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WHERE DID ALL THIS STUFF COME FROM?

An essay on abundant materialism



Part Two of Failing Future

Introduction of Author

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His business career included opening 7 more stores in 7 years, a nationally known leather handbag manufacturing company, selling to upscale stores like Nordstroms, and RedFusion a digital marketing company that became the largest website company in the Inland Empire.

His full-time job since 1989 was Burgess Management Consulting firm where he worked with high growth companies in the areas of agribusiness, retail, manufacturing and business services.

Ron has served on various local boards, over the years and currently serving on the Chamber of Commerce Board, and the Redlands Christian Schools Endowment Board.

Almost completely retired since 2020, he spends his extra time on woodworking, gardening, and art. Following retirement to battle boredom, he started a non-profit to assist start up businesses and advocate for small business, called MicroGiants. He and his consulting team have created over 150 hours of online instruction for startups, and recently funded its first new business.

Paper Overview

Despite our Covid-19 experience, the world continues to gain wealth and fewer and fewer are abject poor. It is one of the most incredible miracles in our history.

How did it happen that we have so much abundance that can't seem to store it all? The paper "Where Did All This Stuff Come From?", discusses the historical processes that set up the industrial revolution and what elements were critical that made it work so well in the United States and Western World.

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Forethought

My last paper, meeting 1954, in 2021, “Our Failing Future – Are things really that bad?” outlined the optimistic outcomes in many of the measures modern economies use to determine our well-being and standard of living. My sense was that many of you were somewhat surprised that things looked so good. We humans tend to pay attention to threats by nature (survival of the fittest) rather than fortune. Some professionals explain further: psychologists and neuroscientists call this “catastrophizing”, “Psychology Today” defines this as “cognitive distortion that prompts people to jump to the worst possible conclusion.” Humans generally don’t pay much attention to good news, but we seem to love bad news.

I was surprised when I ran across the book “Global Trends Every Person Should Know”, which I used to illustrate many of the charts in that paper. It produced in a non-opinion, data only format. I noticed how incredibly we have advanced in my lifetime and the last short two centuries compared with many millennia of our ancestor’s deprivation, starvation, miserable conditions and then short lives.

I was compelled to attempt to reverse the bad news story and contemplate the good news for a while.

Of course, since then we have had a world pandemic. A real scare to be sure, but now we can see that it was not one of the many plagues of the Middle Ages, polio, tuberculous or nuclear war. But it did make us literally crazy for a while. The economy dropped in unprecedented ways, as Chicken Little yelled “the sky is falling”, we stocked up on basic commodities for months or even years. This threw our distribution system into a huge mess.

Yet the United States was back to normal in 2023, the US economy grew at a respectable 3 percent. Our employment rate bounced back to levels not seen since the 1950’s. We seem to have been very resilient, despite Chicken Little.

Introduction

Nearly two years after the first wave of Covid, Molly and I suddenly found our residential circumstances different. After living in the same house for 35 years, we suddenly made a decision to move to gain a nice view of our beautiful geography. We did not plan this, but circumstances simply presented themselves, and we made a one-day decision to adjust our lives. Afterall, it didn’t seem so radical after the lock downs and mandatory government-imposed behavior of the previous two years.

Our excitement over a new house was quickly dispelled when I took my first “moving” inventory of my four-car garage, and the third story walk up attic, filled to the brim with lots of “stuff”.

Where in the world did all this stuff come from, I asked myself? It was true that our three sons had not moved everything they could have when they bought their own houses, so that was part of it. It was also

true that, both of our parents had died in the last several years, and we still had dozens of their boxes of valuable stuff to go through. But no matter, the amount of other stuff was colossal!

It was a good thing that we weren't downsizing, but because our motivation was the view, the house was actually bigger than the old one. Whew, I thought, that was good luck. But truly, there was no way a rational person would just move all that other stuff that we really didn't need or want any more.

When one lives in a single place for so long, you find 30 (or 40 or 50) year old baseball bats, gloves, tennis rackets that should have been re-strung a decade ago, badminton birdies with real feathers, model car kits from son number 1, radio control cars from son number 3, and an assortment of good furniture that was just waiting for a new home.

No, I convinced myself, we are not hoarders. We just saved all the valuable stuff until we or someone else needed or wanted it. My mother did the same thing, despite not needing anything, she re-lived the depression from time to time, and imagined that she would indeed use that set of canning jars if she ever had to grow food again. And how could she get rid of my Great-Great Grandfather's favorite chair? She would save that for me. Molly and I both grew up in thrifty homes, where money was carefully spent, possessions were maintained and cared for. It was an American thing to do. Don't show off, and don't buy what you don't use. But also, don't throw away what still had utility.

"OK, so snap out of it" I tell myself. Some of this stuff has to go: OK lots of this stuff has to go. I took my first bundle of clothing to the Goodwill, but they didn't want some of it. I had an expensive sweater with a small unnoticeable hole in it. Someone would be thrilled to have such a nice sweater. The attendant told me that no one would wear a sweater with a hole. Oh, I had been wearing that for years with a hole. "Why not I inquired?" "Well, everyone has good clothes they only want nice things".

Reality check number one. Fortunately, in our area, everyone seems to have clothing? So the Salvation Army was not going to instantly solve my problem.

OK I decided, we will have the movers take what we want to the new house. Then, my two grandsons carried all the attic stuff down three stories. That only took three days. With their help we were ready to set up shop. Lots of people will want this stuff at modest prices.

The lawn and huge wrap-around porch were so full there was barely a way to walk around it. Advertising in place, we had the early professional buyers jumping the starting time. Knowing that they had to turn a profit, I expected to get lowballed. They wanted little of our valuable stuff. I did sell the sunfish sailboat to one.

The next round were the poorer folks who were truly looking for bargains. Molly's old clothes and kitchen overload would get snapped up. But they didn't. This group was looking for collectibles: old magazines, records, books, toys, games and such. They didn't seem to care or "need" silverware, good pots and pans, or clothing. They wanted the equivalent of luxury items for a very cheap price. It seems they already had the basics.

Finally, the looky-loos, walkers and drive-buyers showed up. This group was inspired by the unusual, novel, or higher priced luxury items like a perfectly built handmade doll house.

At about noon, I realized I needed to step up the activity, so when someone wanted a nice bed, I made them carry away the couch. Or when they bought a filing cabinet, I had a 3 for one price sale, and gave them two more.

At the end of the day, son number 2 brought his trailer and we managed to get all the rest piled high in it. Off to the dump it went.

Reality number 2. People already have lots of stuff.

Reality number 3. My kids and their families don't want any more stuff. Wow, no one needs much more stuff.

Years before I had been appalled at how my grandchildren get all the toys, games and nice clothes at Christmas. We are all so generous, because toys are so affordable. I'm still in shock comparing them to how we carefully selected our one big toy for each boy. Of course they had way too many toys anyway. Many were still in my attic after all. I realized the wisdom of one daughter-in-law who had a limit on number of toys per kid. Following each Christmas or Birthday, she would have the kid assess which ones were going to another child who needed more toys, then gave them away.

So, I began to really consider how this all happened. I remember when I got my first train set. It was that horrible hard rubber material that rapidly lost the paint becoming black as asphalt as it flaked off. I wanted an electric train of course, and was disappointed. I had to wait another year before that came. We got one present from Santa and one from our parents, and a few other small ones from friends and family. As a result, they were all special, and I still remember them today. We were not poor like my mother was. There was always money for things we needed. But things we wanted could be waited for.

After my mother died, I found a letter from my grandmother. She was writing to my great aunt, her sister-in-law, to thank her for the one dollar she sent for the three boys' Christmas. She wrote "your gift was so appreciated, it bought the only toys the boys got this year, one for each of the three." I knew those toys. They were old cast metal with a touch of the original color, when I played with them while visiting my grandparents. Once I asked my mom why there were only three toys. I don't remember how she deflected the answer then, but reading the letter it was apparent why.

How did things change so much? Why were things so expensive that middle class families could afford so little. Today the poor live like the middle class in 1955ⁱ. Now 95% of those below the poverty line have multiple TVs, running water, indoor toilets, refrigerators and seemingly plenty of clothingⁱⁱ? In the span of just 80 years or so, we have unprecedented abundance.

My last paper outlined the dozens and dozens of positive statistics including the enormous reduction of the abject poor. In the US, even our poor live well compared to the world's poor living on a few dollars a day. We, on the other hand have gotten used to this abundance to the point of blindness to the world.

To us, our precious things have turned to just stuff! How did this happen?

I began a quest to really understand this. This is a first in the history of mankind after all. It's not a small intellectual query, its a major deal that so many people have moved from the drudgery of survival to a place of ample material stuff.

It's easy to say, "well we invented steam, then rail and steamboat travel, then electricity then computers, and here we are". But that is just the surface answer we can all recite. How did we really come from survival to all this stuff now?

Early humans took millennia to figure out that life was a lot better when they had plenty to eat and good water to drink and that it is nice to get out of the rain and cold. Security and safety are a welcome gift if you don't have it. Finally wrapping your body with skins or cloth in the winter is a welcome luxury.

Humans lived a life of toil for millennia. Whether it was running down game for meat, gathering fruit and nuts, or digging roots, or tilling the soil in hope of a decent crop, we had much to do to gain the basic physiological needs of food, shelter and clothing. Security was rarely present.

To survive was a life of manual drudgery. Toil is a miserable existence where one always works, barely yet barely survives in the miserable weather and dies young.

Eventually, whether the wolf adopted us, or we, them, we managed to find a hunting partner some 15,000 years ago. Other animals were added to the barnyard but the horse and oxen didn't become our beasts of burden until between 4000, and 5500 years ago.

This was a tremendous leap forward not because we had a more stable diet, but because the horses and oxen eliminated some of our manual work; pulling plows, wagons, and grinding wheels. A horse can do the work of ten men. So, one horse power is equivalent to ten men. An ox is 12 times the power of man. You can see how this revolutionized our labor supply.

Until this happened, and of course it took centuries to spread around the world, man could do one day's work which rarely provided all his needs and wants. With the addition of another 10 man-hours per animal, much more could be accomplished. Time was now available for better and larger houses, more crop planting, hunting, trading, crafts such as flint shaping or spear making and perhaps some free time.

Most of our stuff is made in a factory of some sort. Then, as now, the knowhow was combined with raw materials and labor (or horsepower) to fabricate stuff. In the early days it was pottery, weapons, snares and traps, shoes and clothing. Later, copper was mined. Labor and knowhow were combined to do the mining, a burro might help bring the ore to the surface, then small boats were used to transport it to where it would be smelted. Each operation is material, knowhow and horsepower. So, we see the pattern of how we slowly progressed adding bronze, and iron. Better tools allowed faster fabrication and lower horsepower.

This meant that the cost of their stuff fell and their standard of living increased, even if it was just a little more free time.

The culture progressed slowly. Small communities were developed where several families lived together. Just eleven months ago, Molly and I had the fortune to examine, up close, some of those Chalcolithic villages on the island of Orkney, north of Scotland. Standing on the walls of Skara Brae, surrounding each circular home, we could look down into where each family lived some 5000 years ago. The stone furniture (tables, shelves, benches and fishery (a tiny pond to keep fish fresh)) were still as they were five millennia ago. Stone slabs still in place protected the doorway from casual intruders. Sliding or swinging into perfect position, they connected to hallways (more like tunnels) that weaved through the little village. One stronger stone gate protected the whole from intruders.

Their activities were no different than described above. They managed to live and reproduce and had enough time to build The Ring of Brodgar and the Standing Stones of Stenness. Life was not easy, but it was a level above subsistence. Yet, life was nearly the same 2000 years later.

Then just 5 months ago, on the complete opposite side of Europe, we visited the relatively unknown ancient village of Akrotiri on the volcano island of Santorini, Greece. Like Pompei, Italy, it was covered by ash and preserved. The only difference? It was 1800 years earlier - twice as old as Pompei.

While these houses were more squarish and some were two stories high, the standard of living wasn't all that different from Orkney 2900 miles away. They both had running water close by. Akrotiri did have a sewer system and the better houses had indoor toilets. Weather and another thousand years may have been the difference between the two.

In both communities, life was similar. They were limited by labor (horsepower), material availability and of course knowhow. But in so many ways, they were also like Pompei, 1800 years earlier, in 79AD

Rome did advance many specialty crafts in monumental construction, farming, water works, early machinery and of course warfare and organization. But the standard of living of the average Roman was still a drudgery. While the rich lived very well in their villas with art on the walls, plazas, indoor kitchens, and tile floors, everyone else did not.

The Dark Ages lost most of the advanced organization and management skills of Rome in the 400's. It lost a few of the crafts, but mostly the skilled trades. Guilds began to form in the 1100's around these basic crafts. Examples were the skimmers, weavers, liveries, cuttlers and smiths. At first, like-kinds of craftsmen joined together for their general welfare. Later they controlled who was allowed to learn the crafts, conduct business, and monitor product quality and prices. Many monarchs even licensed guilds as sole governors of the trade, taking fees for doing so in the process. This was a source of easy revenue for the crown, but unknowingly they stunted growth by creating monopolies in most material goods. Limiting the supply by limiting the production capability results in higher prices. We still have guilds today in the form of quasi-governmental agencies that limit production by controlling how many participants are allowed to learn the trade. This happens in the medical professionals, accounting professionals, lawyers, and even hair stylists and plumbers. Of course, today we justify this control in the name of training and safety, but the result is the same, it affects the supply of producers making sure too many don't saturate the market.

Guilds and monarch regulation led to a more organized form of trade and what we call mercantilism in the 1500s. The maritime technology continued to advance allowing the exploration of the world and resulting in the economic benefits of trade around the world. Monarchs began to think in terms of whole country economics. They felt that, by selling more than buying from another country, that they would accumulate more gold. Gold treasury was considered the measure of wealth and stability. The guilds were fine with this arrangement because it allowed them another market while maintaining control of their crafts at home. Kings knew the gold meant that they could instantly raise an army when needed. But it also created tariffs and more regulation on trade which further slowed growth.

On a side note: Spain amassed huge gold supplies. They thought this made the country wealthy; however gold in a warehouse doesn't create economic growth unless it is used to back investment. Therefore, Spain actually stunted its growth, during this period, while England gained.

In Medieval time while the nobility lived in castles with large banquet halls with multiple fireplaces, lovely tapestries to keep the cold on the rock walls, plenty of jewelry, fine hand carved furniture and fittings, indoor toilets, wells for water and plenty of servants, everyone else lived very much the way they did in Akrotiri and Orkney; simple hovels, with dirt floors, leaky roofs, wood fires and a few bowls and perhaps one metal cooking pot. They still toiled on the soil or worked in the mines. Only a few craftsmen were allowed and became a small middle class. With all this tradition, control and regulation it is no wonder that we had such a pitiful increase in the standard of living after Rome fell.

The Enlightenment began following the scientific revolution in the mid 1500's. Francis Bacon, Thomas Hobbes, and the Frenchman Montesquieu began the dialog that brought the enlightenment thinking forward.

Due to thinking in a more rational way, with the influence of Newton and other scientists, as well as the more liberalized Protestant thinking (such as reading the Bible for yourself), some began to think of ways to further ease the toil of labor.

Mechanics began to be considered more, and the first really innovative semi-automated machine was invented by James Hargreaves, the Spinning Jenni, in 1767ⁱⁱⁱ. Cotton had been imported from India a century before and was preferable to all wool garments worn in Britton. The supply was always short so the price was very high. The incentive was to make cotton more affordable to the everyday person at an affordable price.

This idea was colossally enhanced almost simultaneously by Richard Arkwright in 1767. Coincidentally both he and Hargreaves lived within 15 miles of each other! But Arkwright went further, enhancing the spinning and adding a water wheel to greatly reduce human labor. The result was the huge Cromford Mills in Derbyshire. We visited this historic site last May on our way south from Orkney.

The outcome was a large multi-building factory, driven by swift water wheels, on the River Derwent. Arkwright was the first to combine the mechanical spinning mill with water power. In this way he used less skilled workers and long lines of wooden machines to spin cotton into thread for cloth. This became the first factory^{iv}. Arkwright earned the accolade the "father of the factory system". Hundreds of mills were established through-out Britton, and by 1800 cotton was the largest British export. For the consumer, the price of a fine pound of yarn dropped from 38 shillings in 1786, to just 3 shillings in 1832^v.

Adam Smith the father of economics was influenced by these men: Newton, David Hume and his learned professor Francis Hutcheson. He was well versed in the classics and lived in the then well-established protestant Scotland.

The natural rights of man were hotly discussed by the learned of the age. According to Niel Ferguson, prominent economic historian, the lowland Scottish Universities were the best in the world. So much so that Benjamin Franklin came up from London while US Ambassador to England to meet with Adams and other leading thinkers including Watt and other intellectuals.

As a young man, Adam Smith intently watched the trade in his hometown and other Market Cities of the time. He later formed his thoughts on trade and the economy, noticing that regular people could mindfully and intelligently select goods to freely trade with the merchants. He noticed that each, with their own family good in mind, reviewed, examined, negotiated and bought vegetables, kitchen goods and meat. Both entered into the discussion freely; the merchant freely set up his stand, and the

customer freely approached the goods offered. When the negotiation was complete, both had benefited, the price and quality was satisfactory for both.

In addition, when tomatoes sold well, the merchant would bring more the next week, and ultimately the farmer would plant more tomatoes, the increased supply kept prices lower.

This happened, without any outside direction or control, as it had since the first trade of the arrowhead for a fish a millennia before. No government official, union representative, or environmental consultant was needed. Guilds could be largely avoided in small remote towns, so craftsmen could adjust to the demand. If any merchant cheated in some way, the whole village knew it and no one would trade with him again. Likewise, a customer that cheated in anyway, would be shunned by all merchants on the next market day. It was a self-regulating system that worked flawlessly. After all, it had done so when not regulated for many thousands of years.

Smith also noticed trends such as when the number of apples was limited the price went up. The buyers were fewer, some deciding the apples were not worth the new price could now spend their money on the berries that the family loved. Each buyer made a judgement as to her particular value for the money, and either bought, did not buy, or substituted another good instead. Economists call this, well, substitution. In this way, the supply was normally not overly depleted because the price was too low, so whoever wanted or needed the good at an inflated price would still have the opportunity to obtain it. All the while, the merchant maximized his margin while not keeping too much inventory.

The first published principle of supply and demand was written by Sir James Steuart, of the University of Edinburgh in 1767. Adam Smith followed with his earth-shaking book, "The Wealth of Nations," in 1776, the year the United States was born. These principles were well known known by most of the framers by the time the constitution was drafted in 1787. Smith left no doubt about his position on free trade and free markets, in fact the American Colonies had experienced this "free" method of trade themselves for 170 years already.

So successful were the colonies that Joan Pearce from Jamestown said, "I can much cheaper keep a good house in Jamestown than in England. Why would I want to move back?" As one of the richest men in the Colonies, Benjamin Franklin embodied free enterprise while starting simultaneous community organizations to fight fire, establish lending libraries and encourage community involvement. Freedom was real in the colonies and it was confirmed by Adam Smith's book "The Wealth of Nations." It was advantageous to be free and trade in a free economy to attain the highest standard of living and combat the drudgery of toil.

Smith somehow understood this self-correcting system of supply demand and price. He called the mechanism "the invisible hand." While decades of study would eventually develop other concepts like utility and substitution, Smith knew that some form of behavior or system seemed to balance out the local economy. This did not actually exist yet, at the British national level, due to duties, the mercantilist system of guilds and royal regulations.

Industrial Revolution

Along with the development of the factory system by James Arkwright, other issues were taking place. In England, wood long a scarce natural resource, was being replaced by coal for heat and cooking. The use of iron in smithing was well known, but now used for many more items than horse shoes and firearms. Coal had been mined since Roman times in England, but the easy surface coal had been used up and deeper mines followed the coal veins deep into the earth. This effort was being hampered by flooding in the mines and, as they got deeper, clearing the water was difficult.

James Watt^{vi} an associate of Adam Smith conceived of an idea to improve on the Newcome engine used to pump water from mines. He patented it in 1769, and began producing steam engines that could be adapted to many uses in 1776 with partner Mathew Boulton. Together their company started the transformation from water and horse power to steam power that would power the world until the electric motor. It was Watt that coined the use of “horsepower” as a form of measurement for power output. So we transition from human power, to domestic animal, to water, to steam power.

The components for the industrial revolution were now in place: machinery, cheap power, and knowhow. Joined with modern understanding of supply/demand and pricing the stage was set to create cheaper supply in everything material. This lower production cost in turn created more demand. Demand in turn required more supply.

The Transformation

With economics established, machinery understood, and growing knowledge on how to make better tools to make better machines, combined with cheap power the cost of everything dropped based only on entrepreneurs discovering a need or desire to full-fill customer demand.

It was slow at first, restricted by the know-how part of the equation. But when rich lower-class people on both sides of the ocean became mansion owners and moved into the upper classes, others noticed that something was happening that was very different than before.

By the end of the 1700s, Scotland, England, north-eastern Europe and America were fully aware of the elements of the Industrial Revolution. Many big inventions shifted to the US, the Cotton Gin in 1793, Fulton’s Steamboat in 1807, the self-polishing steel plow by John Deere as reported by Jeff Waldren’s 2008 Fortnightly Club in his paper “Mr. Deere’s Self Scouring Wonder.”

Transportation added the grease to the distribution process. As steam, water-power, then railroads were added to the mix, the availability to markets opened up for manufactured goods from farther away. They could now locate a steam engine in the interior on cheap land where people needed work, and get anything to market. This enabled more production units per factory location lowering the costs even more.

But another element was still missing; capital.

Adam Smith only lightly used the word capital; the term capitalism was not used until 1855. But the concept has been used for millennia. Capital is the input to the production process. It can be capital stock (inventory) or company stock, or that money used to fund a company from outside the company so it can buy inventory and machinery. Today, it broadly refers to the money used to create more money. It

has a somewhat negative connotation, but it is anything but. If transportation greased the Industrial Revolution, then capital is the engine that starts the revolution.

But where does capital come from?

Perhaps the famous story of Joseph in Egypt is the earliest and most memorable use of savings. When he took the surplus of good farming years, to store for seven years for a bad crop, he was using “surplus” production to ensure that the future labor would survive in a famine. That labor, along with the seed wheat, would be used to produce again, where the surplus would become the savings used for more growth.

This example, provided in Genesis 41:21, is much more than the story about the cast-off brother who made good. It is the example of how to use the economy to create food security, more production, thrift, and rational planning.

Today, successful businesses create surplus (we call it that nasty word - profit), which in turn becomes capital for more production. The uses of this asset are broad: it can be squandered, gambling, or invested back into the business, as cash to pay growing bills from a growing business, used to pay taxes, or invested in another business so they can create more production.

In fact, this surplus gets spread around far more than many realize. Production surplus pays for the loans a business has, it pays for that new, more efficient machine, and it also allows pays for higher wages as a company is more productive. This surplus in fact, is the way we pay for education as a future investment in knowledge. If a business has no profit, it pays no taxes to fund government, or give to non-profits. Virtually all non-surplus parts of our economy could not exist without someone creating a surplus to spread around. Neolithic people had to create a surplus to be successful, and so do we. (Or we can live off old surplus or assets until it is used up.)

It amazes me how saving, investing and surplus are positive words, yet profit and capital are negative. Only the economically ignorant could possibly put up with that. If no profit were produced, we would literally never change, it would be another thousand years of the Middle Ages.

Capitalism has one more element that the financial sector invented over hundreds of years ago. First they learned how to mitigate risk through insurance, then they learned how to find new entrepreneurs that had the right knowhow but no capital. Capital fluidly goes where the need is greatest for the greatest return. These capital markets are extremely sophisticated now. Capital from surplus can zoom around the world in seconds, finding the next Elon Musk idea, or the next Amazon, or even a local entrepreneur with a sterling idea.

Two Big Enhancements

In America, we managed to advance two big changes in society starting all the way back with our founding. First, we cast off primogeniture, seniority by birthright. In England, the oldest son received the estate, by law, to preserve the elite. In America, (other than the cavalier south) we cast that idea off. We tended to split our estates with sons and even daughters. We embraced the concept of meritocracy, advancement, and wages based on individual merit. General Washington threw off the old English practice of selecting officers based on family wealth or influence. He promoted based on merit. Some claim it may be why we won. Certainly Franklin, Hamelton, Patric Henry, Henry Knox and many others

rose to prominence due to what they accomplished and knew. Washington set the tone for two hundred years of military success^{vii}.

Internal Combustion Engine

But to get to our answer, we still need to improve one element. Steam Power was great - it increased the production of horsepower and enabled production, but it was bulky, expensive, tended to blow up, and was not as efficient as new technologies. The internal combustion engine solved those short comings and was more energy efficient. Further, it was portable enough to propel small vehicles. This created the successful automobile. Henry Ford in turn created the advanced assembly line, lowering costs and using the labor even more efficiently. Frederic Taylor gave us time and motion studies to further enhance manufacturing.

Industrial Electric Power

Edison had failed on a regional level with his direct-current projects. While Edison Electric and Westinghouse (Tesla) were messing around at the Chicago World's Fair in 1879, competing with each other on lighting, our own Redlands Council Member Henry Sinclair hired Almerian Decker to build the first real workable three-phase alternating power plant, Mill Creek No. 1 in Mentone.

I discussed this development, in minute detail, in my Fortnightly Paper in 2007, "Redlands Powers the World – How the San Bernardino Vally Developed Modern Electric Power". Despite its title, I didn't really give it the world changing weight it deserved. Several pieces were invented at that time: a way to generate electric power (3 phase generators), a way that it could be transmitted over hundreds of miles easily, (transformers, insulators), and a way to power large electric motors, which had to be re-invented for 3-phase.

It was this system that drove the big motors that exponentially increased horsepower yet again. The Edison lightbulb had received all the press coverage a few years before, but in truth the light did little to make our "stuff". We in Redlands love the idea that we were first in the endeavor (by 2 years), but the real impact on the entire world was that the 3-phase electric motor lowered the energy costs and increased the output in huge ways. Industrial Electric Power lowered costs and increased horsepower in one stroke.

Machines could use more energy to make more machines. These new machines would lower costs of nearly everything manufactured, and as a result increase the demand which in turn created a huge increase in the stuff we made.

One of the first immediate results was the use of the electric motor to run compressors for ice making. The cost dropped to such an extent that other ice companies could not compete. In Redlands, that lower cost ice allowed for new markets in the East due to lower cost refrigerated train cars. We increased our orange production as a result.

Cheap horsepower energy, combined with better, faster machines, and continually learning labor, created a production behemoth. This drastically drove down the time-spent to buy basic goods.

An hour of labor bought 24 lumen hours of reading light in 1750, then 186 lumens (tallow) in 1800, to 4400 lumens or hours in 1880 (kerosene) to half a million hours in 1950 (electricity)^{viii}. Today an hour of work buys 300 days of reading light. [In California, this may be reversing now.]

New products of every kind were now possible to make at prices that everyday people could afford. Many of these products were human labor saving for people as well: irons, stoves, refrigerators, washing machines, cars, electric fans (a hit in Redlands summers), and so much more. It was the kind of horsepower that won two world wars, ensuring security for a hundred years, something few other civilizations ever achieved.

Following the war, our production capacity, after a brief lull, went crazy supplying the entire world with these same goods. We made 75% of the cars and some 40% of all manufactured goods. Our existing factories, knowhow, and very low energy costs literally “fueled” this boom.

The 1950s and ‘60s were good years for consumerism, as many cheaper goods, including more luxury goods, were invented and designed for the “mass consumer.” By 1960, seventy-five percent of Americans had a TV. The standard of living increased steadily along with average family income.

But as wages increased, companies saw the advantages of moving operations offshore, so this started the really cheap materialism. Other countries, notably China had millions of low skilled workers. Combined with our technology and knowhow, these countries could make our products much cheaper than we could. Prices of most things dropped, from shoes and clothing, computers and cars, to toys and thousands of other products.

This increased the American buying power and standard of living during the last decades of the 20th century even more. But, additionally, it created wealth around the globe. Countries that practiced the principles of free trade and capitalism (as shown in my last paper) increased their standard of living too. According to the UN^{ix}, more than a billion people have been lifted out of abject poverty since 1990. This system of free trade and surplus profit, and capital formation is primarily responsible. How, do we support the poor disadvantaged and homeless? Because it is the surplus from free enterprise funds it.

Summary

Where did all this stuff come from? Well, despite the thought that we have too much of it, in a free society who is to judge? The miracle of Adam Smith’s cohorts was that they pointed the way for governments to reform. Mercantilism died in a relatively short time as modernity crept in. The new free market (in free countries) flourished because of the three factors outlined: machinery, cheap power, and knowhow. Where primogeniture is squashed, and merit rewarded, this mix is incredible.

As tools improved, machinery became more complex. Human power was transformed horse power to electric power dramatically increasing the human leverage.

Finally, knowledge, meaning collective know-how, by inventors and the knowledge and skills for people to run them. We need a refocusing on real craft, not social.

But the blockbuster concept behind these elements is the concept Joseph gave us - surplus. Surplus used wisely for security, investment, inventory and machinery development, as well as taxes and donations to good causes transformed out lives. So surplus, that nasty word profit, should be treated more like miracle than a dirty word. When you look at your next paycheck think, I’m sure glad someone had a useful surplus.

Post Script

In these last two papers I have attempted to outline the monumental success we have had in the west, and how it can impact the whole world. But it doesn't mean it will continue just because it has been so successful to date. In fact, freedom and profit have many contemporary enemies. Our incredible unprecedented national borrowing has become a very worrying threat to normal capital distribution. The US national debt is 124.3% of our Gross National Product.

We have enemies without and within who for uninformed or idealistic reasons just hate "capitalism". Several entire countries that see us as threats or think we are immoral, want us gone.

The free enterprise system is in many ways anti-fragile on the micro level, but somewhat fragile on the macro level, meaning that business needs stability to make good rational decisions. Stability is easy to disrupt. This happened in the depression, the wars, and could easily happen with another war or nuclear bomb. It could also happen if people simply stopped buying treasury bonds. There are too many opportunities for disruption right now.

This year we will spend 870 billion dollars in just interest fees. This is a 32% increase from last year. This has equaled the national defense budget and will be much higher next year. We are overspending our receipts by 1.7 Trillion dollars. This will add much more to the interest payments.

I have not turned into Chicken Little here, I don't think the sky is falling, but business, and consumers react on instability, and the sky may well look a little stormy right now.

Let's hope that overspending on non-surplus projects doesn't kill the golden goose that needs surplus to thrive. In the third installment of these 3 papers I explore "Did we kill the goose yet?" We explore how natural free market economics can be fatally injured with government regulation. I hope we are all here in two years to find out.

Footnotes:

ⁱ “The Rational Optimist, How Prosperity Evolves,” Harper Perennial 2010, Matt Ridley, Pages 16-20. 99 percent have electricity, running water, flush toilets, and a refrigerator. 95 percent have a television, 70 percent a car and central air conditioning.

ⁱⁱ Ibid

ⁱⁱⁱ <https://kids.britannica.com/students/article/spinning-jenny/630347> Spinning Jenny invention

^{iv} <https://www.cromfordmills.org.uk/about/> First cotton spinning mill and father of manufacturing

^v Price of fine spun cotton – “The Rational Optimist – How Prosperity Evolves,” Matt Ridley, Harper, Page 228

^{vi} <https://digital.nls.uk/scientists/biographies/james-watt/index.html> James Watt and the steam engine.

^{vii} Washington,

^{viii} “The Rational Optimist, How Prosperity Evolves,” Harper Perennial 2010, Matt Ridley pp 20 -21

^{ix} United Nations, reduced poverty data

<https://www.un.org/millenniumgoals/poverty.shtml#:~:text=More%20than%201%20billion%20people,of%20extreme%20poverty%20since%201990.>

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