best expressed the critical importance that relative prices play in stimulating innovation in renewable energy was none other than the late great Saudi Arabian oil minister Sheikh Ahmed Zaki Yamani. Back in the 1970's, as OPEC was just starting to feel its oats, Yamani used to warn his colleagues not to raise oil prices too high, too fast, for fear of causing a government and market reaction in the West that would trigger massive innovation in wind, solar, and other forms of renewable energy.

The way Yamani put it to his OPEC colleagues reportedly went something like this: 'Remember, boys, the Stone Age didn't end because we ran out of stones.' It ended because people invented alternative tools made of bronze and then iron. Yamani knew that if the oil-consuming countries actually got their acts together to produce renewable energy at scale or to drive energy efficiency breakthroughs exponentially higher, the oil age would end with millions of barrels of oil still underground, just as the Stone Age ended with a lot of stones still on the ground. Yamani knew that the price signal - the price of oil versus the price of renewables - was everything, and OPEC needed to keep crude prices exactly at the level where the cartel would earn the maximum returns without spurring the West to innovate any scale alternatives to oil.

Our goal needs to be to make Yamani's nightmare come true."

-The above quotations are from Thomas L. Friedman's book

Hot, Flat and Crowded : *Why We Need a Green Revolution - And How It Can Renew America.*

Friedman goes on to explain how we do this and to describe what it would actually be like to live inside a real green revolution (as opposed to the green party we are currently having... "in America, at least, it is mostly a costume party. It's all about *looking* green.") in the year 20 E.C.E - Energy-Climate Era...hoping into a time machine of sorts. (ref. p. 205, 224 – 237)

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A few examples:

"Your car, by the way, is not longer called a "car". It is now called a RESU, or rolling energy storage unit....

...we progressed from an Internet ...that connected content and Web sites to an Internet of Things: an Energy Internet in which every device - from light switches to air conditioners, to basement boilers, to car batteries and power lines and power stations - incorporated microchips that could inform your utility, either directly or through an SBB [Smart Black Box], of the energy level at which it was operating, take instructions from you or your utility as to when it should operate and at what level of power, and tell your utility when it wanted to purchase or sell electricity....

To enter into the downtown area, you had to pass through an electronic gateway, which automatically charged you \$12 for entering the city between 10:00 a.m. and 2:00 p.m. (It costs \$18 at rush hour)Your city's new mayor actually won the election with the motto "Price the road and clear the traffic." You don't need to be a rocket scientist, said the mayor: 'If you want fewer CO2 emitters, charge people money for emitting CO2. If you want fewer cars on the roads during certain hours, charge people money for using them.' It works everywhere it has been tried.

When you arrived at the office, you docked your car at a parking ramp where you can both charge your car battery and sell electricity into the grid.

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Sounds far-fetched.Well, it's not fetched from very far away. A simple prototype for this Energy Internet was deployed in 2007 in Washington State's Olympic Peninsula.....On November 26, 2007, MSNBC ran a story about the preliminary results, headlined 'Smart Appliances Learning to Save Power Grid.' The story noted that ' as part of the experiment, the researchers found that they could cut the peak electricity load among participating homes by half for three days in a row.' "

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Fabulous reading, I highly recommend Friedman's book! Even if you are not "into" green for the environmental reasons – read it for the business economics angle.

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