THE FUTURE

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Due to the dynamic nature of the future, "The Future" book is frequently revised during each calendar year.

Stephen Cronin is the author and graphic designer of this text. Stephen is a novice graphic designer under the tutelage of Signature Printing Creative Director, Nick DeCesare. Stephen has exhibited moderate, at best, potential in graphic design.
You can reach Stephen at
stevecronin1949@gmail.com

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GLOSSARY OF KEY TERMS:

PERSPECTIVE

INTERPRETATION,

"This text is not fact, rather the view of one author; consequently, it should not be automatically accepted as 'truth'. Two time Pulitzer Prize winning historian and author, Barbara Tuchman, stated 'there is no such thing as a neutral or purely objective historian….without an opinion, a historian would simply be a ticking clock.….'
Your mission should be to determine the 'truth'. Your challenge will be to explain why anyone should believe you."

CREDIBILITY

BELIEVABILITY

"It's not a given, we acquiesce too quickly. Be respectfully skeptical. Do your homework; check the record and the resume. Ask the question – 'should I trust this person as a credible source for the truth?' *Make it a prerequisite before embracing the claims of anyone who professes to have the 'answers."*

moi

"The future
depends on what you do in the present."
Tomorrow
starts today!

Mohandas Gandhi

"You may have made some mistakes
and
you may not be where you want to be
but
that's got nothing to do with your future!"

Zig Ziglar

The next several pages provide a look at what awaits you.

The skills you need.

The technology you'll encounter.

The challenges and opportunities

you and your fellow citizens of the planet

will

compete for

AND/OR

collaborate *with*

to

***exploit* or *remedy*.**

Primary 21st century skills!

1. ***CREATIVITY*** *- ability to innovate and problem solve; use your imagination; think and then create new ideas & solve problems; ability to ADAPT to changes in your life.*

2. ***COMMUNICATION*** *- observation and listening skills; awareness of powerful messages sent by body language; reading, writing, storytelling & presentation skills; how do the people in your network affect the perception others have of your brand?*

3. ***CRITICAL THINKING*** *- ability to identify reliable source for 'facts'; ability to organize, segment, make sense of 'data' and then use the data to make logical decisions.*

4. ***COLLABORATION*** *- ability to work with machines AND people*

Hope Life Skills teaches general purpose skills like networking, the ability to tell your story, being curios, and a desire to constantly learn. Above all, we try to teach students the need and how to re-invent themselves, to adapt to the changes taking place in the 21st century driven by technology and world events (Harari)

Are you -

- ***DEPENDABLE*** *- fulfilling your responsibilities; always show up on time, all the time!*
- ***ORGANIZED*** *- ability to prioritize; to focus on the most important tasks before moving on to tasks of less importance; time management ability.*
- ***NETWORKER*** *- constantly meeting new people from different backgrounds and with different interests as yours; the ability to 'tell your story' especially in networking opportunities; and having a very good personal brand which others like and respect.*
- ***WILLING TO GO OUT OF YOUR COMFORT ZONE*** *- healthy attitude for 'risk' and 'failure'; don't fear mistakes; realize failure provides lessons to get better!*
- ***EMPATHETIC*** *-appreciating and understanding how others feel*

from "*There Is Life After College: What Parents and Students Should Know About Navigating School to Prepare for the Jobs of Tomorrow*" by Jeff J. Selingo; AND - "*21 Lessons for the 21st Century*", by Yuval Noah Harari.

"It's All About ....'DATA' !!!!!!!!"

Data. It's been called as valuable as **oil** in the late 20th century by one data scientist. I would argue ***its present value is closer to gold during the 1848 California gold rush or lithium today in the 21st century.*** '***Why***', you ask? Because it's the resource which fuels technology development today. Technology becomes more powerful, more impactful on everyday life, when it has access to large amounts of data. Data is essentially the lifeblood of technology. ***Data teaches machines, i.e. 'droids, 'bots, and the software of Artificial Intelligence, AI, what to do and how to get better.*** The country which has the most access to data will emerge as the world's dominant power in this century!

Data, sometimes called '***raw information***,' is continually being collected by governments and businesses. From the things people do on their mobile phones and tablets and where they travel and hang out to all sorts of cyber activity whether it's shopping on Amazon or hacks into government, company, and personal computer systems is collected by sensors, cookies, security cameras, facial recognition software, and GPS tracking. ***Governments and businesses analyze the data collected to make accurate decisions and predictions about how they should respond to what someone might do.*** Data on baseball players, soccer players, students, shoppers, company employees, tourists, farmers, and ordinary citizens are being collected and analyzed. Predictions based on behavioral data are now made to recommend clothes, music, and books a person might be interested in buying, the best medicines to treat patient diseases or when a nefarious person might commit a crime. ***AI collected and analyzed data could decide*** the best player to pitch a critical baseball game or ***start in goal for the championship soccer game***. All these predictions and decisions are based on **vast amounts of collected data** and then analyzed by Artifical Intelligence influenced computers and algorithms. "***Good choices begin with good information***."

Governments continually collect data on things affecting their country and citizens like weather, the stock market, sea levels, the economy, crime, the food and water people eat and drink, public education, the physical health and fitness of children, immigration, international trade, and cyber-espionage and hacks by enemies who try to harm states and the nation. It is believed the **country of China collects more data** on its citizens than any other country in the world. The country of **Singapore might be a close second**. Both countries claim their access to citizen data helps them provide the highest rated schools in the world, the healthiest citizens, and the safest communities with the lowest crime rates in the world. **Kai-Fu Lee** is an American educated computer scientist who worked at Apple and Microsoft before becoming the President of Google China. Mr Lee left Google to become the CEO (chief executive officer) of Sinovation Ventures, a leading technology company helping new, emerging high-tech companies in China. **Kai-Fu Lee believes China will become the most powerful technology country** in the world **principally because it has more access to people, business, and technology related data than any other country.** It is a commonly accepted fact today that the more data or '*raw information*' collected, the better decisions or predictions a government can make about its resources and citizens. **What kinds of data are you comfortable with your country's government collecting about you?**

It's not just individuals, businesses, and governments collecting, analyzing, and then learning from the data they collect; ***machines now collect and learn from data***. Most computer scientists today believe machines can collect and analyze data indubitably faster and arguably more accurately than any human being.

Machine learning ***is a form of artificial intelligence where computers and algorithms collect data that can be used to make decisions and predictions*****.** Many companies are using machine learning to improve their operations to be more successful. As machines have access to more data, companies improve production systems to better serve their customers and stakeholders. **Amazon** began using machine learning in 1999 to collect data from their warehouse operations to improve production efficiency, that is, to get things moved and shipped faster and less expensively to customers. Often times, data analysis indicated their warehouses would operate more successfully by replacing humans with robots and deploying drone deliveries. **Jeff Bezo**, the founder of Amazon, soon began using artificial intelligence in machine learning algorithms to better serve his Amazon customers by collecting data from his Amazon web site - **amazon.com** -. Amazon algorithms analyzed customer purchasing data to recommend other books, similar to the ones they previously purchased through the Amazon web site, that Amazon customers might be interested in. Amazon today uses artificial intelligence throughout its entire company not only in Amazon factories and their Amazon web site but also new products like its virtual assistant, the **Echo**, which uses artificial intelligence to constantly gather and quickly provide information and services requested by their users.

Elon Musk's ***Tesla*** *autonomous (driverless) cars is another example of machine learning.* "*Autonomous vehicle*" means a vehicle capable of navigating roadways and interpreting traffic-control devices without a driver actively operating any of the vehicle's control systems. Tesla autonomous cars have and continue to drive millions of miles collecting data on its surroundings: other cars, pedestrians, animals, traffic lights, road signs, bicyclists, school buses, parking, construction signs and cones, pot holes, etc. The *data collected teaches the computers driving TESLA cars how to respond safely to whatever situation the car encounters* on the road. As a result, Tesla autonomous cars are safer with fewer accidents than cars operated by humans because of the lessons learned from continuous access to experiential, automobile driving *data*.

Google *also has built an autonomous vehicle* called "*Waymo*". In November 2017, Google announced that it started testing driverless cars without a human being in the driver position; however, there was still a human beig employee in the car. In October 2018, Google announced that its test vehicles had then traveled in automated mode for over 10,000,000 miles, increasing by about 1,000,000 miles per month. More miles driven means more data accessed and more lessons learned by the machines. In December 2018, Waymo became the first to commercialize a **fully autonomous taxi service in the United States in the city of Phoenix, Arizona**.

The Level 4 autopilot feature on the **Tesla Model S autonomous car enables passengers to ride without any responsibility for driving**. The autonomous car drives itself; no driver attention is ever required for safe driving. The driver of this Tesla may safely go to sleep, do work for their company, or focus on their child, a business associate or client, all while the car is safely driving on the road. But can drivers safely pay so little attention to the road? Some are beginning to wonder. **Jim Hackett, the CEO of the FORD Motor Company**, once believed his young son would never need a drivers license because all cars would be autonomous. As of October of 2019, he's not so sure. **Hackett now thinks driverless, autonomous, cars will gradually emerge on our roads over a period of "*30 to 50 years*"**. Stay tuned.

Machine learning is proving computers collect and learn from data faster and more accurately than humans.

Data collection is part of 21st century life. ***AI is now powering many of our favorite apps and web site***s. With increased access to data, AI is driving cars and trucks, managing our investments, running our factories and warehouses, and maybe, fighting our wars.

But, at what cost? ***Are you willing to allow governments and businesses access to your personal activities*** on web sites you visit, purchases you make, videos you watch, and places you travel to so that governments can keep you safe and companies can recommend interesting products to buy and discounts based on your data they have been collecting and analyzing? ***What do you think?***

If AI and robots are now driving cars and taxis, working in warehouses, making and serving hamburgers (see next page), what other jobs can and will they do? Mailmen and mailwomen? Bank tellers? Pharmacists? Accountants? Pilots? Cashiers?

And, what new jobs, that don't exist today, will be created in the future?? Technology always creates new jobs!

Internet of Things' (IOT): *Everything is Connected*!!

The **IOT** is *a system which collects all different types of DATA from many different things and sends the DATA through the internet to companies and government agencies.*

This system of collecting and sending data through the internet has been called an ambient system but better known as *the internet of things (IOT).* **It collects DATA from the t-shirts you're wearing, the web sites you visit on your phone, your refrigerators and watches, from people walking on city sidewalks, EVEN COWS!!** *The IOT is a connection of all physical things that have sensors and computer chips embedded into them that then sends the collected data through the internet to government agencies and businesses. Things like* mobile phones, automobiles, hot tubs, shoes, web sites, food packaging, a person's heart, home and city security systems, buildings, airports, UBER and taxis, train stations, and school buses with cameras, sensors, computer chips and actuators in them continually collecting data. Data, collected by governments and companies, are processed through computers, algorithms, and artificial intelligence to identify problems and opportunities as well as create solutions. *More data means more information and, potentially, wiser decisions.* For instance, cows with embedded computer chips inside them will collect, in 'real time', data to keep cows healthier and, as a result, produce more milk. The chips in cows will collect data from inside the animal to predict when a cow will give birth up to 15 hours be-

the 'IOT' - continued

forehand or predict when a cow will be sick so the farmer can take action to prevent the sickness from affecting the animal. An Australian company has created a sensor cows swallow and remain inside the animal for the rest of its life. Nanotechnology (tiny computer chips) in a person's t-shirt will send your smartphone or watch real-time information about the health of your heart and how well hydrated you are and, then, passing that data to your home robot to prepare a dinner menu and beverage based on your nutritional needs and the food, beverages, and ingredients available in your ambient refrigerator. Computer scientists are speaking about a smartphone app that will scan food packaging barcodes in your pantry and refrigerator and then send instruction to your home android to put the food identified by through the scan into the oven or microwave to start cooking your dinner. Your home robot will also fill your hot tube with warm water and bubbles just as you walk in the door. The ambient system will enable people to easily turn 'on' or 'off' all the devices in their home through voice commands. You can even schedule a meeting or buy a plane ticket with this app. You won't need to carry your cell phone with you because every glass surface in your home, from your bathroom mirror to your kitchen counter top, could be ambient for checking your calendar, answering e-mail, watching videos, getting the news and weather and anything else we do today now through our phones and tablets! Traffic light sensors will collect data to predict busy traffic times of the day so traffic can be managed more effectively during busy time to reduce traffic jams and congestion. Street cameras will also help police track down and arrest criminals. ***A Chinese insurance company is using facial recognition technology to determine, from a person's face, body fat percentages which then will affect what a person will pay for their life insurance policy.*** Automobile insurance companies are offering discounts on car insurance if drivers will permit black boxes in their cars containing sensors that will collect data on a driver's driving habits like speed, cornering, and braking. The data is then analyzed by algorithms the insurance company creates to determine a person's driving ability and how much they should be charged for their car insurance. The American insurance company, John Hancock, recently

announced it will soon only sell health insurance after analyzing health data from a person's smartphone and wearable exercise devices like FITBIT, which collects data from the amount of exercise a person does.

There's a sensor in smart toothbrushes that tracks how often a person brushes their teeth and offers a discount on dental insurance to those who diligently brush their teeth multiple times each day. There's even

a company that is weaving a 'thread like computer chip' into clothing that will alert the person wearing the clothing when they need to take a shower!!!

New buildings are incorporating smart technology into their design and engineering. Buildings will use sensors to create better environments for workers and, at the same time, monitor their daily activities. An app called *Comfy* will allow workers to adjust temperatures and light levels in their offices with their smart phones. "*Over time, the system will learn the preferences of workers and automatically adjust temperatures and lighting to worker preferences. In the process, workers become more productive, i.e.*

they get more done each day. At the same time, supervisors can monitor what their workers are doing each day, how much they get done, where they go, and who they hang out with."

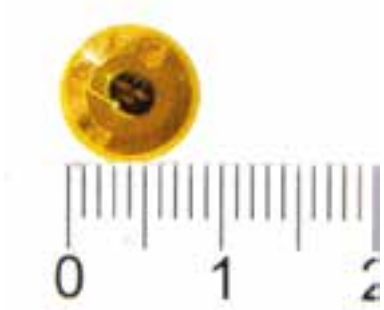
According to The Economist Magazine, "*Arm, a chip design company specializing in making the computer chips the **IOT** needs, predicts there could be a TRILLION computerized, network devices by 2035 which will outnumber the humans that control the chips by well over a hundred to one*". Ambient environments will also create new, high paying jobs, like **industrial designers**, to create smart systems in ambient communities.

What about security? There are serious concerns about protecting all the data being collected and then transmitted to companies and governments. *The Economist* magazine, in their September 2019 issue, cited a 2015 story about a pair of TWITTER security researchers who ***staged a cyber attack on a car being driven in which they were able to turn the stereo and windshield wipers 'on' and 'off', turn off the engine, apply the brakes, and even control the steering wheel***. Other security researchers have demonstrated an ability to hack into medical devices like heart pacemakers and insulin pumps. There is even a story about hackers getting access to finger print readers that controlled access to a factory that made expensive, luxury goods and products. ***The IOT will make 'security' even more important*** as more and more products are operated and produced by computers which then transfers valuable, personal data through the internet.

Cyber security is now a well paid career in high demand.

Stay tuned!!!

RFID Computer Chips



contactless symbol using RFID at store payment terminals

Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track computer chips / tags attached to objects. An RFID system consists of a tiny radio transponder, a radio receiver and transmitter. When triggered by an electromagnetic interrogation pulse from a nearby RFID reader device, the tag transmits digital data, usually an identifying inventory number, back to the reader. This number can be used to track inventory goods. RFID computer chips / tags **can be attached to physical money, clothing, and personal possessions, or implanted in animals and people**.

RFID can be used in a variety of applications -

- *Access management*
- *Tracking of goods*
- *Tracking of persons and animals*
- *Toll collection and contactless payment*
- *Machine readable travel documents*
- *Smartdust (for massively distributed sensor networks)*
- *Locating lost airport baggage*
- *Timing sporting events*
- *Tracking and billing processes*
- *Monitoring the physical state of perishable goods*
- *Share business card information, i.e. email address, mobile / business phone #, address, company web site, aspirational quotes, etc.*

RFID chips can communicate information; they do so in response to a signal from an RFID reader. They don't actively broadcast or disseminate information independently. The data on an RFID chip is usually fixed and doesn't change unless the chip is reprogrammed or replaced.

Walmart is testing RFID chips in stores. Walmart stores have their customers install Walmart robot cashier apps on their smart phones, scan each item as they takek them off the shelf, and simply walk out of the store. The RFID scanner shows a picture of everything purchase, the price of each item, and if I want a receipt of my purchases which are connected to my payment method of payment.

And ***what about THEFT***? *"Every check out model tried by Walmart has proven better at reducing theft that a live employee standing at the checkout register. AI high resolution cameras capable of reading barcodes from 100 feet away and invisible RFID scanners make sure any item leaving the store is paid for by the customer"*. Similar tests are taking place at Amazon's Whole Foods Stores writes Paul Zane Pilzer.

Security

Facial recognition cameras

connected to the internet of things, in **real time**, will be ***everywhere; omnipresent!*** Cameras in malls, along sidewalks, highways and in buildings will process our facial features and send ***personal DATA*** to algorithms for analysis. For example,

facial photos will be sent to special recognition software to identify a suspicious person or a criminal's location to police. Or, while walking

in a mall,
facial recognition software
will trigger specific advertising videos
to be shown
on mall screens or
even on a person's mobile phone or
smart watch
showing the person's favorite products and
the stores in the mall to find them
with sale prices.

In fact, Apple launched a new **IPHONE** on September 12, 2017, **with facial recognition capabilities** enabling users to view information about people on their mobile screen they've just seen. A **Chinese company, Megvii,** is building a 'brain' for visual computing that allows Chinese users to 'swipe' their faces on their smart phones to authorize payments to companies they're buying things from. **Jet Blue** is taking steps to match passenger faces to passport photos to eliminate boarding passes. Some companies are even

writing algorithms to predict personal behavior
from data they have collected!!!

The September 9th, 2017 issue of ***The Economist Magazine*** speculates stadiums and night clubs may scan faces of customers entering their venues

to predict threats of violence.

And, University of Cambridge in England research has even proved artificial intelligence can reconstruct facial structures of people in disguise. Some airports in the United States were using facial recognition software with selected passengers deemed '***suspicious***'.

Cyber Terrorism

Annual salaries average MORE THAN $116,000 (2015). **Today, these salaries are MUCH HIGHER!** In 2015, there were about 1,000 of people with a job in cyber data security. Today, government and companies need at least 30,000 of them. Because of the value of data today,

keeping data safe has become the primary goal

of all companies and organizations. Governments are competing with companies to hire cyber security specialist, thus, increasing the salaries for those interested in the work and qualified to do it. What do these people do ? They protect countries, cities and companies from cyber attacks that steal personal information (medical and credit card information) and bank accounts, industrial (machine and software) design patents, and threats to shut down power grids that supply electricity to homes and businesses in cities and states as well as influencing elections! In 2013, the retail company,

Target,
was the victim of a cyber attack
and
lost billions of dollars of market value

when hackers (cyber thieves) were able to gain access to Target's computer systems and installed 'malware' that collected information on Target's customers who had paid for their Target purchases with credit and debit cards. People's names, their credit card information, phone numbers, and email and home addresses, all stolen and used by hackers for their criminal deeds. Likewise, for **Home Depot** whose computer systems were hacked in 2014. And, in **the 2016 United States Presidential Election, the FBI investigated the possibility of Russian hackers affecting U. S. election results by hacking into American voting systems.** In the future, terrorist groups with hacking expertise could shut down power plants, sabotage GPS and air traffic control systems thus jeopardizing air and automobile transportation safety as well steal bank deposits and sensitive government information. ***Data trafficking,*** the sharing, selling, and remixing of people's data without their control or awareness, has threatened people's financial well being, security, freedom, and liberty. Cyber security, according to some experts, is and will continue to be one of the globe's most sought after, high paying careers.

THE WALL STREET JOURNAL.

Dec. 15, 2020 7:48 am ET

Russian Hackers (Cyber Terrorists) Break Into United States Federal Agencies

In one of the most sophisticated and perhaps largest cyber terrorist hacks in more than five years, email systems were breached at multiple US Government Departments including Treasury, Commerce, Energy, Homeland Security, and Cyber Security. Other breaches are under investigation.

The **Wall Street Journal** and other media from around the world reported in their December 15th, 2020 editions "*it was a widespread and months long hack of the U.S. government and some of America's biggest corporations enabled by an unlikely source: a little-known Austin, Texas, software company called SolarWinds Corporation that, until this week, was a household name only to computer network administrators in 400 of the Fortune 500 corporations and many government agencies.*

Security investigators say SolarWinds provided the perfect delivery mechanism for a carefully executed intrusion attributed to Russia's foreign-intelligence service.

The hackers targeted software that is foundational to most businesses, but not usually in the spotlight and used principally by technical staff that keep computer networks and software up and running and supposedly SAFE. 'SolarWinds is in the plumbing' said Stephen Elliot, a vice president with the industry research firm International Data Corp.

By building a back door into SolarWinds software, the hackers were able to compromise systems at the Department of Homeland Security, the Treasury and Commerce departments, the Department of Energy, national security agencies, defense contractors, and potentially hundreds of other entities. Also hacked was the Director of CISA, ***the nation's top cyber security official.***

This kind of indirect cyber attack—targeting suppliers as a way to break into their customers—has become an increasing concern to government and cyber security experts. While companies have beefed up their cyber protections, most clients don't closely scrutinize the software that their suppliers deliver. In this incident, the hackers appear to have gained a foothold in their victims' networks by adding "back door" code to SolarWinds Orion software, according to an analysis of the event by Microsoft Corp. Once installed, this software connected to a server controlled by the hackers that allowed them to launch further attacks against SolarWinds customers and to steal data.... As the probe continues into the massive hack—which cast a nearly invisible net across 18,000 companies and government agencies—security specialists are uncovering new evidence that indicates the operation is part of a broader, previously undetected cyber espionage campaign that may stretch back years.... the United States National Security Agency, America's top cyber spy organization said Hackers were finding ways to forge computer credentials to gain wider access across networks and steal protected data stored on in-house servers and cloud data centers."

The attack blended extraordinarily stealthy trade craft, using cyber tools never before seen in a previous attack, with a strategy that zeroed in on a weak link in the software supply chain that all U.S. businesses and government institutions rely on—an approach security experts have long feared but one that has never been used on U.S. targets in such a concerted way.

Just four days before the 21 year old Solar Winds company disclosed the hack, the company announced its CEO (chief executive), Kevin Thompson, would be leaving Solar Winds, effective January 4 2021..."

Wikipedia profiled the attack this way - *" The data breach, considered to likely be the work of Cozy Bear (hackers) backed by the Russian state agency SVR, was reported to be among the worst ever experienced by the United States, due to the high profile of the targets and the long duration the attacker had access. U.S. Senator Richard J. Durbin described it as tantamount to a declaration of war. Other prominent organizations, inside and beyond the U.S., were also exposed to the attack, and some of these may also have suffered data breaches. The cyberattack that led to the federal breaches began no later than March 2020 until their detection by* **FireEye** *Inc., a major U.S.-based cybersecurity firm. The attacker apparently exploited software from at least three U.S. firms: Microsoft, SolarWinds, and VMware.... SolarWinds said that of its 300,000 customers, 33,000 use Orion. Of these, around 18,000 government and private users downloaded compromised versions. .. Possible future uses could include attacks on hard targets like the CIA and NSA, or recruiting spies.... Former Homeland Security Advisor Thomas P. Bossert warned that it could take years to evict the attackers from US networks, leaving them able to continue to monitor, destroy or tamper with data in the meantime...the hackers also breached the United States Department of Energy which oversees the nation's nuclear weapons program, nuclear reactor production for the United States Navy, energy conservation, energy-related research, radioactive waste disposal, and domestic energy production."*

Surveillance -

'What if'
the country you lived in
had a rating system
for each citizen
that affected each person's
rights and privileges?

This rating system is like a '*credit rating*' which American banks now use to determine whether someone is 'trustworthy' enough to re-pay a bank loan. However, ***data collection for this new rating system of people*** is more intrusive with personal consequences more far reaching than an American bank's 'credit rating'. For example, governments using this new surveillance system will ***watch everything its citizens do*** from the web sites they visit and whether they pay their bills on time to the restaurants and concerts they go to and the people they hang out with. As a result of the data collection of each person's behavior, the government will give each person a numerical score or rating. Citizens will be given points for good deeds like giving blood, helping the elderly and veterans, paying bills on time, doing exceptional work at school or their job and keeping their property neat and clean. Citizens will have points deducted from their rating for misdeeds like late payment of bills, being late or absent to school, speeding tickets, littering, being disrespectful to a teacher or policewoman or policeman, or being convicted of a crime. Billboards will promote good behavior like re-cycling trash, flushing public toilets, not chewing gum nor wearing inappropriate clothes in public and never offending anyone with insensitive racial or ethnic comments on social media. ***People with good ratings will get discounts on train, plane, UBER, and bus tickets, access to the best doctors, hospitals, and schools, and discounts on parking fees and mortgage rates. People with low ratings will pay higher prices for plane tickets and tickets to popular concerts*** and movies; they will also pay higher mortgage rates to purchase a home. People with bad ratings may not be able to buy airline or high speed trains. Citizens will stay on the ***'bad citizen' list*** until the court the government established to rate citizens decides to take them off the ***'bad citizen' list***. All citizen data will be compiled and stored by the government and protected by the best firewalls and security systems. Citizens can always look up their rating by entering their social security or citizen number into a mini-app running on social medial platforms like Facebook or WeChat. ***The government wants to know and track the trustworthiness of its citizens and companies.***

One country has already started
a 'citizen rating' program in 2018.

Everyone citizen in this country starts out with 1,000 points and then gets awarded additional points for good deeds or points deducted for bad behavior. All of this country's 1.4 billion citizens may have a personal score by 2020.

Do you know which country already has a citizen rating system like this?

Education -

"Government's Best Anti-Poverty Program"

Marta Aparicio (far right) speaking with a Hope High School student in Providence, Rhode Island during one of her annual visits to her alma mater. Ms Aparicio went on to Georgetown University from Hope High for her undergraduate studies before receiving a Charles Rangel fellowship to attend Columbia University for her Master's degree in International Studies.

How does
a government OR private company
measure
the effectiveness of
its investments?

Of course, by collecting and analyzing
data
to determine the investments
return on investment (ROI);

in other words, did the money a company or government spend achieve the goals it was hoping for?

That's exactly what American diplomat, college professor, philanthropist, and community activist, ***Marta Aparicio,*** did to identify the best ways countries can end '*generational poverty*'. **Ms Aparicio funded an ambitious research project in 2025 asking** noteworthy economists and anthropologists to ***collect and analyze economic and education DATA to reveal***

public education's impact on
'generational poverty',
the country's GDP ('gross domestic product',
in other words, the
products and services a country produces),
AND
its international influence.

The findings were convincing!! The research unequivocally proved the better and more inclusive a country's public education, the greater the country, its cities, and its educated citizens economic success. The more students who went to great schools with great teachers and state of the art resources, who were involved in extracurricular sports, arts, and science activities, the more money students earned as adults and the better lives they provided for their families. At the same time, ***countries with great schools and teachers had higher GDPs which affected its' citizens' standard of living and mental health. Countries with great schools also had more influence in the world.***

Government officials also acknowledged Ms. Aparicio's funded economic and anthropological research found a significant number of highly intelligent students in America's inner city as well as in poor, rural, low performing public schools than previously thought. Anthropologists and economists contended that many countries were missing opportunities to raise their median income and, thus, the standards of living of all its citizens, by exploiting

the most overlooked and under appreciated natural resource within their borders, its citizens!

Economists, after reviewing the ***DATA,*** insisted communities and countries could no longer afford to accept great schools in wealthy communities only. Regardless of the country, city, or town where someone lives, Ms Aparicio's funded research proved

great education
increases
national, community, and personal
wealth
by maximizing the talents
of citizens.
Great schools

do this by creating '*success*' and, in the process, reallocate money from non-revenue producing items like incarceration (prisons), policing crime infested neighborhoods to medical and environmental research, great schools and health care, and the maintenance and upgrade of community and national infrastructure (roads, trains, airports, internet speeds and access, electricity and water systems, parks, etc). Ms Aparicio's study also suggested ***reasonable tax increases*** on soda, candy, ice cream, shakes, gambling, alcohol and marijuana, snack cakes and chips as well as video games ***NOT to be allocated to a state's general fund as in the past but for further funding on high quality, universal, education;*** a proven investment with a great return. ***"There are proven, measurable returns on investing in education"*** one well known economist commented. *"In 2030, after 7 years of universal, high quality educational opportunity for all Americans, standardized test scores in the inner city and poor rural areas of America will be consistently the same as wealthy communities."*

As a result of Ms Aparicio's funded research, there will no longer be an appreciable difference in the quality of education between inner city and poor rural public schools of the United States from schools in wealthy communities. As a result, ***great education for all is the best government plan for investing tax money to end systemic, 'generational poverty' and creating opportunities for lifetime success for the country and ALL its people***.

Generational Poverty is defined as a person or family's economic level that remains at or below a POVERTY LEVEL for two or more generations which ***prevents a person or family from having enough material possessions or income to meet their needs of food, clothing, shelter, and, for too long, a great education***.

So, what does '*great education*' mean?

Photo above is from Hope High School's annual ***FUTURE FORUM***, a gathering of students from **Hope High, LaSalle Academy, St Raphael's Academy,** and **Rocky Hill Country Day School** and corporate futurists from companies like **Data Robot, Working Planet, Brown University, Harvard Pilgrim Health, Bank of America, Gilbane Building Company, NOAA Office of Ocean Exploration and Research, CVS Health, Accenture**, and **Alex and Ani** who facilitate collaborations among diverse groups of students to solve social problems or create entrepreneurial opportunities.

Ms Aparicio's funded research **provided** ***EMPIRICAL DATA as*** **evidence indicating** ***a great teacher is the most important component of great education.*** **Consequently**, the 'best' teachers are now paid according to the value they provide their customers, i.e. their students. *'Great'* teachers are paid more money than a teacher who has been evaluated as '*average*' and certainly more than a teacher evaluated as '*ineffective*' or '*unsatisfactory*'. ***Great teachers, like great doctors, engineers, scientists, artists, entrepreneurs, and electricians are now seen as indispensable to the well being and success of people, communities, and their countries***. Secondly, schools are now annually evaluated for

curriculum "relevance"

to ensure each school subject actually prepares students to be successful TODAY in the GLOBAL economy.

"What is important to teach and learn
NOW
is what students need to know
for the life & jobs they aspire to
after graduation!

one of Ms Aparicio's economists stated in the report. " ***'School Advisory Boards', composed of 1 student from each school year elected by their grade level peers, 2 teachers chosen by parents, 2 community business owners chosen by the local Chamber of Commerce, and 2 school administrators, act as a board of directors reviewing school curriculum."*** Principals are charged with only offering courses that are deemed 'relevant' by their ***School Advisory Board***. School budgets are mandated to invest a specific percentage of their annual budget in technology and extracurricular activities. From virtual reality apparatus to the latest versions of Adobe and Microsoft software, ***technology will complement a teacher's efforts*** in the school.

One of the technologists who participated in Ms Aparicio's research was **David Hanson, Jr**, an American roboticist and the founder and Chief Executive Officer of Hanson Robotics, a Hong Kong-based robotics company which created and produced the humanoid robot, **Sophia.** Hanson asked "***if we're really committed to maximizing student potential and the remarkable intelligence each student is born with, let's use technology! It's the 21st century!*** *We can spend our taxes on education in better ways than we've been doing. How much money do we spend on hard and soft cover books which are outdated minutes after they're delivered to our schools? Some courses we teach in high school and college could be eliminated due to their irrelevance to what students really need to know to be successful. We might even lower education tuition costs in the process. And, the courses deemed highly relevant at one point in time might later lose their relevance and be changed as well. Let's* ***start by using technology! Let's give tablets to students in every school and make sure they ALWAYS have internet access at home. Let's use the IOT*** *(Internet of Things) to* ***collect data*** *to discover how each student receives and processes the information we're teaching!* ***We can create personalized learning experiences tailored to each student's learning style!*** *Students will then be able to maximize the intelligence they're born with and our great teachers can invest their time on more specific student needs and opportunities. There*

should be
an ongoing process of
collecting data
to refine 'how' and 'what' we teach

according to the learning styles and interests of students as well as the opportunities in the marketplace our students will be competing in*. If schools do this, I'm sure student and school success will increase exponentially. Our schools and their customers, the* ***students, will be more successful*** *by maximizing their potential. Students will feel better about themselves too! Confident, smart students will improve our country's economy by creating new, successful companies. More people will be employed in the process. Our nation's standard of living will increase too. We'll be able to offer better and more personalized health care to those in need. Heck, crime may even decrease. We'll* ***still need great teachers and social workers but technology will make them more effective and students more successful.*** *Security remains a concern about how to keep all this data safe. But, with all the smart people we're educating, cyber security solutions are probably just around the corner!"* According to an article in the 2019 May-June edition of the **Harvard Business Review**, the McGraw Hill publishing company has started creating digital lessons. As students work on these activities, **AI** (artificial intelligence) **based algorithms** collect and analyze student data providing analysis to teachers, students, and parents. If a student is struggling with a particular lesson, McGraw Hill '*AI*' will direct the student to a data based alternate lesson more suited to the student's learning style. The alternate lesson could possibly use video or educational **virtual**

reality goggles. Schools will use ***AI based data analytics***, much of it in ***real time***, to optimize learning and, in the process, improve each student's potential and feelings of success. Instead of just publishing traditional hardcover textbooks, McGraw Hill now offers data driven, customized, learning programs.

Extracurricular activities are NOW mandatory after DATA proved what business leaders have long been advocating, that life skills are best developed and refined in extracurricular arts and team sports programs with great coaches and moderators. Skills like collaboration, communication, empathy, networking,

brand development, leadership, creativity, and perseverance as well as attitudes like pushing out of your comfort zone are more easily developed through the experiential learning of well coached arts and sports programs. ***Art and music are mandatory***. Scientists also proved, from ***data based analysis,*** that ***arts and exercise have a profound impact on neural (brain) development*** and how they also develop entrepreneurial skills and creative thinking. Data also revealed that school days should start no sooner than 9am and end at 6pm for better student learning. Transportation is provided to all students living over 1 mile from their school. Educators convinced government officials that parent or guardian nurturing in their child's education affects student success. ***School Advisory Boards (SAB)*** organize 'Parent' events, their locations, and times. Multiple locations and times in the community are offered for each parent-teacher event for the convenience of parents. If parents have conflicts with a scheduled parent - teacher event, SABs will work with parents to arrange a time and place alternative for a meeting. School ***parent-teacher nights*** are NOW treated like voting rights in Australia; ***a responsibility***!! ***If you choose not to attend parent-teacher events, a fine may be assessed.*** For those families depending on their children to work to supplement the family's income, a country's '*graduated*' UBI program provides extra money for families in need. Ms Aparicio's research proved the critical importance of a nurturing parent engagement. As a result, parental involvement in the schools is facilitated by SABs. One of the first actions taken was the distribution of **Google translate ear plugs, free of charge, to student mothers, fathers or guardians needing to speak multiple languages** for meetings with teachers, school administrators, as well their doctors and other state agencies providing services to them. Parent- teacher meetings are scheduled quarterly unless parents request more frequent consultations. Parents are encouraged to visit classrooms and monitor activities through web sites for each course. Schools also have embraced the "***broken window concept"*** for all school facilities. This essentially means all school buildings and surrounding landscape are continually maintained to reinforce the community's commitment to outstanding education. Lawns are always cut and well manicured. Gardens and flowers are cultivated. No debris on the grounds or in the buildings; as clean outside as they are inside.

As a result of this new focus on public education, America now ranks #3 in the international PISA test behind China and Singapore. The PISA assessment is a worldwide study of eduction to evaluate educational quality and effectiveness by measuring 15-year-old student performance in mathematics, science, and reading. In 2010, the United States was ranked 35 in the PISA test.

"When and if
you stop learning,
you risk being left behind!

Lifetime learning is endorsed, promoted, and even funded in some communities by people like **Sergey Brin** and **Larry Page** of Google, **Jeff Bezos** of Amazon, **Francoise Bettencourt Meyers** of L'Oreal, **Alice Walton** of Walmart, **Carlos Slim Helu** of América Móvil, **Jack Ma** of Alibaba, **Elon Musk** of Tesla, and **Melinda Gates of** Microsoft.

"The world is changing
and so are
the skills needed for success.

Artificial intelligence. Machine learning. Autonomous vehicles. Ambient intelligence. Connectivity of all things (IOT). Genetic engineering. Drone deliveries. Humanoid service robots. Cyber security. Global supply chain and business models. Each of these technologically driven fields require ***new skills*** *just as the automobile, radio, airplane, television, x-rays, and the internet did upon their arrival."* Some skills, however, remain critical for 21st century success. ***"Basic computer, data collection, and analysis skills are fundamental to success along with collaboration, creativity, empathy, critical thinking, communication, and, most importantly, the ability to deal with change and continuously learn new things***" according to historian **Yuval Noah Harari** who endorsed Ms Aparicio's research findings. **Darrell West**, American author, political scientist, political commentator, and director of the center for technology innovation at the Brookings Institution, supports Harari's perspective. "***As the workplace changes with new jobs demanding new skill sets, lifetime learning becomes mandatory if people wish to remain employed***" according to West.

"There must always be
a close alignment
between what we teach in schools
and
the skills required in the workforce.

Collaboration. Teamwork. Data analysis. Critical thinking. Negotiation skills. Motivating teams of people. Ability to design a great experience. Coding. These are the talents now in short supply and will be high demand in the evolving 21st century economy". Empowered **School Advisory Boards** **now ensure these skills** will be successfully taught by qualified, respected, passionate, well paid teachers complemented by data based lessons and technology in all schools across the country!

Thank you, Marta Aparicio.
Tu eres la mejor!

Marta Aparicio

Public Education Ranking BY STATE in the United States of America

US News &World Report (2021)

Lifetime **success often correlates with the quality of traditional or experiential education** the person receives. This disparity in education quality is often indicative of "*the glaring achievement gaps among white students and Black and Latino students, among wealthy, middle-income and low-income students, as well as among students with disabilities and English learners*" according to a US News & World Report.

"*The Obama administration bravely pushed states, against various levels of local and national resistance depending on the region of the country, to* ***adopt more rigorous academic standards and tests, new teacher evaluations and pay systems based in part of student test scores and strict improvement models for so-called "failing" schools****. The* ***Trump administration's focus*** *to address the poor performance of public school education, especially in the urban centers of America* (like Baltimore, Maryland, Providence, Rhode Island - see the **2019 Johns Hopkins Research Report of the Providence Public Schools**), Chicago, Illinois, and Detroit, Michigan, *was expanding* ***school choice*** *– an initiative that included everything from increasing charter schools to private and parochial schools to school vouchers and education savings accounts. Despite school choice options being struck down at the federal (national government) level, the school choice option served to expand school choice options in a handful of states with interesting results*" (see *Success Academy Charter Schools*, New York).

New Jersey is the top state for public education. It's followed by Massachusetts, Florida**, Washington and Colorado to round out the top five****. Six of the 10 states with the best education systems also rank among the top 10 Best States overall"* concluded the US News & World Report.

RANK	STATE	HIGHER EDUCATION	PRE-K-12
1	New Jersey	27	1
2	Massachusetts	25	2
3	Florida	1	16
4	Washington	2	11
5	Colorado	5	7
6	Connecticut	43	3
7	North Carolina	7	15
28	Maine	40	12
39	Rhode Island	49	25
40	Nevada	9	48
48	Louisiana	48	46
49	Alaska	36	49
50	New Mexico	24	50

COMPARING AMERICAN PUBLIC EDUCATION TO THE WORLD

MATH, SCIENCE AND READING

The **PISA** (*Program for International Student Assessment*) TEST is a highly respected, **international test** which measures 15 year old student proficiency in MATH, SCIENCE, and READING, 3 skills deemed most important for success in a global economy, in 80 countries around the world. Each country must test at least 5,000 students. Some countries use much larger samples than required to allow comparisons between regions in their countries. The Organization for Economic Cooperation and Development (***OECD***), an organization of ***38 countries with high-income economies, administers the PISA test*** every three (3) years. OECD countries include the United States, Japan, France, Australia, Israel, Turkey, Mexico, Costa Rica, Canada, Chile, Germany, and more. The OECD encourages its members to analyze the test data and then compare test results of their students with students with the highest scores in other countries. The PISA test is intended to encourage global leaders to learn from the best-performing education systems.

TOP 10 SCORES - Mean scores in PISA 2018

READING		MATHEMATICS		SCIENCE	
China*	555	China*	591	China*	590
Singapore	549	Singapore	569	Singapore	551
Macau	525	Macau	558	Macau	544
Hong Kong	524	Hong Kong	551	Estonia	530
Estonia	523	Taiwan	531	Japan	529
Canada	520	Japan	527	Finland	522
Finland	520	South Korea	526	South Korea	519
Ireland	518	Estonia	523	Canada	518
South Korea	514	Netherlands	519	Hong Kong	517
Poland	512	Poland	516	Taiwan	516
OECD average	**487**	**OECD average**	**489**	**OECD average**	**489**

The test results seemingly indicate that ***EAST ASIAN COUNTRIES like China, Singapore, Macau, Japan, Taiwan, and South Korea do the best job teaching*** **math, science** and **reading** skills than most other countries in the world, including the United States. Singapore slipped recently from first place to second in the latest test, losing out to China, which limited the PISA test taking to students in only 4 Chinese cities – Beijing, Shanghai, Zhejiang, and Jiangsu. ***The United States PISA results have been consistently low for too many public school students in low income areas.***

WHAT DO THESE TEST RESULTS MEAN,

especially in Math, Science and Reading, the critical skills driving technological change in the World today?

AND, WHAT DO THE TEST RESULTS MEAN

FOR THE CONTINUED SUCCESS, SAFETY, AND PROSPERITY OF THE UNITED STATES OF AMERICA?

These results seemingly indicate that education is taken more seriously in East Asian countries than the United States of America public school systems. ***HIGH QUALITY EDUCATION IS a CULTURAL priority with East Asian families***. *"In these countries, parents clearly believe the road to success lies in education. East Asian families realize parents play an important role in shaping their child's careers. Consequently, **parents work hard to give their children access to great schools with great teachers**. East Asians also believe parent efforts produce results for their children. This mindset creates expectations that children can perform and excel in their abilities with hard work and effort. Through rote learning* (memorization)*, intensive tutoring sessions, critical/creative thinking activities, and various technological tools, children in East Asia receive access to more and better education than their global counterparts*" writes Ascension Tejedor, the founder of ***SCHOOL IN***, an International Schools Reviews & Ratings organization. East Asian leaders believe ***great teachers are essential for great education***. Consequently, "*teaching is a respected profession in East Asia. **Teachers are paid** a handsome salary **far exceeding the average salary in other OECD countries**. Great teachers can lay claim to "**bonuses**" and enjoy greater rewards for their teaching excellence. The national governments support teachers with useful educational tools, and rigorous regular training to upgrade their skill sets as a nurturer for the next generation*" continues SCHOOL IN. A survey by education charity Varkey Foundation also found that Singaporean teachers polled report working longer hours per week (52 hours) than any other country except teachers in New Zealand (52.1 hours).

The **New York Times** wrote in late 2019, after reviewing another disappointing report card of American students on the PISA exam, ***'It Just Isn't Working': PISA Test Scores Cast Doubt on U.S. Education Efforts"***. The downward trend of ***American 15 year old students***

taking the PISA test shows an overall downtrend in the critical skills of Math and Science and especially with lower income students. *"An international exam shows that American 15-year-olds are stagnant in reading and math skills even though the United States has spent billions of dollars to close the achievement gaps with the rest of the world"* the New York Times article continues.

Do PISA test scores matter?

*"Although the top quarter of American students have improved their performance on the exam since 2012, the bottom **10th percentile of American students lost ground"*** according to an analysis by the *American National Center for Education Statistics*. The 10% of low performers on the PISA test are found mostly with low income Americans, mostly but not limited to, America's urban areas like Baltimore, **Providence** and Chicago. ***These students",*** the analyst asserted, ***"face daunting challenges to become the successful people they aspire***

Mathematics			Science			Reading		
1	China (B-S-J-Z)[a]	591	1	China (B-S-J-Z)[a]	590	1	China (B-S-J-Z)[a]	555
2	Singapore	569	2	Singapore	551	2	Singapore	549
3	Macau	558	3	Macau	544	3	Macau	525
4	Hong Kong	551	4	Vietnam	543	4	Hong Kong	524
5	Taiwan	531	5	Estonia	530	5	Estonia	523
6	Japan	527	6	Japan	529	6	Canada	520
7	South Korea	526	7	Finland	522	6	Finland	520
8	Estonia	523	8	South Korea	519	8	Ireland	518
9	Netherlands	519	9	Canada	518	9	South Korea	514
10	Poland	516	10	Hong Kong	517	10	Poland	512
11	Switzerland	515	11	Taiwan	516	11	New Zealand	506
12	Canada	512	12	Poland	511	11	Sweden	506
13	Denmark	509	13	New Zealand	508	13	United States	505
13	Slovenia	509	14	Slovenia	507	13	Vietnam	505
15	Belgium	508	15	United Kingdom	505	15	Japan	504
16	Finland	507	16	Australia	503	15	United Kingdom	504
17	Sweden	502	16	Germany	503	17	Australia	503
17	United Kingdom	502	16	Netherlands	503	17	Taiwan	503
19	Norway	501	19	United States	502	19	Denmark	501
20	Germany	500	20	Belgium	499	20	Norway	499
20	Ireland	500	20	Sweden	499	21	Germany	498
22	Czech Republic	499	22	Czech Republic	497	22	Slovenia	495
22	Austria	499	23	Ireland	496	23	Belgium	493
24	Latvia	496	24	Switzerland	495	23	France	493
24	Vietnam	496	25	Denmark	493	25	Portugal	492
26	France	495	25	France	493	26	Czech Republic	490
26	Iceland	495	27	Portugal	492	27	Netherlands	485
28	New Zealand	494	28	Austria	490	28	Austria	484
29	Portugal	492	28	Norway	490	28	Switzerland	484
30	Australia	491	30	Latvia	487	30	Croatia	479
31	Russia	488	31	Spain	483	30	Latvia	479
32	Italy	487	32	Lithuania	482	30	Russia	479
33	Slovakia	486	33	Hungary	481	33	Hungary	476
34	Luxembourg	483	34	Russia	478	33	Italy	476
35	Lithuania	481	35	Luxembourg	477	33	Lithuania	476
35	Spain	481	36	Iceland	475	36	Belarus	474
35	Hungary	481	37	Croatia	472	36	Iceland	474
38	United States	478	38	Belarus	471	38	Israel	470

to be and, for many, face pretty grim prospects in the job market". Because test scores often indicate a person's prospects for finding a fulfilling, well paying job, the PISA results cause many parents, corporate leaders, and other genuinely concerned Americans to wonder about America's inability to help those citizens relying on public education to learn, develop, and exploit their inherent talents for their success and the country's success in an increasingly dynamic, highly competitive, technology driven, global marketplace.

Some observers wonder if East Asian students are simply more intelligent than American students. East Asian national leaders say '***no***' as well as ***this author screaming"NO!!"*** Here are a few observations on human **talent** and the performance of **AMERICA'S public education system** especially those school systems charged with developing the **obvious, native talents of too many students from lower income families**.

Shinichi Suzuki, world famous Japanese violinist and teacher who developed the Suzuki Method of early music education, was adamant "***all people come into this world equipped with a tremendous capacity to learn and become talented*** *in their own ways. Talent is not static, an inborn quality like eye color. Rather, talent is a muscle that can be developed and strengthened regardless of genetics*".

Malcolm Gladwell, journalist and author, shares the implications of his long standing, exhaustive research in the social sciences, like sociology and psychology, and concurs with Mr Suzuki on the concept of **'talent'**. Gladwell introduces the concept "***talent capitalization"*** as "*the rate at which a community capitalizes (*develops*) the human potential of those in its midst; i.e. what percentage of those who are capable of achieving something, actually achieve it.*". Gladwell furthermore proclaims "***we (America) has a scarcity of achievement NOT because there is a lack of talent BUT because America is squandering it!"*** Gladwell's conclusion - "***America generally does a poor job at 'talent capitalization' and has done so for a long time.***"

So, what should America do to improve too many public schools that are failing too many students?

Eric A. Hanushek, the Paul and Jean Hanna senior fellow at the Hoover Institution of Stanford University and the co-author, with Paul E. Peterson and Ludger Woessmann, of *Endangering Prosperity: A Global View of the American School,* writes in Education Week magazine, "*since 2003, the United States has made virtually no gains (*in the development of its citizens critical skills*), even as a range of countries have made substantial gains".*

Furthermore, **Angel Gurria**, the 2012 secretary general of the Organization for Economic Cooperation and Development which oversees PISA, declared the PISA test results for the United States "*are straightforward and stark: It is a picture of educational stagnation.*" After the results of the 2009 PISA were released, he said: "*America needs to wake up to this educational reality—instead of napping at the wheel while America's emerging competitors prepare their students for economic leadership*."

And yet, after millions of additional dollars invested in American education and new government advocates launching new education programs, AMERICAN PISA SCORES, especially in lower economic communities, remain unsatisfactory while other countries, especially East Asian countries like China, improve.

Gladwell claims America's potential for success in an increasingly competitive global marketplace is being restrained by a "***stupidity constraint".*** In other words, the people in places of NATIONAL power and influence overseeing American public education, especially schools serving low income neighborhoods in urban areas like Providence, RI AND, Baltimore, MD, have deprived Americans AND our country from capitalizing on its greatest resource, human talent. Consequently, America and many of its citizens will not fully develop nor exploit their talents and potential for lifetime success in today's highly competitive, richly opportunistic but increasingly dangerous global marketplace.

As the PISA test results continue to indicate,
more and more countries are gaining ground on America
in the skills deemed critical for global success - science, math, and reading.
At the same time, America's chief competitor in the world, China,
has surpassed America in the teaching and proficiency of these critical skills.
Consequently, what does this mean for America's success, even safety, in today's global economy?

The lion like figure is ***The Merlion***, the official mascot of Singapore

Daniel Koretz, an expert on testing and a professor at the Harvard Graduate School of Education, said recent test results showed that "*it's really time to rethink the entire drift of policy reform in American public eduction because it just isn't working*."

If looking for a model of success and an effective commitment to the education of ALL its citizens, ***Singapore*** may be an example to emulate. Singapore was a poor, racially divided country after being granted independence by England in 1959. Singapore initially became part of the country of Malaysia until Malaysia told Singapore to "*leave*". On August 9*th*, 1965, the Malaysian Parliament voted 126 to 0 passing a bill to expel Singapore from Malaysia leaving Singapore alone, poor, ethnically divided, but independent. NO NATURAL RESOURCES (not even water). NO SUCCESSFUL BUSINESSES.

Ethnic groups (2020, resident population)[1]	74.3% Chinese 13.5% Malay 9.0% Indian 3.2% Others
Religion (2020, resident population)[1]	31.1% Buddhism 20.0% No religion 18.9% Christianity 15.6% Islam 8.8% Taoism 5.0% Hinduism 0.6% Others

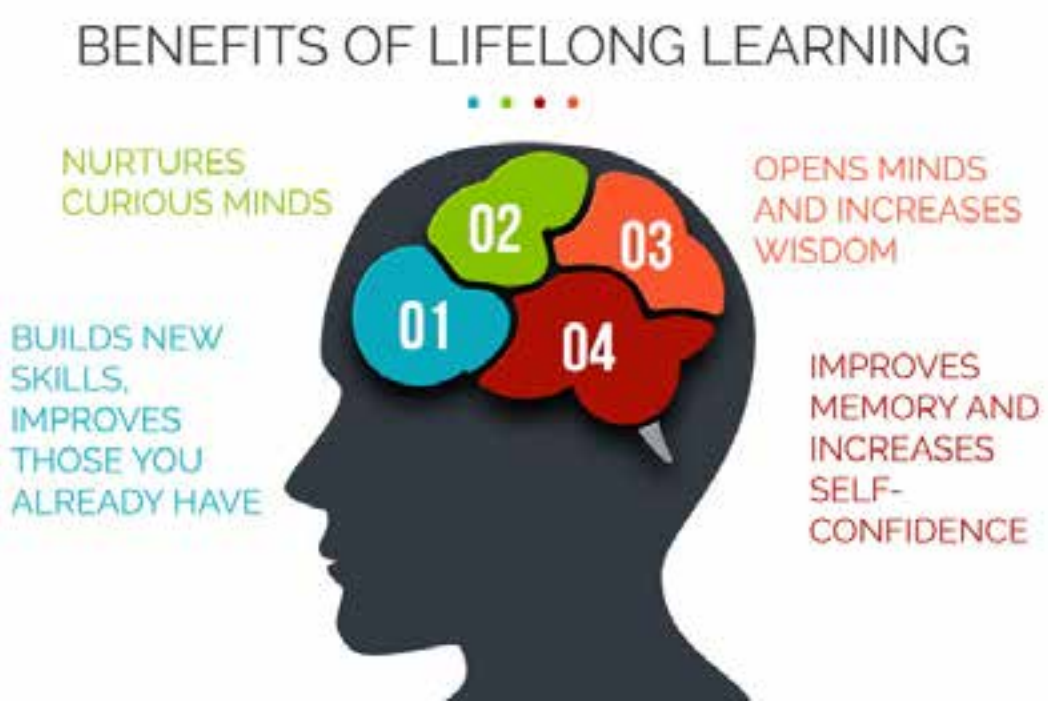
VIOLENT RACE RIOTS. HIGH POVERTY and a lack a great leadership until one man, **Lee Kwan Yew,** became Singapore's leader, its Prime Minister. ***In a country without fresh water and no mineral resources, the ONLY SINGAPOREAN NATURAL RESOURCE OF VALUE, according to Lee, was its PEOPLE, HUMAN TALENT.*** Lee Kwan Yew believed EVERY SINGAPOREAN HAS TALENT which could be developed for Singapore and its people to be prosperous and successful. ***EDUCATION became Mr Lee's focus for developing and exploiting the natural resource*** of human talent to ensure Singapore would be a SUCCESS in a highly competitive and dangerous world. In the ethnically diverse and often ethnically divisive country that Singapore was, EDUCATION became the critical component to instill the creative thinking and learn core skills to start companies and provide skilled labor for Singaporean companies. Lee realized the **FACT** the world is 'dynamic' (ever changing) AND, AS A RESULT, Singaporean school curricula must also be 'dynamic' to address and exploit the challenges and opportunities in a global economy. Lee's national government of Singapore demands its education leaders continuously solicit data (feedback) from businesses and community institutions to identify the primary needs, primary skills, and primary objectives for corporate and societal success. Singaporean schools were and remain designed to help students pass exams in core subjects (**math, science, reading, and art**) that are deemed "*practical*" and in-demand by companies and community leaders (empathy, collaboration, and cooperation). As a result, funding for the education system was and remains robust. "*Probably one of the **biggest factors behind Singapore's educational success-story is its teachers** and the quality of training that teachers receive*" writes Wee Ben Sen, the head of an organization named Tutor City. "*Only the top 5% of graduating students qualify to enter teaching, and the training is delivered centrally by the National Institute of Education. On average, teachers receive over 100 hours of education every year, and are subject to rigorous performance assessments to monitor and measure their progress. The teachers are held accountable to ensure they are delivering what is asked of them, and to the right standards. Furthermore, Singaporean teachers are paid a handsome salary, far exceeding the average salary in OECD countries. Teachers that excel can lay claim to "bonuses" and enjoy greater rewards for their teaching excellence. This makes teaching an attractive career option for the most talented people of the country.*" Teachers receive continuous training and development. As a result of this highly focused and nationally regulated education model, ***Singapore has*** the ***world's highest percentage*** of ***millionaires***, with one out of every six households having at least one million US dollars in disposable wealth. There is ***'little to no' unemployment***. Singapore's ***labor participation rate (percentage of the population with a job) is 70.5%***; the United States labor participation rate is 62%. There is little very ***little crime*** especially compared to the crime rates in America. The government provides ***significant assistance to the homeless*** and needy and, as a result, ***acute poverty is rare***. Other benefits include compensation for gym fees to encourage citizens to exercise, up to S166,000 as a baby bonus for each citizen, ***heavily subsidized healthcare***, financial aid for the disabled, provision of reduced-cost lap tops for poor students, and rebates for costs for public transport and utility bills. Singaporean ***home-ownership rate is 88 percent*** of the total population. Singaporeans enjoy one of the ***longest life expectancies*** (much higher than the United States), the fastest Internet connection speeds, lowest infant mortality rates, and ***lowest levels of government corruption*** in the world; much less than the United States government. These key social indicators prove ***Singapore understands the benefits*** (***ROI*** *-return on investment*) of smart investments by ***honest leaders committed to high quality education*** to develop and maximize the human talents of its people to ***ensure the country's ultimate success***.

EDUCATION CAN NEVER STOP

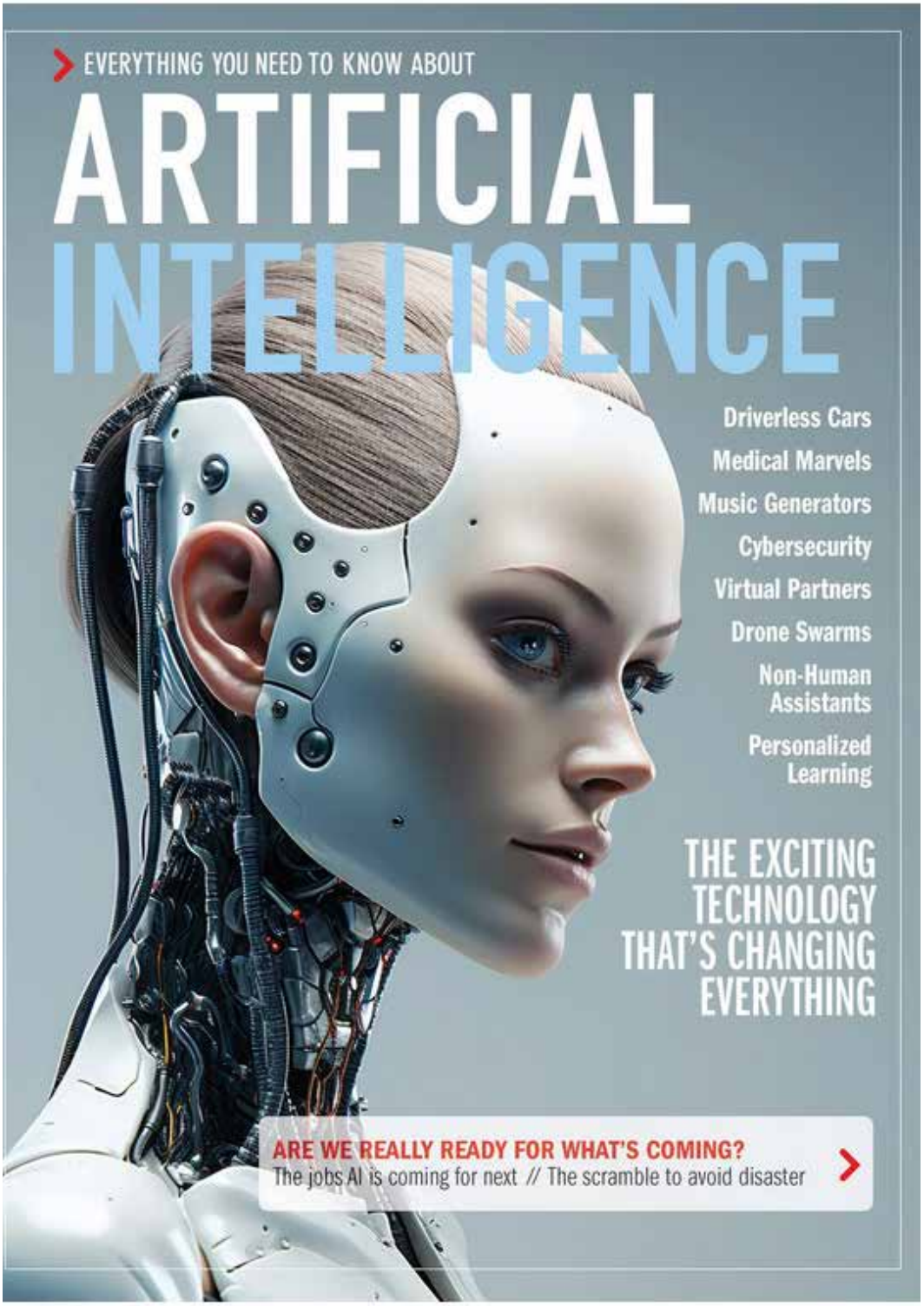
"The days of a steady, stable career are over. The rapid pace of technology makes many jobs and skills go out of date in a few years. You need to be aware of how jobs, careers, and skills are rapidly changing....."

Skills

The new workforce requires employees to learn, unlearn and relearn skills



MOST VALUED SKILLS COMPANIES LOOK FOR IN EMPLOYEES


EVERYTHING YOU NEED TO KNOW ABOUT
ARTIFICIAL
INTELLIGENCE
Driverless Cars
Medical Marvels
Music Generators
Cybersecurity
Virtual Partners
Drone Swarms
Non-Human Assistants
Personalized Learning
THE EXCITING TECHNOLOGY THAT'S CHANGING EVERYTHING
ARE WE REALLY READY FOR WHAT'S COMING?
The jobs AI is coming for next // The scramble to avoid disaster

AI, Robots, Androids, and Code

Robots and androids!

Robots will continue to look more human and will become commonplace in everyday life, whether it's self-driving cars, making accurate weather predictions, or as store mannequins who store your personal wardrobe profile to offer wardrobe suggestions at your next store visit. Businesses will "train" AI machines, robots, and androids to handle customer inquiries in stores. They'll play an important role in space exploration too. **Robots will carry out chores like vacuuming and dusting as well as driving trucks, taxis (UBER, LYFT) and delivering the mail and packages!** **Hans Moravec**, an adjunct professor at Carnegie Mellon University, states *"by 2050, robot 'brains' based in computers will execute 100 trillion instructions per second and soon will start rivaling human intelligence."* Since 2004 Moravec has been chief scientist of Seegrid Corporation, founded to commercialize "*tuggers*" and other robots for work in warehouses and factories. *"Robots will have stronger, more dexterous arms and better sensors. Programs will be written to make such robots pick up clutter, store, retrieve and deliver things, take inventory, guard homes, open doors, mow lawns, play games, and so on"* according to Moravec. A 2015 Wired Magazine article went so far to say "*I believe, by 2040, we will achieve the original goal of robots, i.e.*

robots will be freely moving machines with similar intellectual capabilities as humans."
SINGULARITY!

ChatGPT or Conversational AI

"I think it (ChatGPT) will be more important to doctors than the stethoscope was in the past. No physician who practices high-quality medicine will do so without accessing ChatGPT or some other form of generative AI."

(Doctor Robert Pearl, Stanford University medical school)

ChatGPT is like sitting next to the smartest person in the world **for** *"human like conversations which can answer ANY QUESTION or complete most tasks. This CHATBOT is the artist composing human sounding poems and songs or the class valedictorian to write an A+ essay or the brilliant programmer who writes intricate computer code or explain complex problems, and even pass final exams and tests. This bot can answer anything you'd like answered or write something perfectly like a marketing plan to sell a new product, solving a complex physics problem, and writing a term paper or English composition assignment. ChatGPT is the 'go-to' source for anything you need answered or composed".* (**The Economist Magazine- 2/15/2023**)

ChatGPT (*Chat Generative Pre-trained Transformer)* is a **bot**, more specifically, a chatbot. **A chatbot is a computer program, a software application, that is used to conduct an online conversation** via text or text-to-speech, **as if a person is speaking in a direct conversation with a SUPERSMART, live, human being.** A person asks a question and ***ChatGPT responds WITHIN SECONDS!*** Chatbots are capable of maintaining a conversation with a user in a natural language. The chatbot understands a person's question and intent and then replys based on rules and data written into the computer software of the chatbot. (wikipedia)

ChatGPT was developed by a startup company called OpenAI and launched in ***November 2022***. It quickly attracted attention all over the world for its detailed responses and well expressed answers across many different fields of knowledge. OpenAI's market value was estimated at $29 billion dollars at the time it launched.

Many banks, insurers, telecommuniction companies, e-commerce companies, airlines, hotel chains, retailers, health care providers, government entities and restaurant chains use chatbots to answer simple questions. In the process, companies save millions of dollars by using chatbots to replace human beings. *"Several studies report significant reduction in the cost of customer services, **expected to lead to billions of dollars of economic savings***" according to the Wikipedia profile.

Chatbots are not perfect;
they can get things wrong.
Chatbox users must realize chatbots deal with
bias, prejudice and misinformation
as it scans the internet for responses to
each user's questions and requests.

Chatbots have also been incorporated into devices not primarily meant for computing, such as toys. ***Hello Barbie*** is an Internet-connected version of the doll that uses a chatbot.

The consulting company Forrester has predicted that ***25% of all jobs today (2023) and soon much more will be affected by AI technology.***

"*Many teachers believe ChatGPT could actually help make education better*"

reports **Will Douglas Heavan in the April 6, 2023 edition of MIT Technology Review.** Douglas continues in his report that "*advanced chatbots could be used as powerful classroom aids that make lessons more interactive, teach students media literacy, generate personalized lesson plans, save teachers time on admin, and more. Educational-tech companies including Duolingo and Quizlet, which makes digital flash cards and practice assessments used by half of all high school students in the US, have already integrated OpenAI's chatbot into their apps. And OpenAI has worked with educators to put together a fact sheet about ChatGPT's potential impact in schools. The company says it also consulted educators when it developed a free tool to spot text written by a chatbot (though its accuracy is limited).*"

"*We believe that educational policy experts should decide what works best for their districts and schools when it comes to the use of new technology,*" says Niko Felix, a spokesperson for OpenAI. *"We are engaging with educators across the country to inform them of ChatGPT's capabilities. This is an important conversation to have so that they are aware of the potential benefits and misuse of AI, and so they understand how they might apply it to their classrooms"* Heavan concludes "*it will take time and resources for educators to innovate in this way"*

*If nothing else, **many teachers now recognize that they have an obligation to teach their students about how this new technology works and what it can make possible**. They don't want it to be vilified,"* says David Smith, a professor of bioscience education at Sheffield Hallam University in the UK. *"Teachers want to be taught how to use it. ....."*

""*AI will be in the classroom one way or another. It's vital we get it right*"

Will Douglas Heaven, MIT Technology Review

Northeastern University (Boston) scientists build AI that can predict a person's life (and death)

By Hiawatha Bray Globe Staff,Updated December 31, 2023, 1:00 p.m.

Tina Eliassi-Rad, a computer science professor at Northeastern University and one of the authors of a study showing AI can make surprising predictions about a person's life.

The popular artificial intelligence app ChatGPT can do many things, but it can't tell you how long you're going to live. Not yet, at least.

But now a team of scientists at Boston's Northeastern University and in Denmark say they've built an **experimental AI system that can predict the patterns of a person's life with unsettling accuracy.**

the AI system, called "*Life2vec*," can accurately assess whether a person is extroverted, whether they're likely to emigrate, and even approximately how long they will live!

One of Life2vec's creators, **Sune Lehmann**, said the AI system belongs strictly in the lab for now, because its predictive capabilities could have unpredictable real-world consequences. (*Like 'what consequences', this author asks!?*!)

Life2vec is a "*large language model*" AI built on the **same principles as ChatGPT**. This type of AI can **process vast amounts of data and extract patterns of behavior that are invisible to humans or to less sophisticated software**.

Life2vec was trained on a massive database maintained by Statistics Denmark, a government-funded service that contains detailed information on 6 million citizens. Access to the data is tightly regulated for reasons of privacy, so Lehmann and his colleagues needed special permission to use it.

The information included home and work addresses, school records, medical records, marital status, and career and income data. It also included the results of personality and social behavior tests taken by thousands of Danes. The research team looked at citizen data collected between 2008 and 2015.

"*We now live in an era where we can look at all the data all at once*," said Northeastern computer science professor Tina Eliassi-Rad, a coauthor of the paper. "*It means you can pay attention and learn correlations between every piece of data we have*."

The researchers tested Life2vec's predictive abilities by selecting 100,000 people from the training database. About 30,000 of those chosen had died between 2016 and 2020, after the training period. To make it tougher to predict people's life spans, all 100,000 were between 35 and 65 years old, because relatively few people in this age range would die in the subsequent four years. Still, when it was asked to pick which of them had lived and which had died, **the computer got it right nearly 79 percent of the time.**

Eliassi-Rad and Lehmann aren't sure how the AI could figure this out. They found that even when Life2vec didn't take medical records into account, it was still

fairly accurate in predicting mortality
(*at what age a person dies*)**.**
This suggests that the AI is relying on other factors that affect lifespan,
such as a person's choice of career (job).

Lehmann said that because the **AI is built with detailed information on millions of people,** researchers could use its mortality estimates to figure out the best behaviors for good health. For instance, they could single out all the 40-year-olds who died early, and ask the system about what they had in common.

Life2vec won't produce reliable results for people living in the United States or any other country than Denmark because

Lifw2vec has been trained on the personal data of Danes (Danish people raised in the European country of Denmark), who presumably live differently from people elsewhere. However, a US version may already exist based on data collected from US residents.

"I think it's naive to think they're not (the United States government, US companies, etc) doing it already,"

Lehmann said. The same kind of data stored by Statistics Denmark is already filed away in US corporations and government agencies. Much of it is also held by giant social networks like **Meta**. It's conceivable that organizations are building AI systems (now) that seek to predict the future of their users.

AI might someday be able to predict whether a child will have problems in school. That could be good news, Lehmann said, because parents and teachers could obtain remedial help for the child. But it could also do harm by causing some parents or teachers to give up on the child. (This observer adds - *What kind of parent would give up on their child? Doesn't this say more about the parent or a teacher than the child? Every person has the potential for success and even greatness.*)

"*This is the kind of discussion that we need to start having, because these machines are going to start arriving*," Lehmann said.

Here's something else to ponder about futuristic clothing. Please try to push your imagination out of its familiar boundaries for this idea. How about ***clothing which changes its fabric capabilities based on the temperature of the day?*** For instance, you could change the "capabilities" of your jacket from being light and cool for a warm, summer day to warm and "toasty" for a cold day. It just so happens this is exactly what **Google** computer scientists and **Levi Strauss** clothing designers are **collaborating** to do right now. And, they assure us you can still put these Levi clothes in your washer and dryer.

And, what if clothing could be **made with microscopic, conductive, sensor threads woven into the *fabric which could detect the moods circulating in your mind*?** ***Then, clothes change colors and patterns to express your moods***. Changing your clothes colors could lift your spirits to make you feel better with your favorite colors and patterns when you're feeling sad. Scientists are working on this right now! **The concept is similar to the way light-sensitive eyeglass lenses darken when exposed to sunlight. Dr Liu Xuqing** of the University of Manchester, England, is also experimenting with ways to create antibacterial coatings for fabrics used to make clothes. Dr Liu is testing the process with cotton and polyester. "*One of his thoughts*" according to an article in The Economist Magazine (June 30, 2018), "*is to make conductive threads that could form part of an electric circuit in a person's clothes which would link to sensors that monitor a person's body.*"

And, what **if your clothing could, by its very nature, repel mosquitoes** when you're with friends at a cookout? And, what if the clothes patients wear in the hospital could protect them from contracting a staff infection? What do you think? Is this a possibility too?

AI - Robot JOBS

A Burger Joint Where Robots Make Your Food

Creator, a San Francisco restaurant, opened in June 2018 and offers a $6 gourmet burger, cooked and assembled with no human help.

The Wall Street Journal: article written by Larissa Zimberoff

U.S. Edition - June 22, 2018 - Today's Paper

"Creator "is a San Francisco burger shop where a robot preps, cooks and assembles your meal. Photo: Ryan Darcy

Artificial Intelligence continues to disrupt the world's workforce, eliminating jobs that once belonged to people! The San Francisco restaurant, Creator, is just one example. This restaurant doesn't look like your typical fast food restaurant but rather a luxury home-goods store. It's key components are ***two 14-foot-long burger-making machines***, each comprised of roughly 7,000 parts, including hundreds of sensors. Buns, tomatoes, onions, pickles, seasonings and sauces are stored in clear tubes, which sit over a copper conveyor belt on a wooden base carved into Zaha-Hadid-style swooping lines. Each machine costs under $1 million and prepares up to 120 burgers an hour. (Alex Vardakostas, owner, engineer, and founder, said he expects to improve the machines' speed over time.)

Customers order through a mobile app, with human *"burger consultants"* on hand to offer assistance. (Initially, these human employees will also guide customers through the app, which won't be available to download at the launch.) All burgers will be cooked medium when the restaurant opens; eventually, patrons will be able to customize their burgers' doneness and seasoning. They'll also have their pick of more than a dozen sauces—sunflower tahini, smoked oyster aioli, ballpark mustard—created with the oversight of local chefs Nick Balla and Tu David Phu and Pilot R + D, a culinary research and development firm.

Creator's **robot** grinds the meat—a blend of pasture-raised chuck and brisket—to order.

Once an order is placed, air pressure pushes a brioche roll from La Boulangerie, a local bakery, through a tube. The robot slices, toasts and butters the bun to order, drops it onto a leaf-shaped tray and dollops it with carefully calibrated amounts of sauce. ***Different components*** slice tomatoes, pickles and onions, shred the lettuce and grate the cheese. The robot also grinds the meat—a blend of pasture-raised chuck and brisket—to order. A specialized mechanical grip packs the patty loosely —so much so that, in human hands, it would break apart before reaching the grill. The light handling keeps the grain of the meat aligned, a texture-enhancing technique borrowed from three-Michelin-star chef Heston Blumenthal. Once the patty is done—***thermal sensors and an algorithm determine the temperature and the cooking time—a robotic arm drops the meat onto the bun***. Patrons pick up their orders at the counter when their names appear on a screen. The process **takes about five minutes.**

DaVinci Surgical Robot Technology

What would you think if I told you **a doctor who is a surgeon, standing in a Providence, Rhode Island hospital, could successfully operate on a patient needing a new kidney lying on a hospital bed in Laredo, Texas? It's possible** using DaVinci robot surgery technology. FURTHERMORE, "*the robot records every moment in the surgery so a less experienced surgeon (or even a robot) can use the daVInci robot to perform the same operation*" writes Paul Zane Pilzer in his book "***The NEW Roaring Twenties"*** (2020s).

Robots to Build Houses and Drive Trucks / Taxis / UBER

Autonomous / Self Driving Vehicles

Pizza Delivery?

Sure. Dominoes will deliver, by drone, faster than their delivery person.

Notice the Amazon logo on the photo of the bottom drone. While Amazon is still testing and anticipates launching their

drone delivery service

sometime after 2020, China's second largest retailer, JD, is already delivering boxes of their phones, maternity goods, and fresh food using 40 drones in over 100 villages in rural areas of China. 600 million Chinese people live in rural areas of the country; that's almost more than twice the number of people living in the United States of America. Chinese people in remote villages order products on JD.com. Drones are autonomous, this means **NO HUMAN GUIDANCE, just remotely monitored**; could be someone who simply enters the purchasers address into a computer and the drone is then on its way to deliver. Customers can expect **SAME DAY DELIVERY.** Right now, **Chinese drone delivery is only used in rural areas.** Urban (city) environments have too many tall buildings to navigate safely. JD claims drone delivery costs their company 1/5 of the cost for deliveries by a person and van. The JD drone makes their delivery to a "*Drone Postman*" a short distance from the customer's home. ***The "Drone Postman"*** *then* delivers the package to its final destination, i.e. the customer's home. This 'postman' is often a JD employee whose primary job is teaching people in rural areas how to use JD's shopping APP. Eventually, could the '*postman*' be a robot or android and not a human being?

AI to Replace Journalists and News Reporters

LEFT PHOTO is Watson, a question answering computer system developed by the company IBM. Watson is capable of answering questions posed in a natural language. Watson was developed in IBM's DeepQA project by a research team. The computer system was specifically developed to answer questions on the popular television quiz show, Jeopardy! In 2011, the Watson computer system challenged Jeopardy game champions, former winners Brad Rutter and Ken Jennings. ***Watson had access to 200 million pages of structured and unstructured data and content consuming four terabytes of disk storage including the full text of Wikipedia.*** Watson defeated both former champions and won the first place prize of $1 million. In February 2013, IBM announced that Watson would be used for decisions in lung cancer treatment at Memorial Sloan Kettering Cancer Center, New York City. IBM Watson's former business chief, Manoj Saxena, says 90% of nurses who use Watson now follow its guidance in their care of patients!!. **RIGHT PHOTO** - ***Will AI replace Journalists?*** Google is testing a product that uses artificial intelligence (AI) technology to produce news stories and presenting the idea to newspaper organizations including *The New York Times, The Washington Post* and *The Wall Street Journal*'s owner, News Corp, according to three people familiar with the matter. The tool, known internally at Google by the working title ***Genesis***, can take in information like the details of current events and create content / articles summarizing the news of an event.

"47% of United States jobs are now at risk of being taken over by computer software within the next two decades.....

The Associated Press (news service) now uses computers, not human reporters, to write more than 3,000 financial news stories every three months...."

excerpts from two articles by New York Times reporter Tom Friedman. "*How to Beat the Bots*" (June 10, 2015) and "*Hillary, Jeb, Facebook and Disorder*" (May 20, **2015)**

Robots & Drones to Fight Wars and Help Police

Top Photo is a drone / robot used by police in the country of Dubai. Visitors to Dubai and Dubai citizens can ask the robot questions, pay fines and access a variety of police information via purpose-built software. Its facial recognition technology is only 80% accurate but the robot's camera eyes will send live feeds to a command control center for background analysis of suspicious people. ***MIddle 2 photos*** are US Army drones used on the battlefield to detect buried bombs, investigate areas occupied by the enemy or launch missiles against enemies. ***Bottom photos*** are American police officers using drones / robots for surveillance of dangerous places. (CNN Business)

Robots Who Are Citizens of Countries

Scan the **QR CODE** ABOVE TO WATCH A REPORTER INTERVIEW SOPHIA

series of photos featuring Sophia, a realistic ***humanoid robot*** capable of displaying humanlike expressions and interactions (including conversations) with people. CLOCKWISE - Sophia discussed a book, is interviewed by reportrers at an AI Conference in 2017, and a photo of the back of her head. Sophia is designed for research, education, and entertainment and helps promote public discussion about AI ethics and the future of robotics. Sophia is described as a *'social humanoid'* robot developed by the Hong Kong-based company **Hanson Robotics**. Sophia was activated on February 14, 2016, and made its first public appearance in mid-March 2016 at South by Southwest (SXSW) in Austin, Texas, United States. Sophia is marketed as a "***social robot***" that can mimic social behavior and induce feelings of love in humans.

Sophia has been covered by media around the globe, and has participated in many high-profile interviews. In ***October 2017, Sophia was granted Saudi Arabian citizenship, becoming the first robot to receive legal personhood in any country.*** ***(wikipedia)***

Will AI Keep Eliminating Jobs Until There Are NO JOBS for Humans?

" NO!! NEVER!!! "

History has always revealed
that far from making working humans obsolete,
technology has long been a
"great job-creating machine."

Lumberjacks, milkmen, movie projectionists, typesetters at printing companies, and video store clerks DID IN FACT disappear because of technological advances.

*But **do not panic.***

*Technology also created a host of **new jobs** that never before existed **like:** computing specialists, data analysts, social media managers, ChatGPT Prompters, digital marketers, energy engineers, software and app developers, cyber security analysts, drone operators, drone maintenance personnel, YouTube content creators and entrepreneurs exploiting new technology...*

How many people are working today with jobs that didn't exist 50 years ago?

A report by the Institute for the Future estimated that less than
85 percent of the jobs that will exist in 2030 haven't been invented yet".
(Source - FEE - Foundation of Economic Education)

THIS IS THE REASON *WHY*
YOU MUST ALWAYS LOOK TO THE FUTURE
TO ANTICIPATE THE SKILLS YOU'LL NEED
TO BE SUCCESSFUL IN THE FUTURE.

Future OPPORTUNITIES are always coming!!

Jobs MOST In Demand

Fast Company is a monthly American business magazine published in print and online that focuses on technology, business, and design. **The New York Post** is a daily New York city newspaper. Both publications published articles in **September 2018** about the most sought after jobs in the global marketplace. Those jobs are in ***Data Analytics, Marketing,*** and ***Cyber Security.*** Here are a few of the jobs mentioned:

1. **Cyber Security:** from ***'Good' Hackers*** whose job is to find weaknesses in the fire walls protecting a company's data to ***Cyber Security Analysts*** who analyze threats and attacks on a company data base, these jobs will continue to be some of the most sought after with the highest paying salaries.

2. **Data Analysts** - using scientific methods, processes, algorithms and systems to extract knowledge, answers, and insights from '**data**'.

3. **Marketing** - collaborating with teams of analysts using '**data**' to identify customer profiles, to determine the products they want to buy, designing and creating an advertising message, determining the right channel (social media, television, etc) to advertise on, and, finally, analyzing the results of marketing campaigns to make the next campaign better.

4. **Sales Representative** - simply put, a sales person. Sales people are very important people in most organizations and, as a result, often paid very well. A sales person's job is to ***listen, collect data, and offer advice or a service that can help other*** companies and organizations be more successful. Salespeople are good at meeting people, listening to their needs and challenges, and then suggesting data based solutions for the people, companies, and organizations they speak with for their success.

5. **'Big Data' Developer** - is a computer scientist who develops, maintains, tests, and evaluates '**data' based** solutions within organizations.

6. **Brand Manager** - What do ***Nike***, ***Apple*** and the ***Kardashians*** have in common? They're all huge brands that leave consumers thirsty for more of whatever they're selling. A brand manager has a lot to do with that. ***Good writing***, managing relationships, and ***creative skills*** are important.(**MediaBistro**)

7. **Full Stack Engineer** - A full stack developer is an engineer who can handle all the work of databases, servers, and systems engineering. "***Full stack***" refers to the collection of a series of technologies needed to complete a project. The "full stack" engineer needs to be proficient in multiple programming languages, such as JAVA, PHP, C #, Python, Ruby, Perl, etc. Design skills are very important too; as well as, global thinking, communication skills (reading, writing, observation), creativity, curiosity and time management skills.

8. **Registered Nurses and Home Health Care**: whether it's working in hospitals or visiting nurses to homes and nursing homes, the medical and empathy skills of nurses makes their services invaluable according to Forbes Magazine.

The most important skills future jobs will require:
critical thinking, data analysis, reading, collaboration, all forms communication (writing, speaking, body language, listening, etc), imagination, and, most importantly, creativity.

Data Jobs

*It's a 21st century **'Gold Rush'!!** But, instead of mining a precious metal, it's a rush to mine **'Data'.*** Companies, organizations, and individuals compete to mine or find data, develop best practices for organizing/segmenting, analyzing and then, exploiting it; in other words, taking advantage of the '*value*' or '*truth*' that good data reveals.

Companies compete to **recruit people** with the ability to collect, analyze, secure, make sense of, and exploit data. Good analysts use reliable data to help companies understand their customers, keep them happy, find new customers, solve problems, and be profitable. Data answers questions about '*where*', '*when*', and '*what to say*'. *Direct mail? Newspapers? Facebook? Google? YouTube,*? *Spotify*? *What time of the day*? *What week and month*? *15% savings*? *Buy one, get one free*? *Use the color red or black?* **Data answers these questions!**

To hire the best data mining and analytic candidates, many companies offer **signing bonuses** to candidates with this type of resume:

- customer service or professional office **internship** experience
- **dependability**; meet expectations
- **degrees/certificates** from reputable institutions in computer science, programming, information systems, business or mathematics.
- strong **technology skills**
- excellent judgment and **problem-solving skills**
- ability to repetitively follow a highly technical process with the highest **attention to detail**
- strong quantitative and **analytical skills** focusing on generating outcome based reporting
- Excellent **written and verbal communication skills; story telling/sales skills.**
- ability to **work on a team** to create, present, and execute plans to meet the goals of their teams and company

Sales people will always be in demand and will prosper in the 21st century. ***Guy Kawasaki,*** former Chief Evangelist at **Apple,** present Chief Evangelist of **Canva**, an online graphic design tool, and the author of 15 books including "*Wise Guy: Lessons From A Life*", proclaims the

most valuable skill "*I ever learned was how to sell.*

I encourage everyone to learn how to sell". Whether you realize it or not, the ability to sell will increase your ability to be successful in life. ***You will always be required to sell something, starting with why the company you want to work for should hire you!!!*** Another word for '

'selling' is a form of' storytelling'.

The ability to tell your story, honestly, humbly, and with purpose, and value, is exactly what good sales people do.

A *job interview* or a *networking* opportunity requires you to tell your story in a way that people become interested in you.

People who can sell can step out of their comfort zone to network, meet new people, listen and observe as well as willingly offer help to a person in need without demanding something in return.

People tell their stories not only through their words, but through their body language, with a smile, good eye contact, as well as the ability to listen, showing interest in what the other person has to say, and, saying '*thank you*'.

Projecting a '**personal brand**' of good values and experience in something that has economic value accompanied by unselfishness will always help a person's career and their network . A '**personal brand**' of helping someone in need will always pay long term rewards in life, in relationships, and for jobs. . Make sure your brand projects ***empathy and kindness along with a skill, knowledge, and value.***

This is all part of telling your story, of selling the value of YOU!

FUTURE JOBS - closer than you think!

Front page of the November 30th, 2015 edition of the Wall Street Journal. This photo shows "Pepper", a humanoid robot, interacting with senior citizens at a nursing home in Japan. This particular nursing home is testing robots like Pepper leading recreational activities at the home. **Yet, in the process of using humanoids, new jobs are created. Can you think of any of these new, 21st century jobs?**

```
<h1>Computer Code</h1>
<img src="../image/story/2013/88-computercode.jpg" width="700" height="394" id="vplayer">
<script type="text/javascript" src="jquery-1.7.1.min.js"></script>
<script type="text/javascript" src="videoplayer.js"></script>
<script type="text/javascript">
     var publishedDate = "20130326"; //reverse date format
     var origtitle = "Did you know kids are learning about computer coding?";
     var origurl = publishedDate+"_computercode_hi.mp4";
     videoplayer.smooth = true;
     videoplayer.wmode = "opaque";
     videoplayer.embedPlayer('vplayer',origurl,null,null,origtitle,false);

     //to handle the title overlay.
     videoplayer.onStateChange = function(vplayer,state){
     if (state=="PLAY_STATE") {
          $("#kiosk h1").fadeOut();
     } else if (state=="STOPPED_STATE" || state=="PAUSE_STATE") {
          $("#kiosk h1").fadeIn();
     }
}
</script>
```

The *image above represents a computer program or 'code'.* A computer program is a sequence of instructions written to tell a computer what to do. A computer and every product which uses a computer to perform its tasks, from mobile phones to automobiles, require a program to run it. In fact, the robot in the photo above follows a series of instructions written as a computer program or code. A collection of computer programs is referred to as 'software'. Computer programs are typically written by people called computer programmers.

Computer programming jobs are in demand with high salaries and very good benefits.

"REMOTE" JOBS
aka Working From Home

Evidence suggests that some jobs are changing to remote locations at a rapid rate. While the 2020 COVID pandemic certainly accelerated the pace of *'remote'* employment, the transition from having to work in the company office to **working at home** had already begun because of advancements in technology. Faster internet speeds, cloud computing, and, of course, ZOOM software have been part of the technical revolution enabling this change. But, there have also been other beneficial, business reasons, many of which were reinforced by the 2020 global COVID pandemic, to allow employees to work from home. When governments forced business offices to close in order to protect employees from the deadly COVID spread in 2020, many employers found their employees were as effective and productive as when they were in the office and, in some cases, more productive! Employees were pleased they could do their jobs from home and employers were, not only pleased with their employee productivity, but, in many cases, business owners saved money. Energy costs for heating and lighting offices decreased with fewer employees in the building. For companies having to rent office space, less office space was needed with fewer people in the building, thus, less rent paid to commerce office space landlords. While some company leaders like Reed Hastings at **Netflix** prefer to have all employees work in the company offices, other companies like **Working Planet, a digital advertising company in Providence RI, told all their employees in August of 2020 to permanently work from home**. *"I found during COVID our staff was as effective working at home as they were commuting to our Providence office. And, in some cases, the staff was more effective! By closing our Providence office, I am now able to hire people from all over the country rather than within a radius of 50 miles of our Providence office. Remote employment gives the company access to MORE GREAT talent by being able to hire people from all over the United States not just the Providence area. Furthermore, a remote workforce allows me to sell the Providence office building I own and save money by not having to pay government property taxes, building maintenance like snow plowing and landscaping, and costs for heating and lighting the building. The costs for my running my business with remote employment are significant less"* states **Working Planet** Co-Founder and President Soren Ryherd, *"while the opportunity to grow my business increases dramatically with access to GREAT TALENT from all over the country not just the Providence area".*

A survey of global firms conducted by the **World Economic Forum** in 2020 found that more than 80% of company employers intend to accelerate plans to digitise their business processes and provide more opportunities for remote work from home. About 43% of these same company employers also expected remote work opportunities will reduce the number of people working at their company. High housing and property costs and high taxes in major cities like New York, San Francisco, Boston, and even Providence, RI , have created obstacles for some companies to grow. If tech workers especially can more easily contribute to top companies grow while living outside of major, very expensive cities, then employment can increase by maximizing opportunities inherent in technology as cited in an **Economist Magazine**, 12/10/20, report.

According to an article in the **Harvard Business Review,** *"today's company employees are more dispersed, yet more connected, than ever before. Globalization, the rising gig economy, and the COVID-19 pandemic have shown that companies can move quickly to enable their employees to* ***communicate, collaborate, create, and stay productive*** *independent of physical location. Research conducted by Harvard Business Review Analytic Services reveals that remote work forces and the need for the right digital workplace tools and capabilities, will only continue to grow. Done right, these digital tools and capabilities can positively impact organizations."* This author might also add that the aforementioned **digital tools and capabilities enable more employees to balance their work, personal, and family responsibilities better by working from home while, at the same time, being paid well for their services.**

Entrepreneurship

Jeff Bezos, the founder and Chairman of ***Amazon***, began his company by offering people ***a differnt way*** to buy books. He started small by launching a web site for people to buy books rather than going to a book store. Bezos stored books in his garage and a local warehouse for shipment and delivery. Today, Amazon sells everything from books and basketballs to food and footware!! Bezos is the ***richest person in the world.***

Martha De La Torre created ***a different way*** for people and companies to advertise to the Latino community in the Los Angeles, California area by launching, in 1988, ***El Clasificado,*** a free, weekly Spanish-language classified print publication that today reaches more than 1.5 million people.

In 1998, Marta brought her classified advertising medium from print to the internet when she launched ***ElClasificado.com***, now the largest Spanish language classified marketplace in the U.S. El Clasificado has over $20 million dollars in sales today!

Entrepreneurship is ***a***bout ***people starting businesses!***

Entrepreneurship is the foundation of a healthy economy. The businesses that entrepreneurs start and daily manage provide money for themselves and their loved ones as well as jobs for other people and, subesquently, taxes for cities, states, and the federal governement to pay police, fire, school teachers, and the military, as well as keeping the city, state, and country's infrastructure, i.e. computer systems, the roads, airports, and railroads, in good condition.

Starting a business and managing a successful business are **2 different exercises.**

Starting a business happens in a couple of ways.

First, entrepreneurs start businesses through '***invention***'. For example, businesses are ***create***d when someone ***designs*** a new product like Earle Dickson did in 1921 with the ***band-aid*** or, in 1947, when Martin Cooper's first verstion of a ***mobile phone***. And, how about Albert J. Parkhouse's ***clothes hanger*** in 1903 or William Naismith's new game, ***basketball***, in 1891?

But, more often, entrepreneurship is about '***innovation***'; in other words, when people improve (***change for the better***) an existing product or service. For example, look how **Jeff Bezos** has changed shopping. His company, **Amazon**, allows people to shop for their clothes, food, books, and bicycles in a different way. Instead of traveling to a store to buy products, Bezos enables people to shop from anywhere by using the internet, through a mobile phone or lap top, to log onto his Amazon web site to shop. **Jack Ma** offers a similar service in China through his web based company, **Alibaba.**

Here are 2 other entrepreneurial **examples** using **innovation: George Crum and Herman Lay. George Crum** purportedly invented **potato chips**. On August 24, 1853, Crum, an African American, was a cook at a resort in upstate New York. One of his customers didn't like his french fries and kept sending them back saying they were too thick. Crum immediately thought about how to address this customer's complaint. Crum quickly ***changed the way he made french fries*** by creating a new batch using potatoes that were sliced paper thin and then fried to a crisp. The previously unhappy customer loved them!!! Problem solved; customer happy. By the way, the customer was none other than American railroad tycoon, Cornelius Vanderbilt, one of the richest people in the world. A ***further innovation*** with potato chips took place during the 1920s when an American businessman from North Carolina, named ***Herman Lay***, began selling potato chips out of the trunk of his car to grocery stores across the south in sealed, wax paper bags to reduce crumbling while keeping the chips fresh and crisp. By 1938, Lay was so successful that his ***Lay's potato chips*** went into mass production and eventually became the first successfully marketed national potato chip brand.

Steve Jobs (APPLE), **Martha de la Torr**e (El Clasificado), **Sheila Lirio Marcelo** (CARE.com), **Elon Musk** (TESLA), **Mark Zuckerburg** (FACEBOOK) and **Garrett Camp and Travis Kalanick** (UBER) are just some of this century's entrepreneurs who ***changed the way people do things*** and, in the process, ***started businesses*** to take advantage of the popularitiy of their innovations.

Second, entrepreneurs need specific **qualities and skills** to be successful. Entrepreneurs need **courage, curiosity,** and **self confidence** to accept the challenges of starting a business. Entrepreneurs also need business skills like **time management, asking lots of questions, data collection and analysis, storytelling/selling, networking, futuristic** and **critical thinking, basic accounting,** and a continuous **commitment to learning** new things to ensure the success of their new business.

Start a business! Innovate!!!!! Yes, you can!!!!!

Why Buy Your Latest Fashions When You Can RENT!

that's right - ***rent your clothes!*** Stay fashionable with the latest handbags, jewelry, designer suits, prom dresses. You want it, rent it. For $159 per month, ***Rent the Runway*** (KTR) is one company successfully doing this NOW. Subscribers can order up to 4 items at one time. All clothes are cleaned and pressed. Money back if not satisfied. Several top American clothing brands like Ann Taylor and NY&Co are testing the rent strategy and could launch by 2024**.**

Job Interviews

According to a Robert Half International (a global consulting company based in California which helps companies with their employment needs) survey cited in a April 2nd, 2019, report in the Wall Street Journal, **80% of business owners as well as people with hiring responsibilities in companies claim they have hired the wrong person** for a job in their company. At least 2 Artificial Intelligence companies have responded to this **opportunity** by creating an AI based solution for hiring the best person for the right job.

Voicesense
is a speech based AI system
which analyzes
200 different speech patterns,
like tone of voice and pace of speech,
to identify the best job applicants
for companies
seeking the '*right*' person
for the '*right*' job.

Voicesense has collected **data on speech patterns** and the personalities associated with them to identify a candidates ambition, dependability, creativity, and temperament. **Companies upload audio and videos from recorded candidate job interviews to Voicesense**'s cloud to be analyzed. Voicesense gives each job applicant a score or grade from each interview. A company then uses the score assigned to each job applicant by Voicsense's software to match the best applicant with their posted job. For instance,"*if a company is looking for a salesperson, our software would listen for specific comments that were highly active and engaged in the conversation of the interview*" to find the best candidates for the sales positions, according to Yoav Degnai, Voicesense's CEO (chief executive officer). Voicesense claims they can save companies time and money interviewing job applicants but, more importantly, Voicesense is better at finding the best candidate for each job.

If AI based systems are analyzing video and well as speech patterns from the recorded interviews, just think about what physical standards are given a score and then passed onto the companies looking for the best job applicants for their jobs. A company called **HireVue uses visual analysis software to examine facial movements they call "*microexpressions*" to match the best job applicant for a specific job**. A health care system in Florida call AdventHealth Orlando is using Hirevue to find the best candidates for their jobs. Hirevue's assessment of job applicants is matched with data points which correspond to ideal job description attributes. **Applicants with the highest scores are then called in for face to face interviews** with AdventHealth human resource personnel and department supervisors. AdventHealth operates eight hospitals in Florida employing 25,000 people. AdventHealth interviews more than 350,000 job applicants a year and ultimately hires 8,000 people from this applicant pool. Since using Hirevue, AdventHealth has decreased the time it takes to fill a job from 42 days to 36 days according to Karla Muniz, AdventHealth's human resource director.

Other technology companies are using Artificial Intelligence with increasingly very powerful machine learning methods. In September of 2018, two AI companies, Affectiva and Nuance Communications, announced they are working together to put emotional intelligence into **Dragon Drive**, Nuance's conversational automobile assistant. This technology will use cameras to detect facial expressions such as smiles and microphones to pick up vocal expressions such as anger. The company's algorithms then use deep learning, computer vision and speech technology to identify emotions. This technology will soon be found in millions of automobiles like Audi, BMW, Ford, GM and Toyota to determine when car drivers are getting dangerously tired. When a driver exhibits signs that they're getting tired, the car's voice assistant ask's the driver "*you seem tired. Do you want to pull over for a break*?" Nuance's Chief Techology's Officer, Joe Petro, believes this technology will be in use in "*just a couple of years*." Could this software be used in job interviews?

Artificial Intelligence is assuming increased responsibilities in companies and organizations. Be prepared; your next job interview may be recorded and then sent to Artificial Intelligent software in the cloud to analyze your speech, facial expressions, how you dressed, and maybe other physical characteristics to determine if you are the best candidate for the job you're applying for.

Virtual Vacations!

Virtual Reality will continue to change the way people learn, heal and vacation. ***Virtual reality will complement classroom teacher instructions.*** **The *French language will be taught through virtual experiences speaking with people in Paris or Port au Prince.*** Students will learn about the greatest artists of all time by a virtual guided tour of the Guggenheim Museum in New York City. Students will understand the engineering of robots by being part of a virtual conversation of engineering and computer science majors at the Massachusetts Institute of Technology (MIT). And, if the prices are too high for an actual vacation trip to DisneyWorld in Florida, how about **a virtual vacation at Disney to give you the closest experience to actually walking along Disney Main Street?**

Students using ***Virtual Reality headsets in a classroom activity.*** Medical School professors are excited about improving education by using virtual reality. *"First of all, you will be able to improve your understanding of the human body"* one professor claimed. *"Then you will be able to learn new medical techniques. My residents will be able to* ***practice an operation in a virtual reality situation, like they are operating on or examining a real human body*** *before they ever go to the hospital to see patients."*

travel and site see in the city of ***Paris, France***, using virtual reality technology.

And then, there is ***Augmented Reality; i.e. an interactive experience in a real-world environment where the objects in this real world are enhanced or added by computer-generated visual, auditory, even smell, perceptions and information***. Michael Abrash, formerly the Chief Scientist at Oculus before the virtual reality company was purchased by Facebook for $2.3 billion dollars, stated "*augmented reality can scan real environments, convincingly, into a headset, or it could place you in another environment to* ***test your reactions or teach specific skills.*** *This could serve as the ultimate system that makes you feel like you are anywhere on the planet, blurring the line between real-world and Virtual Reality. The real significance of augmented VR is being able to share any environment... locally or across the world*" for multiple, educational purposes.

United States Military combat training using virtual AND augmented reality technology.

FOOD - Burgers Without The Beef!!

Really????

Whoppers. Big Macs. Cheeseburgers.

Without real 'meat'????

In 2013, the world's first burger

made in a science lab

was cooked in butter and served at a fancy press conference. **This one burger cost $330,000!** "***Close to meat but not that juicy***" one food critic wrote after trying it.

This new burger was paid for by Google co-Founder, Sergey Brin, in a Google sponsored test of a new technique called "***cellular agriculture"*** for making edible meat products in a different way, i.e. NO DEAD ANIMALS. CELLULAR AGRICULTURE takes the cells for real animal muscle tissue to create a product that tastes like real beef. These animal cells are aged in a ***'bioreactor'*** with a special nutrient broth or soup before turning into a *beef looking product* tasting close to the real beef we eat at McDonalds or Wendy's. In 2018, The US Food and Drug Administration ruled that *'soy leghemoglobin'*, a protein-based color additive that is used to make laboratory *Impossible Burgers* "bleed" like real meat, is ***safe***!

Other scientists are playing catch-up by creating

a ***"plant-based" meat***

alternative made from a combination of non-animal products which tastes and looks likes traditional meat; in fact, plant based meat is already on the market. ***The biggest name*** of the producers of '***plant based meat***' is ***Impossible Foods*** whose '*make believe*' meat sells in more than 5,000 restaurants and fast food chains in the US and Asia and available in supermarkets in 2019. ***Impossible Foods*** said its burger will go on sale in "*select retail or grocery stores*" in September of 2019. ***Extra good news,*** burger fans. If you live in the US, you'll be able to

buy an 'Impossible Whopper' from any of Burger King's 7,200 outlets

as of August of 2019.

Impossible's more than 100 scientists and engineers uses scientific techniques to identify the molecules released when meat is cooked. The key to their formula is the oxygen-carrying molecule '**heme**', which contains iron that gives meat its color and metallic tang. **Impossible** has a few competitors, particularly **Beyond Meat**, which uses pea protein (among other ingredients) to replicate ground beef. **Beyond Meat**'s product is ***sold in supermarket chains like Tesco in the UK and Whole Foods*** in the US, near the real meat and chicken compartments. Both **Impossible** and **Beyond** started selling new, improved versions of their burgers in mid-January of 2019.

Why create alternatives to real beef? Livestock raised for food produces about 15% of the world's global **greenhouse-gas emissions**. (You may have heard that if cows were a country, this country would be the world's third biggest greenhouse gas emitter.) A quarter of the planet's ice-free land is used to graze cows, and a third of all cropland is used to grow food for them. A growing world population will make things worse. Greenhouse gases from food production will rise by as much as 92% further polluting and warming an already warming planet.

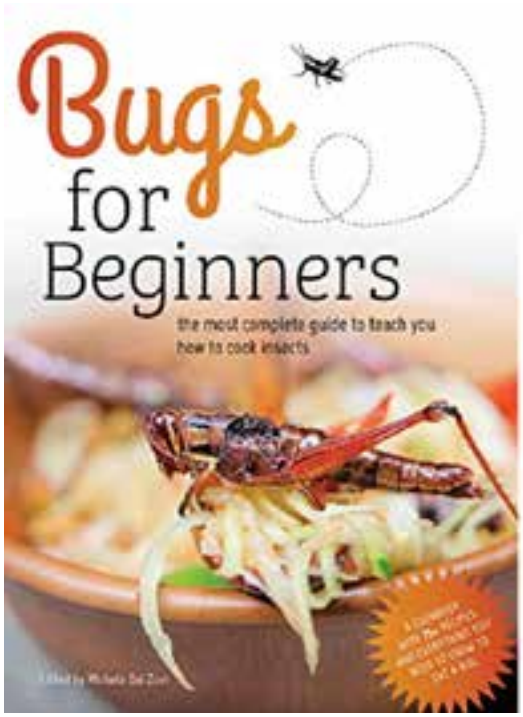
"SEAWEEDs are routinely eaten today across East Asian countries" according to a special report on ***THE FUTURE OF FOOD*** in the October 2nd, 2021 article in **The Economist Magazine**. *"Kelp is a large ocean-growing seaweed that grows naturally in underwater forests. Recently, companies have started to farm and harvest kelp on the east coast of the US as well as in Europe. Kelp is loaded with minerals and fibre AND a lot more sustainable,"* that is, easier and less expensive to grow than more traditional foods in western countries like the United States, Canada, England, and other European countries. **The New York Times** called **kelp** ***the "climate-friendly vegetable you ought to eat."*** *"Kelp is a nutritional powerhouse rich in many vitamins (A, B, especially B12, C, D, E, and K) and minerals (potassium, calcium, magnesium, nitrogen, zinc, copper, chromium, selenium and more),"* according to **Angel Planells**, a Seattle-based registered dietitian nutritionist and national media spokesperson for the Academy of Nutrition & Dietetics. *"Kelp, the sea vegetable, earns its title as **a 'superfood'** not just because it's packed with vitamins and minerals, but also because it is rich in healthy fats and fiber. **Kelp has been studied for its anti-inflammatory properties, its ability to help those with diabetes** that struggle with blood glucose levels, and also may **aid in weight loss** as an obesity treatment "* writes **Emily Shiffe**r in ***Healthy Eating***.

Manfred Kroger, a professor emeritus of food science at Penn State University in University Park, concludes "***what people choose to eat is conditioned by culture***".

Korean Kelp Chips

Another food group that is proven good for you and less harmful to the environment is ***INSECTS***! In the same **Economist Magazine** article, the authors write *"**around 1,900 species of insects are now being eaten around the world**. For example, the food from the Oaxaca region in southern Mexico, arguably Mexico's most diverse and delicious cuisine, features **fried grasshoppers*** seasoned with lime, chilies and salt rolled into a fresh corn tortilla. *"Drinkers in Thailand snack on deep-fried, **thumb sized beetles**; people working the fields of southern Africa prefer **chubby mopane worms**. 2 billion people choose to eat insects on a regular basis".* In a July 4, **2004 edition of National Geographic**, *"Japanese Gourmands, that is, people who love*

Keep this in mind, the hardest insect to eat is... your first one.



ants are everywhere, easy to catch, and actually taste good.
photo by Maciej Forc. Flickr

*food, savor aquatic fly larvae sautéed in sugar and soy sauce. **De-winged dragonflies boiled in coconut milk with ginger and garlic*** are a delicacy in Bali. ***Grubs** are savored in New Guinea and aboriginal Australia* and *during the spring rains **in Ghana, winged termites are collected and fried, roasted, or made into bread.** In South Africa these insects are eaten with cornmeal porridge."* **National Geographic** author Sharon Guynap continued " *If you think eating insects is gross, you may be in the cultural minority. **Throughout history, people have relished insects as food.** Today, many cultures still do". "Ten thousand years ago hunters and gatherers ate bugs to survive. They probably learned what was edible from observing what animals ate',* according to Gene DeFoliart, a professor emeritus of entomology at the University of Wisconsin-Madison. *"Eating insects certainly is an old tradition"* DeFoliart continues. *"The ancient Romans and Greeks dined on insects. Pliny, the first-century Roman scholar and author of 'Historia Naturalis', wrote that 'Roman aristocrats loved to eat beetle larvae reared on flour and wine. Aristotle, the fourth-century Greek philosopher and scientist, described in his writings the ideal time to harvest cicadas: The **larva of the cicada*** on attaining full size in the ground becomes a nymph; then ***it tastes best, before the husk is broken**. The Old Testament encouraged Christians and Jews to consume locusts, beetles, and grasshoppers. **St. John the Baptist is said to have survived on locusts and honey when he lived in the desert**. In the mid-19th century Major Howard Egan, a superintendent of the Pony Express in Nevada, observed a **Paiute Indian expedition where the object of the hunt was neither bison nor rabbit, but rather the wingless Mormon cricket.*** In ***Latin America cicadas, fire-roasted tarantulas, and ants are prevalent in traditional dishes**. One of the most famous culinary insects, the agave worm, is eaten on tortillas and placed in bottles of mezcal liquor in Mexico."*

Scientists have also analyzed **empirical data** on ***the nutrition value of the foods eaten today*** in wealthy, industrialized countries like the **United States**, Canada, and the European Union ***and the nutrition of alternative foods like seaweed and insects.*** ***Hamburger,*** for example, ***is roughly 18 percent protein and 18 percent fat while cooked grasshopper contains up to 60 percent protein with just 6 percent fat.*** From the **Edible Insects web site** - "*insects are a real animal protein that includes all nine essential amino acids; they're a prebiotic fiber (nutrition for probiotics), very high in antioxidants, a perfect Omega 3:6 balance, high in B12, Calcium, Zinc, Iron, and more. Insects are also a very bio-available food source".* Moreover, fish and insect fatty acids are unsaturated and, as a result, healthier.

AS IMPORTANTLY,

insect farming and ***seaweed agriculture*** are ***less harmful to the environment THAN*** modern day ***farming of cattle, soybean*** and other products found in supermarkets and on American dinner tables.

There is a ***delicate balance between the food, water, and industrial products (cars, computers, clothes, homes, etc) people depend upon and the sustain-ability of an environmentally safe and healthy planet which people can live on***.

Many scientists claim farming, growing wheat and vegetables, and raising cows, sheep, and hogs harms the earth's environment . "***Meat production is a major cause of global warming.*** For example, *scientists have published a surprising amount of research on* ***animal flatulance (farts)*** *polluting the earth's climate"* according to **Dani Rabaiotti**, environmental scientist and co-author of *'True or Poo?'. One cow can produce up to 200kg of* ***methane*** *a year. Methane is one of the gases that* ***causes the worst global warming***. *It has been hypothesized that large* ***dinosaurs*** *may have changed the Earth's climate with their* ***farts****".*

Furthermore, cutting down trees, clearing forests, i.e. ***global deforestation***, to create farms to feed cattle, grow crops, and expand living areas ***eliminates the number of trees and other vegetation that produce oxygen and capture toxic carbon, methane, and other harmful carbon related gases on planet earth***. **Heather J. Johnson from Vanderbilt University** writes in a 2015 **National Geographic** article writes "***rainforests are critically important to the well-being of our planet***. *Tropical rainforests encompass approximately 3 billion acres of vegetation and are sometimes described as the Earth's thermostat. Rainforests produce about 20% of our oxygen and capture and store a huge amount of harmful carbon dioxide, thus drastically reducing the impact of greenhouse gas emissions. Massive amounts of solar radiation are also absorbed, helping regulate temperatures around the globe. Taken together, these processes help to stabilize Earth's climate. Rainforests also help maintain the world's water cycle. More than 50% of precipitation striking a rainforest is returned to the atmosphere by evapotranspiration, helping regulate healthy rainfall around the planet. Rainforests also store a considerable percentage of the world's freshwater, with the Amazon Basin alone storing 1/5th.... Rainforests are disappearing at an alarmingly fast pace, largely due to human development over the past few centuries. Once covering 14% of land on Earth, rainforests now make up only 6%. Since 1947, the total area of tropical rainforests has probably been reduced by more than half, to about 3 million square miles..... Such rapid loss is due to the fact that 100 acres of rainforest are cleared every minute for agricultural and industrial development. In America's Pacific Northwest's rainforests, logging companies cut down trees for timber while paper industries use the wood for pulp. In South America's Amazon rainforest, large-scale agricultural industries, such as cattle ranching, clear huge tracts of forests for arable land. In the Congo rainforest, roads and other infrastructure development have reduced habitat and cut off migration corridors for many rainforest species. Throughout both the Amazon and Congo, mining and logging operations clear-cut to build roads and dig mines. Some rainforests are threatened by massive hydroelectric power projects, where dams flood acres of land. Development is encroaching on rainforest habitats from all sides."*

Cattle and crop farming significantly depletes the earth's precious fresh water supply. *"Agriculture is by far the largest consumer of the Earth's available freshwater: 70% of 'blue water' withdrawals from rivers, lakes, and aquifers are for agricultural usage, three times more than 50 years ago. By 2050, the global water demand of agriculture is estimated to increase by another 19% due to farm irrigation needs*" according to global agriculture.org.

Gene DeFoliart, the aforementioned professor emeritus of entomology at the University of Wisconsin-Madison, adds *"insects in our diets worldwide will reduce the need for meat and therefore help fight global warming... In our preoccupation with cattle, we have denuded the planet of vegetation. Insect farming is arguably much more efficient than cattle production. One hundred pounds of feed produces 10 pound of beef, while the same amount of feed yields 45 pounds of cricket."* DeFoliart adds the use of pesticides to protect crops and fertilize land also presents other dangers for the earth. "*People are poisoning the planet (*especially the earth's water supplies*) by ridding it of insects, rather than eating insects and keeping artificial chemicals off the plants we eat.*"

These are just a few of many challenges facing the leaders of the earth's* 195 *countries in the 21st century.

3D Manufacturing

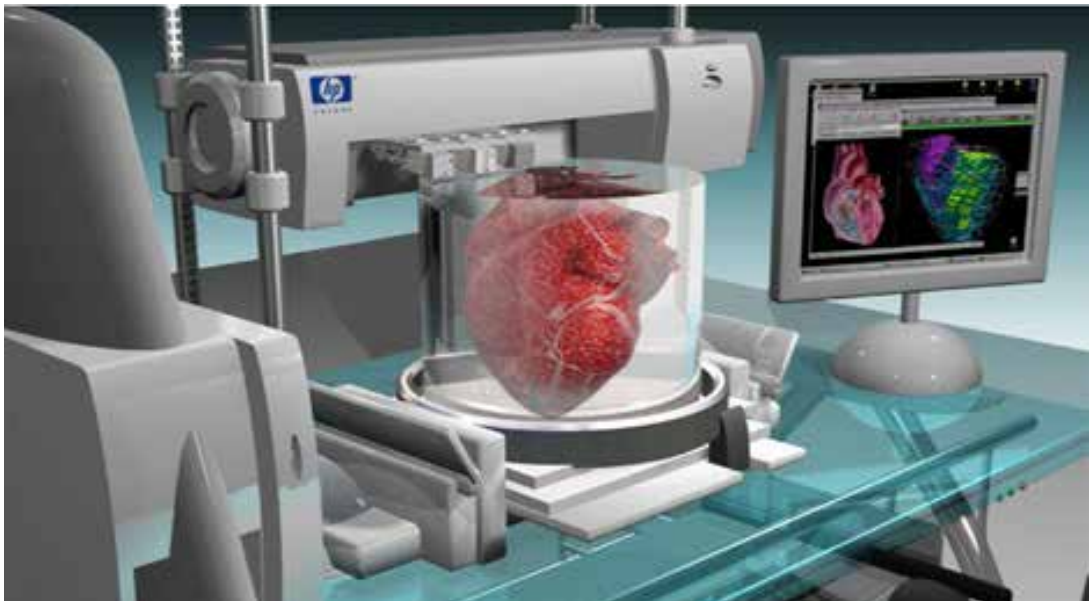
Design and manufacture your own wardrobe.

You'll design your clothes yourself on your home computer then print the clothes you've designed on your home 3D printer. From shoes to prom dresses and tuxedos, you'll design and produce clothes on your home 3D printer!!! Or, you'll purchase designs of famous designers to be made on your home 3D printer. If the clothes you design become popular, you'll be selling the computer programs (code) of your designs on Amazon or you'll create your own web site displaying clothes you've designed for people to buy. After your customers buy the computer program of the clothes you've designed, you will send your customers your clothes design in an **email** through **Blockchain,** the most secure system for sending electronic information. Your email will contain the attachment containing the code of the clothing you've designed. Your customer will then be able to print your design of their new clothes on their 3D home printer. Prices for home 3D printers have become very affordable as more and more people buy them.

3D Home Construction

Building homes using 3D technology? Yes. Cars and other products too. The term "3D printing or manufacturing" can refer to a variety of processes using a variety of materials (**plastics, concrete, epoxy, even skin)** in which the material is "*joined or solidified under computer control with materials being mixed together (such as liquids or powder grains being fused together), and then applied in the* ***construction process layer by layer***." A startup company called *Mighty Buildings* is automating up to 80% of the home building process using 3D printing/manfacturing. The company claims it can build a home with **95% fewer labor hours and twice as fast as** traditional construction. The company can print more of the building structure than previously possible, including overhangs and roof structures. Robots help add interior and exterior finishes, while humans are left to do the detail work that's still beyond the grasp of production-scale automation. The innovative approach and **efficiencies** in terms of both time (a **studio unit can be printed in under 24 hours**) and money (the **homes evidently cost up to 45% less than comparable wood-built houses**) has attracted investment and accolades. A Vancouver company is hoping to change the local construction framing industry even more with new technology that can ***"print"*** **steel** studs which also accelerates the building process. "*The end goal is that I don't want to see anything built out of wood anymore*", a company spokesperson said. The 3D home building process is completely mechanical - with a **building's frame designed on a computer,** then having individual **modular parts, studs and panels manufactured by specialized 3D printers.** The parts are then **shipped to the construction site and assembled,** with minimal on-site cutting, drilling or modifications.

3D Bio-Printing



Top photo shows a technician holding

a human ear
created in a 3d print lab
made from a person's DNA.

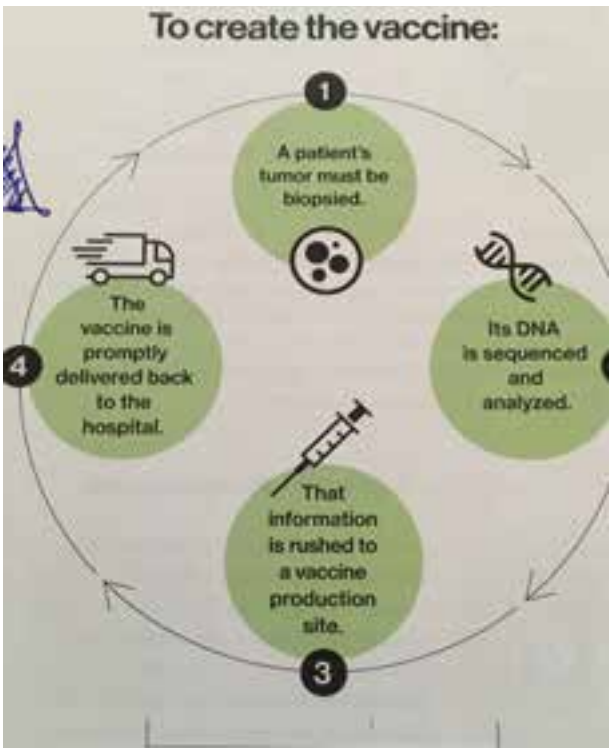
The bottom photo shows a human heart being printed in another 3D lab which also reproduces other body parts. ***(3D) bioprinting*** combines human and animal cells, growth factors, and biomaterials to produce human body parts with imitation tissue characteristics. The 3D printing process uses printer heads which go back and forth laying one layer of material on top on another to make the organ or ligament to be implanted in a human body. ***What else will 3D printers make?***

How about 3D printing a house?

Personalized Medicine

What if we could **cure diseases by creating a unique medicine for each, sick person to treat the disease that is making them sick?**

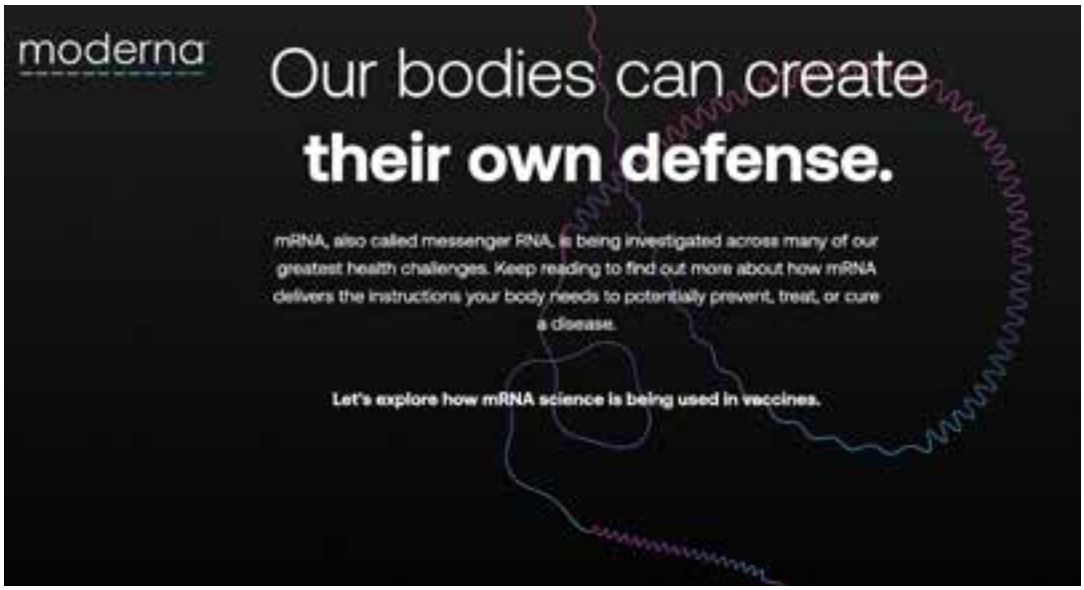
What if **we could cure huaman diseases by using each person's natural immune system** to attack and destroy cell mutations in cancers and degenerative diseases like dementia and parkinsons?



Personal, genetic data collection, analysis, and ongoing testing will soon enable scientists to make and sell ***personalized cancer vaccines to trigger a person's immune system to "identify, attack, and destroy a cancer tumor."*** Research into this treatment began in 2008, five years after the Human Genome Project was completed. The most recent data findings have been extremely encouraging.

A startup company in Germany called BioNTech has created and tested a vaccine containing copies of mutations found in cancer cells which could activate a person's immune system to produce special cells which would find, attack, and destroy all cancer cells containing the malignant mutations. BioNTech has joined another company called Genentech to create a process to produce thousands of personally customized attack vaccines. The companies process for producing special attack cells take samples from a person's cancer tumor (biopsy), analyze the tumor's DNA, then produce a personalized vaccine based on their study of the tumor's DNA. ***The personalized vaccine is then injected into the patient to find, attack, and destroy the malignant tumor.***

Stay tuned for the ultimate victory over cancer scientists expect.



Messenger RNA, or ***mRNA***, is a molecule that tells the body how to make harmelss proteins from a virus or other microbea which are then able to trigger the body's immune system to produce antibodies and cells to help protect a person from getting infected if and when a real virus enters the body. Researchers found a way to introduce and protect an mRNA message with the code for a portion of the spike protein on the SARS-CoV-2 virus's surface. The vaccine provides just enough mRNA to make just enough of the spike protein for a person's immune system to generate antibodies that protect them if they are later exposed to the virus. The mRNA in the vaccine is soon destroyed by the cell – just as any other mRNA would be. The mRNA cannot get into the cell nucleus and it cannot affect a person's DNA. In the case of **COVID vaccines**, the mRNA instructs the body to make the spike protein that SARS-CoV-2 VIRUS uses to enter cells. This protein, then, stimulates the body to mass produce antibodies to the virus.

If there is anything positive to come out of the coronavirus pandemic response has been mRNA. It's the ***key ingredient*** in the Pfizer and Moderna COVID-19 vaccines. But mRNA itself is not a new invention from the lab. It evolved billions of years ago and is naturally found in every cell in your body. Scientists think RNA originated in the earliest life forms, even before DNA existed, according to Penny Riggs writing in a Hawaiin periodical in 2021.

FURTHERMORE, mRNA technology will probably produce a new business model establishing new companies creating ***"similar mRNA proteins capable of treating a wide variety of different disorders including",*** according to Bloomberg Business, ***"heart disease, cancer, and rare genetic conditions.*** mRNA could be used to *"prompt cells in the body to produce any protein to reverse disease or growth agents to repair damaged tissue."* Clearly, obstacles to success exist. For example, teaching the immune system to differentiate between tumors and healthy cells is just one. Stay tuned.

Cancer Cure!?!
Vaccine could be available by 2030

Please imagine a personalized medical procedure that induces your immune system to cure your disease or sickness.
This is the future reality of medicine.

One example is BioNTech, short for '*Biopharmaceutical New Technologies*', a biotechnology company based in Germany that develops and manufactures personalized '**immunotherapies**' to treat diseases. **Dr. Ugur Sahin** and his wife, **Dr. Özlem Türeci**, founded the company in 2008. Dr Sahin, an oncologist and immunologist, emigrated to Germany from Turkey when he was 4 years old. Dr Türeci is the daughter of Turkish immigrants. She has focused her medical research on the "*identification and characterization of tumor-specific molecules and the development of immunotherapies against cancer.*"

Türeci and Sahin founded the company Ganymed Pharmaceuticals in 2001, which focused on making a new class of cancer drugs. Dr. Sahin and Dr. Türeci sold Ganymed for $1.4 billion in 2016. ***The two doctors, now billionaires, live with their teenage daughter in a modest apartment near their office. They ride bicycles to work. They do not own a car.***

They founded another company, BioNTech, in 2008 to find cancer treatments using technology including ***messenger RNA***, an example of the **personalized medicine I reference at the outset of this story.**

Messenger RNA, messenger ribonucleic acids (mRNAs), transfers information from a person's DNA to the place in a cell that makes proteins. . In other words,

messenger RNA carry instructions to the immune system to produce proteins in a person's body to create cells that attack and kill cancer cells in the body.

The ***Covid-19 pandemic changed BioNTech's business plan from fighting cancer to ending a pandemic.*** In ***2020, BioNTech, partnered with the drug company, Pfizer, to develop an RNA vaccine for preventing COVID-19*** infections.

BioNTech returned to its original purpose, cancer research, following the development of the COVID 19 drug with Pizer.

Dr Sahin told the British Broadcast Company (BBC) that he believes a cancer vaccine could be widely available ***"before 2030."*** Several trials for the BioNTech cancer vaccine started long before the pandemic and have already shown signs of promise. The vaccine uses ***mRNA technology*** that teaches human cells how to make a protein that triggers a person's immune system to attack a virus or cancer tumor in a person's body. *"mRNA acts as a blueprint for a person's to body to follow for its immune system to produce its own drug or the vaccine"* ***to attack cancer cells*** *... "When you use mRNA as a vaccine, the mRNA is the blueprint for posting a 'wanted poster' of the enemy — in this case, cancer antigens which distinguish cancer cells from normal cells."*

"*We feel that* ***a cure for cancer is in our grasp***," said Professor Ozlem Tureci. The BioNTech cancer vaccine builds upon discoveries made by scientists during the development of the COVID-19 vacine and may be available within eight years, said Doctor Ugur Sahin. "*We believe that this will happen, definitely, before 2030,"* Dr Sahin told Keunssberg. The hope is that the vaccine will be able to train a person's immune system to recognize then attack cancers using ***mRNA technology.***

BBC reporter Keunssberg asked the doctors if there was "*a chance*" that their cancer vaccine may not work. "*I don't think so,*" replied Tureci. "*Everything we have learned about the immune system gives us confidence of* ***getting a person's killer T-cells to eliminate tumor cells"*** Sahin stated.

Dr Sahin concluded 'the story of his company, the story of the vaccines he, his wife, associates and partners developed is proof that immigration, a free and open capitalist global economy which allows collaboration, creative thinking, freedom of expression, and private companies making money and use their profits to invest in research and development for new products to benefit mankind' is a successful strategy for 21st century success. ***"If it were up to critics of capitalism and globalization,"*** Dr Sahin added, ***"there would have been no cooperation with Pfizer.*** *This is what makes us strong: a country open to* (legal) *immigration, and* ***a market economy (capitalism) & open society!"*** Their company raised hundreds of millions of dollars in investments and now has more than 1,800 people working on their staff with offices in Berlin, other German cities and Cambridge, Massachusetts.

Changing Genes?

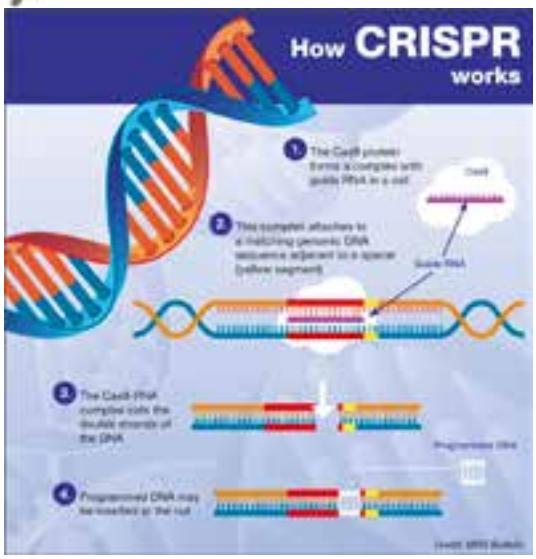
CRISPR genome editing

is a biomedical engineering tool enabling doctors to alter the genes of plants, animals, and humans.

This means doctors NOW have the ability to change the genetic instructions found inside the TRILLIONS of cells in the body of person or animal that they were born with. Cells determine physical traits like height, skin color, eyesight, and predisposition to certain diseases. As a result,

doctors and scientists can NOW change the qualities of insects, like the mosquito above, by changing chromosomes in insects' DNA.

DNA 's function is to store hereditary information. A person's genetic code is stored in the DNA. Chromosomes can be found in the nucleus of the cell. Scientists can make female mosquitoes sterile OR give mosquitoes resistance to the parasite responsible for malaria by changing the mosquito DNA. If scientists decide to change mosquitoes' DNA to make females sterile, female mosquitoes will no longer have babies. As a result, without the ability to reproduce, mosquitoes will become EXTINCT. No Mosquitos means these insects can no longer pass along terrible diseases like malaria which kill millions of people in poor countries throughout the world. Altering an insects DNA is an alternative to using toxic pesticides to kill bugs like mosquitos which, besides killing the mosquitos, also pollute water and causes cancer in humans. If we can change the DNA of insects,

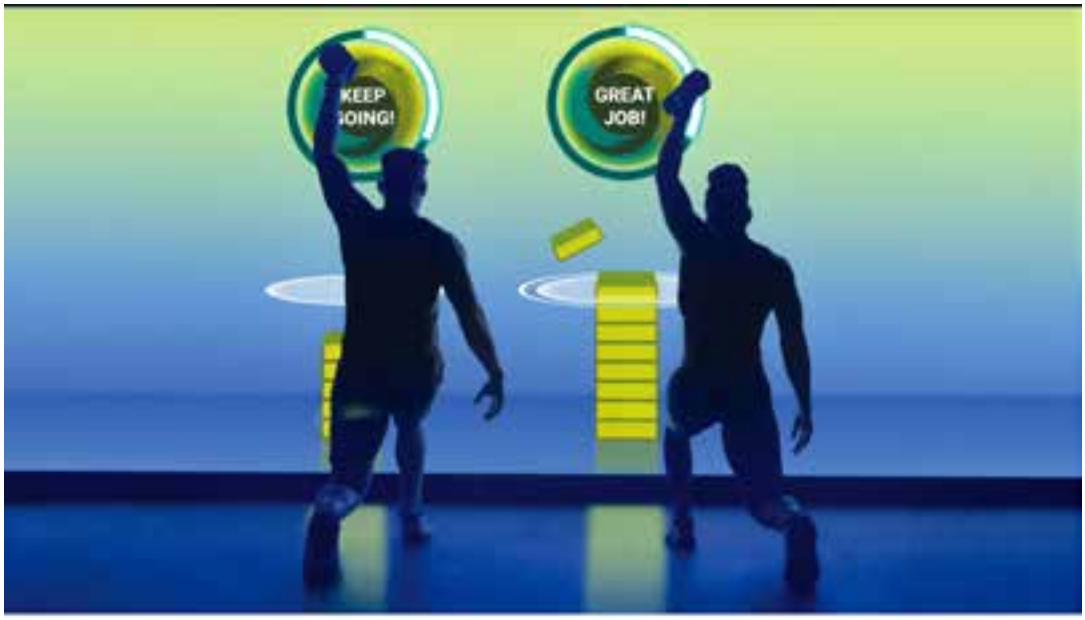


we can change the DNA of humans and potentially eliminate birth defects and diseases like cancer, ALS, MS, and even old age.

Genetic Engineering: The above photo is an original **zebrafish** found in Asian rivers. It's only three centimeters long and has gold and dark blue stripes. Over 200 million have been sold in the last 50 years in the United States to adorn aquariums. To the right is a photo of the same kind of zebrafish only it has had its genes altered. A gene that creates a green fluorescent protein in jellyfish was extracted from a jellyfish and placed into a zebrafish's DNA, allowing the florescent gene to naturally become part of the zebrafish's genome. This new gene enabled the zebrafish to develop bright fluorescent colors when exposed to natural white light and ultraviolet light. Singaporean scientists who performed this experiment were trying to develop a fish that could detect pollution in the water by emitting a florescent color. ***Some crops, like soybeans grown on American farms and found in American stores, have been genetically modified to protect the food from certain insects or diseases.*** Some **cows** have also been genetically engineered to produce more protein in their milk to improve cheese production.

Johns Hopkins University scientists view a normal mouse (left) and a **genetically-engineered mouse** (right) that is two to three times more muscular than the normal mouse. Scientists McPherron, Se-Jin Lee and Ann Lawler created the muscle-bound mouse with CRISPR genome editing technology. "*CRISPR technology also enables doctors to alter a person's genome and DNA so people will not get diseases like diabetes, muscular dystrophy, and many forms of cancer that was in the genome a person was born with.*" ***Can this lead doctors using CRISPR to alter human aging so that humans will live significantly longer, well over 100 years old? Or, what about using Gene Editing technology to determine a child's height, muscle mass, gender, hair color, personality type, and intelligence? What do you think about this capability?***

Gyms and Fitness Centers of the FUTURE



The future fitness club or gym of the future is now here in some parts of the world. Lumin Fitness in Las Colinas, Texas is one of them and it's no ordinary gym. Wall-to-wall LED screens, algorithms, and motion tracking sensors allow Lumin Fitness to offer supervised workouts with

NO HUMAN TRAINERS NOR COACHES. JUST VIRTUAL COACHES DRIVEN BY COMPUTER CODE

written by talented computer programers and a reliable, continually tested, data base the programmer base their code on. **VIRTUAL AI COACHES,** designed to guide gym goers through different workouts on tall LED screens that line the walls of the company's studio in Texas. Although AI is becoming more widespread with fitness, AI generally associated in products like smart mirrors, training apps, and smart cameras. Lumin Fitness's founders claim it's the first gym to integrate AI into a gym.

A darkened studio space can accommodate up to 14 people at once, either completing a solo workout program or participating in a high-intensity training class where a group performs movements likensquats, dumbbell presses, and sit-ups. Each member works out within a designated station facing wall-to-wall LED screens. These tall screens mask sensors that track both the motions of the exerciser and

Aging -

MR Cronin

teaching SOCIAL STUDIES 2.0 - A Life Skills class in 2075
when he is 126 years old.
Is this possible?

According to some scientists today, '***yes'***. But, '*is it probable*' you ask. These same scientists say '***yes***'! A team of eminent *"geroscientists,"* or doctors who study aging, includes Dr. Nir Barzilai, director of the Institute for Aging Research at Albert Einstein College of Medicine in The Bronx, and Steven N. Austad, who heads the biology department at the University of Alabama at Birmingham. These prominent doctors are studying specific genes and one or more drugs that will slow the rate of aging and the debilitating ailments and diseases which typically are the causes of death in older people. Dr Barzilai and his colleagues have identified and are studying specific genes which can ultimately enable men and women to live 20 to 30 years longer than the normal life expectancy. By studying genes that extend a healthy life, "*it should be possible to devise drugs that mimic the genes' effects,*" and, consequently, enable people to live longer Dr Barzilai said. Two such gene-affecting drugs that show early promise against age-related diseases are already being tested. One of these age altering drugs is **metformin.** There is already evidence suggesting that metformin protects people against specific diseases like cardiovascular (heart), cancer, and cognitive diseases (dementia) which are all associated with the ultimate cause of death with old people. Other advantages of using metformin is cost; only two to five cents per pill!!! Metformin is also taken orally with six decades of safe use with people now using it to treat Type 2 diabetes and other diseases. Dr. Barzilai said, "*Our goal is to establish the principle of using a drug or two in combination to extend a healthy life.*" It will be a combination of drugs which will delay the onset of terminal diseases which will ultimately and significantly extend life. Now, **how about reversing the aging process?** ***Some scientists say 'yes'.*** Researchers at the Salk Institute for Biological Studies in San Diego, California have "*reversed the aging of mice*". These researchers are optimistic about doing the same for people.

Photo Credit: Tim Flach Getty Images


MIT
Technology
Review
The
longevity
issue
Vol. 122
No. 5
Sep/Oct
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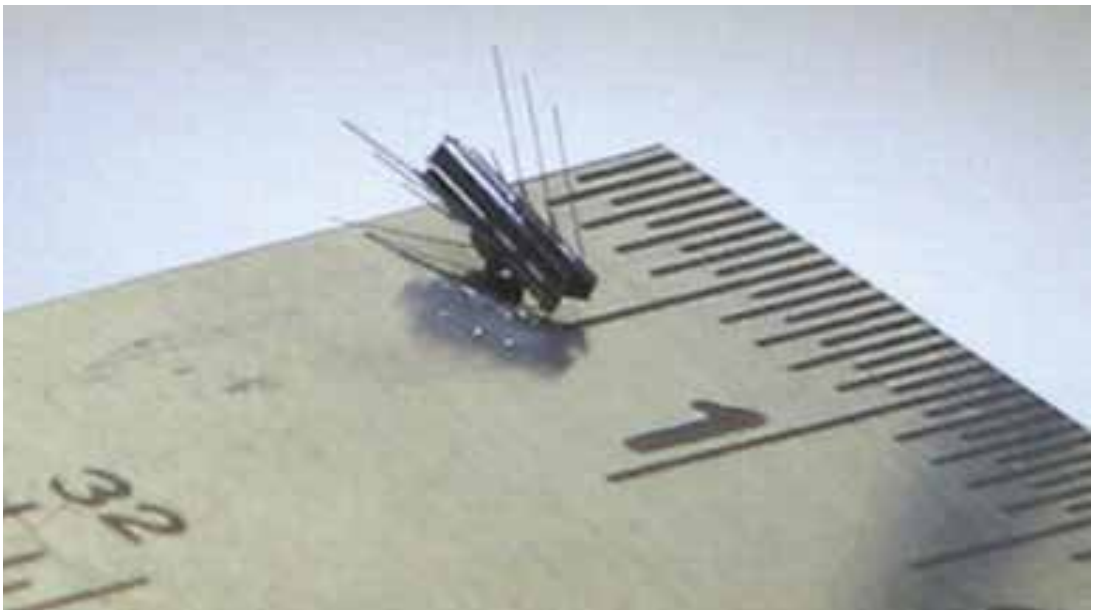
OLD AGE
IS
OVER!
IF YOU WANT IT
Get ready for the first
anti-aging drugs
p. 22
Design for seniors that
doesn't suck
p. 32 and p. 76
A visit with immortality's
true believers
p. 70



Two Israeli scientists may have created a **tiny**, 1-millimeter-diameter **robot** which is capable of crawling through human veins and arteries. The 'nanobot' can cling to vessel walls using small, powerful arms which protrude from a hub in the nanorobot center… the '***nanorobot***' is able to ***swim against the flow of blood***, as well as squeeze through a variety of arterial openings… a large number of the 'nanobots could be used to fight certain types of cancer inside a person's body. - .

While **avatars** and surrogates were once the stuff of games and movies, virtual reality and computer interfacing are taking on more and more active roles as replacements for living humans. How about avatars replacing human actors in movies? Even the U.S. Defense Advanced Research Projects Agency **(DARPA)** has budgeted millions of dollars to ***create avatars to act as real, live soldiers in wars!***

Smart Blood

Q - *"Just relax, James.*
You may feel a little..... prick.

James Bond - *"OUCH!!... What is it?"*

Q - *"Cutting edge technology.*
Smart blood.
I' m putting ***microchips*** *into your blood stream.*
Allows us to track your movements in the field.....
You see those readouts on the screen?
We can monitor your vital signs from anywhere on the planet."

James Bond - *"Well that sounds marvelous!"*

FIXING AND REPAIRING *HUMAN BODIES AND AUTOMOBILES*

The *Tesla* Model 3 was having brake problems in 2017 which created critical reviews in ***Consumer Reports Magazine***. The car was taking too long to stop! Consequently, this problem diminished interest in the car and hurt sales for Musk's relatively new car company. That was until Tesla fixed the braking problem by sending an electronic update to the car's computer system that solved the problem! Hit '***send***' and problem solved. ***A software fix was sent electronically to improve a car's stopping distance by 20 feet!***

Imagine,
sending an e-mail or text message to a car
to fix a mechanical problem
rather than
having to bring the car to the dealership
or
your favorite mechanic.

Upon hearing the news of the Tesla computer fix, ***Consumer Reports*** columnist, Jake Fisher, commented

"I've been at Consumer Reports for 19 years and
tested more than 1,000 cars.
I've never seen a car that could improve its performance or fix a problem with an over the air update".

In the past, car companies required their car owners to bring their vehicles to their service centers to fix car problems. In fact, the car company Fiat Chrysler did just that in May of 2018. Fiat recalled more than 5 million of its cars in the United States and Canada to fix a problem that prevented drivers from cancelling cruise control. To fix this problem, Fiat required Fiat car owners to go to their dealerships to leave their recalled Fiats to fix the cruise control malfunction.

If we can fix a machine by sending an e-mail or text message,
what else can we fix
when 'it' has a problem'?

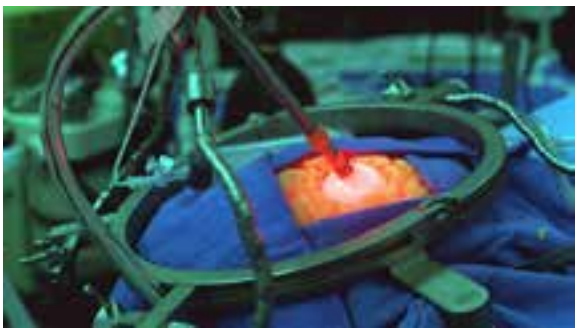
'Why Not' neural implants for treating a person's disease and easing their physical or mental pain the same way Tesla fixes car malfunctions? ***Elon Musk has. In 2016, Musk co-founded Neuralink with an investment of $100 million dollars.*** *The company creates a brain-computer interface through electronic implants into a person's brain that would decode brain activity and communicate it to computers. This computer interface has access to the unlimited data of the world wide web that would help a person's brain restore function to conditions like amyotrophic lateral sclerosis (ALS better known as* ***Lou Gehrig's disease), alzheimer's disease, dementia, and spinal cord injuries****. Musk also hopes the implanted devices will soon cure* ***paralysis, deafness, blindness, autism, obesity and other disabilities.*** *One of the company's brain - computer interface devices would work like a sewing machine that could embed threads into a human brain. (wikipedia and WashingtonPost)*


PERSON of the YEAR
TIME
ELON
MUSK

NEURALINK - Placing Computer Chips in Human Brains

Neuralink is a neurotechnology company founded by Elon Musk which connects the human brain to artificial intelligence (AI) through computer chips placed in the brain to facilitate brain communication with AI learning computers.

This technology attempts to improve a person's memory or allow brain functions to communicate with software. Musk adds "*we had monkeys implanted with Neuralink chips in their brains and they were playing video games just by thinking about interacting with the game. In February of 2024, the first human patient implanted with a brain-chip from Neuralink appears to have fully recovered and is able to control a computer mouse using their thoughts, the startup's founder Elon Musk said. Neuralink will help mankind.*" The company also hopes Neuralink devices to treat neurological disorders like **Alzheimer, dementia, and other neurological disorders.**



Electric Vehicles (EV)

Elon Musk (top photo) **standing next to an *electric vehicle (EV)***

that his company, **Tesla,** makes. Bottom photo shows a Tesla car at an electricity charging station to supply power to the huge battery underneath the chassis of the car. Tesla cars do not use gasoline; they are powered by electricity from the Tesla batteries that the body of the car rests on. The batteries are charged by plugging the vehicle into an electric outlet at a home, hotel, or at charging stations along the highway as shown in the photo directly above. While most gasoline powered cars can travel over 400 miles on a tank of gas, the newest Tesla automobiles can travel more than 300 miles per electric charge. Tesla electric cars are also quiet; you can barely hear them as they move. Other companies like ***Apple***, Volvo (owned by Ford in America), Ford, Nissan (Japan), Baidu (China), Nio (China), BYD (China), and Chevrolet also make electric cars. The August 2017 edition of the *Economist Magazine* stated that less than 1% cars NOW being made in the world were electric. However, more automobile companies are make more electric cars.

The country of CHINA has stated most of the cars on Chinese roads MUST BE ELECTRIC by 2030.

BRITAIN and FRANCE have stated they will ban the sales of all diesel and gasoline powered cars starting in 2040; this means all new cars in their countries **MUST BE ELECTRIC or MAGNETIC by 2040.** And, in your future, ships, drones and aircraft may be electric too!!!! ***EV means cleaner energy, less greenhouse gases, and cooler Earth temperature***s.

Think about all the new design, engineering, and computer science *jobs* *created by Tesla and other EV companies!*!

Transportation

High speed trains floating on magnets or electromagnetic fields within a vacuum tube at speeds of close to

1,000 miles per hour

traveling from Los Angeles, California to New York City in less than 1 hour!
No motors. No engines. No fossil fuels

like gasoline or diesel. No wind or draft the train has to push through. Just the empty, pristine environment of a vacuum tube. This

high speed transportation system in a hyperloop. The vacuum tubes

the trains travel in are mostly buried underground. They will speed across the continental United States, from the west coast of America to the east coast of America in minutes, not multiple hours or days. The only thing a passenger feels in the hyperloop is the acceleration taking off and the de-acceleration slowing down; nothing to feel when traveling at the normal traveling high speed. Other countries are also planning on building hyperloops, partly, to relieve the long delays from the traffic jams in the world's expanding cities . One scientist has proposed a justifiable charge of only $50 for the trip. One of Elon Musk's many companies is called **THE BORING COMPANY**, which plans to build a hyperloop to connect Washington, DC to New York City; travel time 21 minutes rather than 5 hours by car or 3 hours by Amtrak Acela trains traveling in the hyperloop from D.C. to New York!!!

The photo below shows an actual hyperloop, built by Elon Musk's Boring company, just outside LosAngeles, California. **On December 18, 2018, Musk opened a 1.14 mile test track in Hawthorne, California,** which will eventually go directly underground to LosAngeles. Musk's Boring Company tunnels will ultimately send autonomous electric cars equipped with retractable guide wheels, seen on the car below, ***zipping through those tunnels at speeds up to 150 mph.*** **The Boring Company** goal is sending one car per second through the tunnels. The Boring Company is already working with officials in Chicago on an airport express route, with officials in Los Angeles on an underground shortcut to Dodger Stadium, and with officials in Maryland on a Baltimore-to-D.C. transit tunnel. *"Finally, finally, finally"* Musk added *"it's something that'll solve the traffic problems"* in our cities.

Iron Man

The top photo shows Elon Musk.

Mr Musk is a South African-born Canadian-American business man, investor, engineer, and inventor. He is one of the richest and most famous people in the world today. **Some people say Musk is**

a real life version of the *Iron Man*

comic book character, Tony Stark.

Elon Musk is shown standing next to ***solar panels*****.** One of his many companies is ***Solar City***. This company manufactures solar panels which can be installed on the roofs of homes and businesses to collect energy from sunlight. Solar energy collected in solar panels is used to produce electricity for a person's home or business rather than having to buy electricity from a company like National Grid.

The second photo is another product from another Elon Musk company called **Tesla. Beside making electric powered cars, *Tesla also makes batteries to store energy from the sun collected by solar panels*.** Tesla **batteries and Solar City solar panels** complement each other. Elon Musk's solar panels, which you may see on the roofs of homes, businesses, or in large open fields, collect solar energy to be stored in Tesla ***powerwall*** batteries. Musk's home battery eliminates a homeowner's need to buy electricity from a local electric company like National Grid. Because Tesla batteries have "*infinite scalability*", which means their batteries can also expand capacity, entire cities can discontinue getting electricity originating from power plants using dirty coal and oil which emit greenhouse gasses and, INSTEAD, use clean, solar ***energy stored in millions of Tesla powerwall batteries located in giant warehouses. Musk calls the giant warehouse with extremely large batteries, "gigafactories". Musk claims "16,000,000 powerwalls stored in Tesla gigafactories can supply electricity to every person and company in every city in the United States of America."***

World's Most Popular Electric Car

This electric car is made by a company called BYD — an acronym for "Build Your Dreams" — and BYD is competing to sell more electric cars world wide than Elon Musk's Tesla electric car!

BYD, a **CHINESE owned car company,** started making cars in January 2003 after buying another car company called Qinchuan Automobile Company. BYD makes passenger cars, buses, trucks, electric bicycles, forklifts and electric vehicle batteries. BYD's passenger cars include battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs). They did make '*internal combustion engine vehicles*' (**gasoline**) cars until March 2022. (Insider Inc and Wikipedia). ***American investor, Warren Buffet,*** has invested in BYD.

BYD overtook Tesla in June 2022 as the world's largest electric vehicle manufacturer claiming it had sold about 641,000 EVs (including BEVs and PHEVs) in the first half of 2022. It's already the top-selling EV brand in China selling over 900,000 in 2022 — more than Tesla sold in 2022. Most BYDs are sold in Mainland China, although the company is rapidly expanding into foreign markets in the European Union, Southeast Asia, Oceania and Latin America. BYD has expanded its operations all over the world with operations to Norway, Denmark, England, Thailand, and Australia. BYD has a small commercial vehicle business in the United States. (Insider -May 17, 2022).

An BYD electric battery company, *FinDreams Battery,* is the world's third largest producer of electric vehicle batteries with a global market share of ***12%*** in the first half of 2022 and a focus on **lithium** iron phosphate **batteries**. (wikipedia)

BYD's prices are perceived as INEXPENSIVE when compared to other higher price EVs sold by TESLA and BMW. Last month, BYD launched an ***$11,000*** hatchback at an auto show in the metropolis of Shanghai, China. The hatchback is called *Seagull* and considered "*ridiculously cheap*" when compared to the price of a ***Tesla Model 3 with a starting price of $40,000.*** (per Insider Tim Levin)

Despite selling BYDs in countries in Europe and Southeast Asia in 2022, BYD doesn't seem to have plans to enter America's EV passenger car market, says BYD founder Wang Chuanfu (Bloomberg). Stay tuned; this author believes they will soon be selling in America!!

比亚迪汽车

Photos top to bottom: **BYD Street sweeper; BYD BRAND LOGO; BYD American Headquarters in Los Angeles, California**

Flying Cars

Gideon Lichfield, MIT Technology Review Magazine's editor in chief, wrote in the February 2019 digital issue of the magazine about

the emergence of "flying cars"
in cities throughout the world.

Lichfield claimed "*20 small, airborne vehicles will be sold to fly in many parts of the world within a few years. Some will be drone-like, with four to 18 rotors keeping them aloft.*"

Large, international, aeronautical *companies like* Europe's *Airbus* and the United States' *Boeing* have "*flying car" projects under way* while a number of smaller companies will be competing too. Germany's *Volocopter* plans to start trials of *a flying taxi in Singapore*. *Uber* claims it will start test runs in *2020 for a flying taxi service between Frisco, Texas, and the Dallas–Fort Worth, Texas.* The Chinese company *Ehang* is launching a *flying car service in* the rich, Arabic country of the *United Arab Emirates* within the city limits of their *5.5 million person metropolis of Dubai.* This flying car service will take a single occupant from the roof of one Dubai skyscraper to the roof of another.

A few flying car models, like the Aeromobil and the Terrafugia Transition, will be *cars you could drive on the highway*. *Most* flying cars, however, will be only for *flying.* Most will have wings that generate lift, like ordinary planes. A few will have multiple rotors, like drones. While initially drivers of flying cars will need to be certified pilots, *future 'flying cars' will probably be autonomous,* that is, self driving by a computer system in the car. *Autonomous flying a car* is *safer* with less dangers *than autonomous driving a car*: there are fewer obstacles flying in the sky and radar can detect other flying objects with simple radar; a self-driving car, however, needs multiple sensors and heavily trained algorithms to recognize people, other vehicles, animals, traffic signals and other potential dangers. An automated air traffic management system is also needed to be in constant communication with every flying car to prevent collisions and have human operators ready on the ground to take over by remote control in an emergency. Still, existing laws and public fears will mean there will be laws to have pilots available, at least for a while, as a backup to an autonomous flying system.

The recent descriptions of *flying cars vary* from a *single-seat, multi-copter drone-type aircraft to road-style cars that turn into light aircraft and small flying boats that hover above the water.*

It would appear that almost any small flying vehicle capable of transporting a person is now referred to as a 'flying car'. However, 'flying cars' are really just a small aircraft.

"How safe" you ask?

The likely answer now is *"not very"* as most early development technology is. But, companies are working hard to make their aircraft *"safe enough"* so regulators and governments will permit them to fly. One of the biggest concerns is what to do when things go wrong. With a normal car, you can push the brakes to slow down and the car usually stops. But a flying car- it could just fall out of the sky, killing, not only its occupants, but bystanders too.

Places where *demand will be high for flying cars should be large cities* where automobile traffic jams and delays are now high. Out in rural areas away from big cities or travel between cities probably won't make economic sense. Futurists predict *departure and destination points for flying cars* in large metropolitan areas will be on *the tops of buildings* which will also bring building owners some extra revenue by offering battery chargers, battery-swapping stations, and renting landing and takeoff places.

What about *the cost of using a flying car? What about from getting* from one destination in a city like Shanghai, China with

26 million people or New York City with a population of 10 million people - what will it cost going from one location in the city to another location in each city? Futurists speculate a trip of a few miles might cost passengers as little as ***$40 or $50 which is a little more expensive than a ground taxi*** but worth the price when you can get to your destination more quickly. In a 2016 research study, Uber projected that certain routes will be much cheaper than a traditional taxi or Lyft ride AND several times faster because you won't have to deal with city car traffic that is too slow for the busy business man or woman. "***Time is money***" so the saying goes!!! Getting stuck in city car traffic often means missing important means which often means missed opportunities like a job interview or closing a big business deal for making money.

Here's ***an example supporting the prime advantage of using 'flying cars' to get from one location to another, faster, than the traditional, human driven taxi in most large cities***. It currently takes ***23 minutes to drive 19kilometers in an autonomous or human driven car*** from offices in the center of the Australian city of Brisbane with a population of 2.5 million people to the Brisbane airport, even when traffic is freely flowing. ***If you use a flying taxi*** from the center of the city Brisbane office roof (where there are pads on some roof roofs to accommodate a flying car), the ***trip would only take 8 minutes!!!!***

Most importantly, effective ***cybersecurity is going to be essential. Hacking*** remains a real problem today. If technologists believe the flying car industry will be likely autonomously driven, a flying car's computer must be secure. Hackers Charlie Miller and Chris Valasek pulled off a demonstration in 2015 that shook the auto industry by remotely hacking a Jeep Cherokee. The hackers announced they could disable or slam on the Jeep's brakes, even turn the steering wheel and cause the Jeep to accelerate. To trigger almost all those attacks, Miller and Valasek hacked into the vehicles' computer that manipulates the car's computer which controls the car's automated features. They also hacked a Prius' collision avoidance system to apply the car's brakes as well as a Jeep's cruise control to accelerate the Jeep's speed too. To turn the Jeep's steering wheel, they tricked the autonomous driven Jeep into thinking the car was parking itself—even if the Jeep was moving at 80 miles per hour. What does this vulnerability to hacking mean for flying cars and flying taxis in highly populated, metropolitan areas where many think the flying cars will be in demand? Cars dropping from the sky or crashing into buildings?

The biggest hurdle for flying cars, especially in large cities, will be government regulations. If flying cars are to be licensed to fly under the same rules as planes, flying cars may appear in a few test cities sooner rather than later. Managing flying cars will certainly require a new set of standards and safeguards before they take flight.

How long before flying taxis are a common sight in major cities?
"Five to "10 years"
is the most likely estimate.

That means, from today's date in 2019, between 2025 to 2030! Stay tuned.

Welcome to Your Future.

LAUNDROID - The Laundroid is a robot about the size of a large refrigerator. **After accessing a significant amount of laundry related data, Laundroid** will iron, sort, fold and neatly arrange a person's laundry in an assigned dresser drawer. The Laundroid will soon wash and dry clothes before ironing, sorting, folding, and neatly arranging clothes to the assigned drawer. Voilà - perfectly washed, ironed laundry put in the correct dresser draw without a person lifting a finger. The chief designer and CEO of the company, **Shin Sakane,** who developed the Laundroid for his company, **Seven Dreamers Laboratories**, is also developing technology to accompany the Laundroid that will track how often the Laundroid user wears particular clothes cycled through the Laundroid 'bot.

Volkswagon's prototype of a magnetic, **driverless** car. Volkswagon is a German automobile company. In fact, many futurists ***speculate humans will be prohibited from driving cars by 2030***. **It will be illegal for people to drive cars!**

Mega Cities

Mega-cities are described as cities of more than 10 to 20 million people.

Many countries believe their well planned and organized mega-cities will help them compete successfully against other countries in today's global marketplace. **Mega-cities are** attempting to avoid overcrowding by using larger amounts of land than a typical big city. **Some mega-cities will have the same amount of land as the entire state of Rhode Island. The largest mega-cities could possibly be as large as 42,000 square miles, i.e. about the size of the European country of Holland**! Future mega-cities may combine multiple large cities to create one **mega-city cluster** with populations over **100 million.** **While many c**ity planners recognize the challenges of mega-cities, others see advantages and opportunities. **If planned properly,** mega- cities can attract and retain '*the* smartest, most creative, collaborative, empathetic, and highly skilled people as well as the successful companies they own or work at. They also believe mega-cities will create new businesses like banks, entertainment options and schools to support and entertain mega-city citizens. **Good pay** is essential, followed by safe, comfortable, and **AFFORDABLE housing**. Connectivity is important; this means dependable, fast and CLEAN **transportation, especially trains**, for people to get to and from their jobs **Easy-to-access wireless internet** is a must to communicate and share knowledge, ideas and information quickly. Mega-city citizens may give up part of their privacy as government surveillance of internet activities increases to ensure safety. For those countries that create successful mega-cities, the belief is economies will grow, jobs will be plentiful, and life for its citizens will be good.

China is one country embarking on the creation of many mega-cities. The Chinese are focusing on a mega-city model which **clusters** several smaller cities around one giant urban center or hub. One such cluster will be the Chinese city of Shanghai. To illustrate the importance of transportation, a train ride from the Chinese city of Wuxi, about 150 kilometers from Shanghai, once took 2 hours; today, the Chinese bullet train from Wuxi takes only 29 minutes to get to Shanghai. Living in Wuxi also enables lower paid workers to find less expensive homes and apartments than the very expensive housing of Shanghai. The Shanghai mega-city population may reach 150 million.

The **Shanghai Maglev Train** travels at a top speed of 270 miles per hour!!! The Shanghai Maglev train uses two sets of **magnets**, one set to repel and push the train up off the track as in levitation; the other set of magnets moves the 'floating train' ahead at great speed taking advantage of the lack of friction. This train will eventually connect the Chinese city of Hangzhou to Shanghai. Hangzhou, part of the **Shanghai mega-city cluster,** is 105 miles from Shanghai**. The Chinese are also developing high speed electric trains.**

China's mega city clusters in brown. Note the location of the Shanghai cluster on the east coast of China and the listed population of 152 million people. Map from The Economist Magazine, June 2018.

One of the United States of America's mega-city clusters is called Silicon Valley, California,

encompasses the cities of **Palo Alto, San Francisco, San Jose, Cupertino, Campbell** and more. *Silicon Valley* is ***home to world class companies*** like ***Apple, Tesla, Google, Adobe, Netflix, Ebay, Intel, Facebook, Oracle, and Visa and universities like Stanford, Santa Clara, San Jose and California Berkley!!*** Affordable housing, affordable higher education (college), effective public school secondary education, fresh water, and high speed transportation are just a few of the challenges facing Silicon Valley's mega-city cluster. The populations of America's mega-city clusters are much lower than China's mega-city clusters. The country of China's total population is 1.25 BILLION; the United States of America's population is 350 MILLION.

Universal Basic Income (**UBI**). It's a term that ***means***

guaranteed money for every person, every month of their lives, funded by the government.

It's a concept which has been discussed by governments throughout the world for hundreds of years.

Some governments have actually tested the idea.

1795 was possibly the earliest test for UBI in the English city of Speenhamland. **Recently**, the countries of Finland, Canada, Scotland and Iran as well as a few American cities like Oakland and Stockton, California have tested the plan. The goal of UBI is to give money to **all citizens** in a town or country! UBI is not only for poor people who can't get a job **and** people who have a job but don't earn enough money to pay their **cost of living** (food and rent). It's **also** for people who have jobs with very good compensation. UBI programs also intend to assist workers who hate their present job and, if given extra money, they would go back to school to learn new skills for a job they really enjoy.

UBI is different from traditional government assistance programs that give food stamps, rent subsides and other assistance to those people who have proven to be poor. ***UBI is a fixed amount of money every adult, rich or poor, working or unemployed, gets***. It's a monthly government payment, perhaps $1,000 or more a month. Depending on the community, UBI may replace ALL other government assistance programs. Helping poor people has been one reason for public assistance. But some progressive thinkers believe UBI will be MORE necessary in the 21st century because more people will lose jobs to the AI driven machines used in many jobs that were formerly filled by human beings. **Elon Musk** see the merits of a UBI program. **Sir Richard Branson** of Virgin likewise supports UBI claiming "*the sense of self esteem that UBI could provide people*" will help people feel better about themselves and, as a result, the more willing they will be to seek fulfilling jobs and, thus, contribute to the economy of their country. Venture capitalist, **Andrew Yang,** believes UBI will increase entrepreneurship as well as lowering crime and incarceration and the costs associated with them.

A most critical issue to enable communities and countries from launching UBI is cost' in other words, how to pay for this!

Economic journalist, Annie Lowrey, calculates an American UBI program would cost the United States government $3.9 trillion a year. This is almost 3 times more than what the US government spends on public assistance programs in 2016. Lowrey, predicts the United States of America would have to enact new taxes on income (personal earnings), carbon (emissions from cars and factories), and estates (inheritances) as well as increasing existing '***sin***' taxes on tobacco, gambling, soda, etc. Andrew Yang suggests

a new Value Added Tax (VAT) -

essentially "*a consumption tax*". Businesses and consumers would pay this specific tax to fund UBI. This is not a sales tax; it is an extra tax to support the UBI program. **For example**, a retailer sells a phone to a consumer for $5 plus a 50-cent VAT, 20 cents of which is paid to the government. Companies making mobile phones would pay the VAT tax on the metals they purchase to make the phone. The company selling the metals would charge the manufacturer of the mobile phones $1 for the metals plus a 10-cent VAT; the metal seller then pays the 10% VAT to the government to support the UBI program.

Digital Money!!

Paper currency and coins. No Mas!!! No More!!!!

You know, the one, five, ten, and twenty dollar bills we've used or accepted in the past? Even the quarters, nickels, dimes, and pennies we've accepted for change after a purchase at a store? No More! Whether it's a hamburger or pizza, concerts or videos, shoes or jewelry, you name it. If you want to buy something, digital currency, also called **crypto-currency**, will be the only way to purchase or sell something.

There are some digital or **crypto-curriencies** already being used for buying and selling stuff in a number of countries throughout the world.

The most famous is called Bitcoin.

Bitcoin is a digital currency not controlled by a country like the American government prints and controls the dollars and coins we use in our country. Bitcoin is NOT tangible money; in other words, there are no physical bitcoin bills or coins. It's digital. All

purchases using bitcoins take place and recorded on a super, secure network on the internet called BLOCKCHAIN.

Bitcoin was invented in 2008 by a mysterious and unknown person or group of computer programmers using the name ***Satoshi Nakamoto*** in 2009. There are companies in most countries that sell Bitcoins in exchange for the currency in the country you live. For example, you can buy bitcoins in America buy using American dollars. In the United States, a company called **Coin base** will link to your bank account or credit card and then sell you the coins for dollars. In 2011, the value of one bitcoin was equal to $0.30 (cents). In first half of 2018, bitcoin's vaue fluctuated between $11,480 per bitocin and $5,848 per bitcoin. On 1 July 2018, bitcoin's value was $6,343 per bitcoin. Bitcoin's value was and continues to be volatile. One of the attractions of **Bitcoin** is the

anonymity of the purchases. Whether it's pizzas or furniture, no one can find out who is doing the buying and selling of goods when using bitcoins.

Bitcoins are created as a reward for a process known as ***Bitcoin mining***. Bitcoin mining is competition based on speed and accuracy. Miners build and maintain a gigantic public log containing a record of every bitcoin transaction in history. Every time somebody wants to send bitcoins to somebody else, the transfer has to be checked to make sure the sender isn't transferring money she doesn't have. If the transfer checks out, miners add it to the official Bitcoin record or ledger. Finally, to protect that ledger from getting hacked, miners seal it behind layers and layers of computational work—too much for a would-be fraudster to possibly complete. **The first miner to finish checking the legitimacy of a new batch of bitcoin transactions and finish the computational work required to seal to protect those transactions in the ledger is awarded bitcoins.** In 2013, the reward was 25 Bitcoins; in 2017, the reward was 12.5 bitcoins. The reward is halved every four years. There is generally a new bitcoin winner about every 10 minutes, and will remain so until 21 million Bitcoins have been awarded in the world. At that point, no new Bitcoins will be created. This **cap on awarding bitcoins is expected to be reached in 2140**. By 2017, about 16 million Bitcoin had been distributed.

Facebook is launching its version of digital currency

called **Libra**. This currency and its payments and purchases are managed by the Libra Association, an organization made up of leaders of technology, telecommunications, online marketplace, and venture capital (investments) companies and nonprofit organizations. Unlike Bitcoin, the Libra currency is backed by American dollars, European Union Euros, Japanese yen, British pound, and the Singaporean dollar. People with Libra currency can exchange Libras for the currencies of the companies listed above.

Other companies, organizations, even countries, are exploring ways to launch their own digital currencies. Stay tuned.

Top Photo: Mars is the closest planet to earth. Could ***Mars be a place humans could survive and eventually colonize and live***? Scientific evidence is now proving Mars once was habitable. Water has been found on Mars although only in a frozen state. On January 24, 2014, NASA reported current studies on the planet Mars by the *Curiosity* and *Opportunity* rovers searching for evidence of ancient life. Just think about the new kinds of jobs which could be created with missions to and, eventually, life on Mars. Are you interested? ***Elon Musk and Jeff Bezos,*** **founder of Amazon,** are!!

Bottom Photo: This photo is not Mars but a remote location on one of the Hawaii islands where the United States is conducting experiments in an environment that tries to simulate the Martian environment. NASA hopes to send humans to Mars by 2030. In preparation, HI-SEAS (Hawaii Space Exploration Analog and Simulation) is running "campaigns" made up of several missions to determine the resources, conditions and crew makeup that might make such a trip to Mars a success. To mimic life on Mars, Hi-Seas scientists lived in a dome like structure. You can see the top of the dome in this photo. They also had limited resources (food arrived every four months, water every two), and could only communicate with 'earthlings' outside this simulated environment via emails delayed by 20 minutes, the time necessary for signals to travel to and from Mars.

Elon Musk: Space X

SpaceX is an American spacecraft manufacturer, launch service provider, defense contractor and satellite communications company headquartered in Hawthorne, California. The company was founded in 2002 by **Elon Musk** with

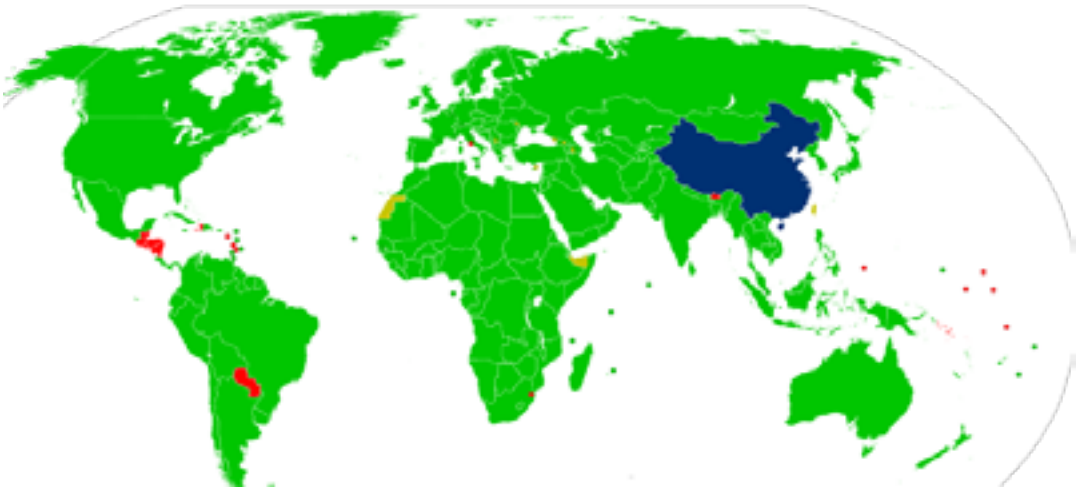
the Space X goal of reducing the cost of transportation in space by using re-usable rockets for a cost effective (less expensive) way for space travel and to eventually establish a sustainable colony on Mars.

Space X currently operates the Falcon 9 and Falcon Heavy rockets along with the Dragon and Starship spacecrafts. In May 2020, SpaceX successfully launched two NASA astronauts (Doug Hurley and Bob Behnken) into orbit on a Dragon spacecraft making SpaceX the first private company to send astronauts to the *International Space Station* and marking the first space ship with a crew launched from American soil in 9 years. (wikipedia)

SpaceX started launching Starlink satellites in 2019 to provide internet access to regions of the world with limited or no access to the world wide web. As of early March 2024, Space X launched and deployed in space 6,000 mass-produced small satellites in low Earth orbit for streaming, online gaming, video calls and communication with ground receivers.

Left photo: Starship is a two-stage super heavy lift launch vehicle developed by SpaceX. It is the largest and most powerful rocket ever flown. **Starship** is intended to be fully **reusable**, allowing both stages to be recovered after a mission. **Right photo**: Starlink satellite.

21st Century World *SuperPower*



By 2050,
this country, colored blue on the map above,
will arguably be the
most influential country on the planet.

More people live here than any other country in the world except India, **1.4 BILLION!!** Its schools have some of the top student test scores on the international PISA test, much higher than the United States. It has the world's fastest growing economy. This country is one of two countries in the world **investing the most in AI, artificial intelligence, education and training** with a goal of having the **world's premier AI innovation center** by 2030. ***They believe collaboration between humans and machines will become the most effective and popular production and service model***. The technology companies in this country, like **Huawei** and **Lenovo,** have become world leaders in telecommunications and personal computing. The supercomputers made in this country are consistently ranked among the world's most powerful. Another of its companies, **Alibaba,** is the world's largest retailer, one of the largest international Internet and AI companies, and one of the biggest investment corporations in the world. **Alibaba** is like America's Amazon but bigger! Its online sales and profits surpass all American retailers (including Walmart, Amazon and eBay). Alibaba also created the online shopping holiday, "***Singles' Day",*** which has become the world's biggest online and offline shopping day, with one day sales reaching over $25.4 billion. Recently, Alibaba has outperformed major **cloud storage** companies like Amazon, Microsoft and Google sales revenue growth. This country is expanding its use of factory robots; from 2008 to 2011, the use of robots in ITS factories rose by **136%**. This country has the largest military. It has the largest number of foreign countries trading with it. Most of its citizens have jobs; less than 4% unemployment. Despite the fact that all companies are strictly controlled by the government, foreign countries from all over the world continue to invest in its companies. The business magazine, *Forbes*, reported that five of the world's ten largest public companies are located in this country. The world's largest bank by total assets is located here. This country has **the world's second-highest number of billionaires.** According to Wikipedia, in 2019,

this country overtook the United States as
the home of the highest number of
rich people in the world,

according to the global wealth report by Credit Suisse bank. In other words, as of 2019, 100 million of its citizens are in the top 10% of the wealthiest individuals in the world—those who have a net personal wealth of at least $110,000. As of October 2020, this country has the world's highest number of billionaires with nearly 878, increasing at the rate of roughly five per week. According to the Hurun Global Rich List 2020, this country is home to five of the world's top ten cities (Beijing, Shanghai, Hong Kong, Shenzhen, and Guangzhou in the 1st, 3rd, 4th, 5th, and 10th spots, respectively) by the highest number of billionaires, which is more than any country. Its government has a significant **mercantile (*business focus*) model** protecting its companies from international competition in the global marketplace. The government makes significant investments in their schools, transportation systems (airports, trains, highways, ports), military, cyber security, and **entrepreneurship** to ensure the country's long term success in a highly competitive, ever changing, 21*st* century, global economy. The country is the world's largest exporter of products AND the second-largest importer of foreign made products and natural resources. According to the Economist Magazine in 2021, "*this country is the largest goods trading partner of 64 countries compared to only 38 national trading partners with the United States*".

THIS COUNTRY
has a more efficient government model
than the United States.

The US seemingly struggles
to get things done
because of partisan politics,
i.e. Democrats and Republicans
always arguing, never compromising,
which prevents passage of laws
that help *ALL* AMERICAN CITIZENS
while
this country,
with only ONE political party,
the Community Party,
gets things done.

With a ***population of 25 million as of 2019, this country's largest city***, the skyline pictured above, is the third most populous city proper in the world. This city is a global center for finance (banking and investments), research, technology, manufacturing, and transportation, and the city is the world's busiest container port.

The communist party makes all government decisions and appointments. Because there is no other political party to oppose it, the communist party wins all elections. The level of **public support for this country's government and its management of the nation is claimed to be high, supposedly 80–95% of its citizens expressing satisfaction** with the central government. **Censorship of political speech and information**, most notably the Internet, is routinely used to prevent criticism, dissent, and opposition to the communist government. The citizens of this country DO NOT HAVE ACCESS to all the web sites and programming American citizens have access to. This communist government suppresses protests and demonstrations that it considers a potential threat to the "*social stability*" of the country.

This country monitors EVERYTHING its citizens do

from web sites they visit, the products they buy, the concerts they attend, the videos they watch, books they read, the churches and clubs they belong to, the clothes they wear, and how quickly they pay their bills! **Censorship** is rising in this country. And,

there are dire consequences for violating national laws, from an extended internment in a country prison to be *'re-educated'* on '*how to be a good citizen*' to the loss of civil rights like travel.

The country is regularly **accused of human rights abuses**, including violent police crackdowns and religious suppression, and anything else the leaders believe could threaten '*order*' in the country. In 2005, *Reporters Without Borders* ranked this country 159th out of 167 countries in its Annual World Press Freedom Index, indicating a very low level of press freedom. An estimated 3,388,400 people are incarcerated, or 0.25% of the population. ***State-sponsored slavery*** is part of the prison system, and there are over a thousand slave labour prisons and camps. Prisoners are not paid for work they do in the communities near the prisons; prisoners need their families to send money to them. Prisoners who refuse to work are said to be beaten, and some, beaten to death. The government responds to its critics by arguing **the laws it institutes and enforces protects its citizens**, and ensures the safety of business development and individual property for its law abiding citizens. Without laws and enforcement, the government claims there would be chaos threatening progress and economic and social stability. This country contends economic success is a prerequisite for granting human rights and improving standards of living. **Achieving economic success for country and citizens is the highest priority of the government.** If the country is successful in the global economy, great schools, safe, clean neighborhoods, job security, free universal health care, and affordable housing will be assured.

National flag of this country

Photo above shows the world's leading currency, the United States dollar, and a sampling of the most popular cryptocurrencies like Bitcoin and Ethereum. ***This country is attempting to create an alternative to the United States dollar*** and the two **crypto-currencies (digital money)** considered to be the most reliable - **Bitcoin** and **Ethereum**. Ethereum is supported by the reputable online wallet Coinbase.

BLOCKCHAIN is a type of server that follows the instructions of a particular code so information is processed and stored in multiple places at the same time. The result is what is transmitted on BLOCKCHAIN, like digital currencies, cannot be counterfeited or stolen. This makes cryptocurrencies safe from hacking and theft because the money can be secure without the need to trust a third party middleman like a government or bank. BLOCKCHAIN is the technology required for cryptocurrency transactions.

This country is testing a digital currency as a potential alternative to the United States dollar as the world's most accepted currency for payments of products and materials between countries.

The leaders of this country contend that those who criticize their government policies should keep in mind the benefits the country's present communist government practices have caused since 1970. As a result of the country's strict laws, this country has created a high level of economic development that has created a dramatic rise in its citizens' standard of living, improvements in workplace safety, higher literacy rates, high achieving schools, and a much longer life expectancy. ***The leaders of this country respectfully suggest world events should not be viewed through an American and western European perspective. The world is full of diverse, legitimate opinions on what is truly happening in the world.*** (source: wikipedia)

Xi Jinping is the General Secretary of the Communist Party in this country and, as such, the most powerful government leader in this country.

The ***world's and this country's fastest train*** charges $8 per person, per ride. This "Maglev" train runs the nearly 19 miles from the world's largest airport, the Pudong International Airport in this country, to the Longyang metro station on the outskirts of the world's largest city. The train, which takes just over 7 minutes to go 19 miles, uses ***magnets***, i.e. ***magnetic levitation*** (maglev) technology, as it travels up to ***267 miles per hour***!!!! . As a result, most of the train's passengers since its 2004 debut have been travelers on their way to and from the Pudong International airport.

Basketball is the most popular sport in this country. Some 300 million people play basketball in this country. **Jimmer Fredette**, shown in the photo above dribbling the ball, is an American and former NCAA Divsion 1 college basketball star at Brigham Young University in Utah and one of many Americans playing in this country's professional basketball league. Fredette is one of the most popular players in the country's professional league. The most famous basketball player born in this country is Yao Ming. Yao was a great player who played in America's NBA for the Houston Rockets and became an elected member to the NBA's Basketball Hall of Fame. America's NBA (National Basketball Association) has grown to become this country's most popular international sports league. The NBA has more than 150 million followers on social media.

The image above shows the logo of the ***Industrial and Commercial Bank***, a multinational banking company in this country. Like most businesses in this country, the government owns and controls the activities of this bank. According to Wikipedia, as of 2006, ICBC had 2.5 million corporate customers and 150 million individual customers. Goldman Sachs, a privately owned, large American investment bank, invested $2.6 billion in ICBC and, as a result, owns 5.75% of the stock in ICBC. According to a 2020 ranking by Fortune Magazine, **3 out of the top 5 most valuable companies in the world are owned by the government**. The #1 ranked company was ICBC.

#1 - **ICBC** - (this country)
#2 - **China Construction Bank** (this country)
#3 - **JP Morgan Investment Bank** (United States)
#4 - **Berkshire Hathaway** (United States)
#5. **Agricultural Bank of China** (this country)

#8 - **Bank of America** (United States)
#9 - **Apple** (United States)
#13 - **Google Alphabet** (United States)
#40 - **CVS Health** (United States)

one of ICBC's banks located in this country's largest ***city of 25 million.*** See the ICBC logo lit on the building.

The ***BYD Han*** is a midsize car manufactured in this country available as an **all-electric car** AND as a plug-in hybrid. **BYD sells more electric cars than TESLA (2023)**. **Warren Buffet**, the CEO of the investment firm, Berkshire Hathaway, owns 8.2% of the stock in BYD Han automobile company. **Buffet has invested more of his money in BYD than the American automaker, General Motors!!!!**

photo above shows the **principal owner** of this company called ***Alibaba***, ***Jack Ma***. Alibaba is a multinational **technology company** specializing in **e-commerce** platforms like the American companies Amazon and EBay. Founded on June, 28*th*, 1999 in this country, Alibaba owns other companies offering electronic payment services, other search engines for shopping and cloud computing operating in many other countries around the world. According to the same FORTUNE MAGAZINE survey which ranked ICBC as the #1 valued company in the world, FORTUNE MAGAZINE ranked ***Alibaba as the 31st most valuable company in the world.***

photo above shows fast food in this country being paid for using ***Alipay***, a third-party mobile and online payment platform. Alipay was **established by the Alibaba Group and its *founder Jack Ma*** in this country in February 2004. In 2015, Alipay moved its headquarters to its largest city of 25 million people. ***Alipay surpassed PayPal,*** the American owned and operated mobile payment service, as the world's largest mobile payment platform in 2013. As of March 2018, Alipay had **870 million users**. It is the world's number one mobile payment service organization. **55% of consumers in China use Alipay** and its use in this country continues to grow. **Alipay was introduced in South Korea** in 2015 and is now accepted as a means of payment at many companies in South Korea. Alipay users can also receive an instant tax refund in South Korea. In 2019, ***taxis and Starbucks in the city of Seoul, South Korea,*** **will accept payments using Alipay**. ***Alipay has also partnered with an American company called First Data*** allowing payments for point of sale purchases with more than 4,000,000 businesses **in the United States**.

founded in 1987 by Ren Zhengfei, a former Chief in the Chinese army, ***Huawei offers telecommunications networks***, providing operational and consulting services and equipment **to 170 companies all over the world**. Huawei has over 194,000 employees as of December 2019. ***Huawei is the largest telecommunications equipment manufacturer in the world and overtook Apple in 2018 as the second-largest manufacturer of smartphones*** in the world behind Samsung Electronics.

"If someone wants to see
the FUTURE,
look to this country!"

Mark Schneider, the boss of the world's biggest food company in 2021, Nestle, recently made this statement to his Nestle's executive team.

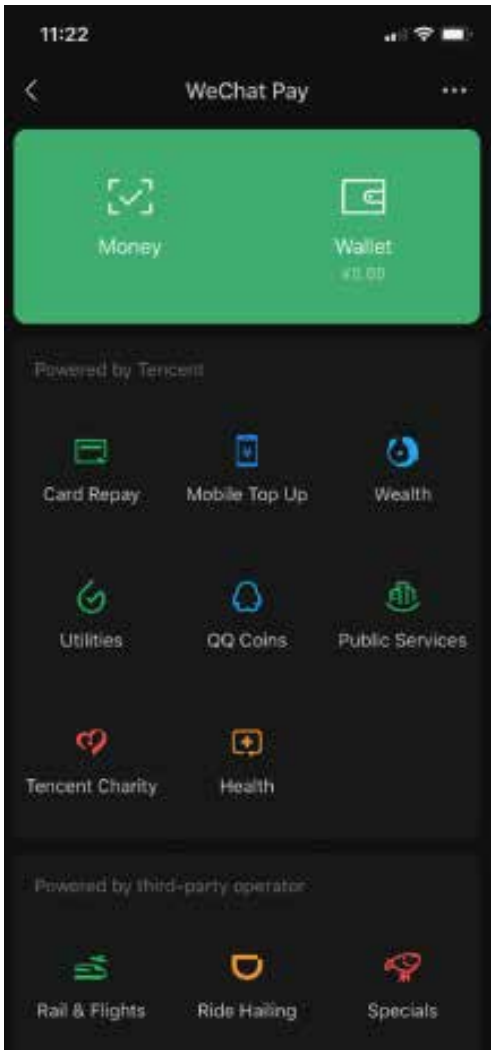
Every year,
more and more people
all over the world
are *shopping online*.

It's irrefutable. The data support this claim. The top 3 e-commerce companies in America are Amazon, Shopify, and EBay. The top 3 e-commerce companies in the country of this profile are ***Alibaba***, ***JD.com***, and ***Pinduoduo***. These companies account for 90% of ALL digital merchandise sales in this country. In America, Amazon, Shopify, and EBay account for less than 50%. And, because Alibaba, JD.com, and Pinduoduo's dominate e-commerce in this country, the communist government leaders of this country are investigating Alibaba, possibly to force them to be a smaller company so new companies will emerge to compete in the country's economy. This country realizes the advantages of free market competition. More competition means investors use their wealth to start new companies which then compete with the established companies. When companies compete, they invest in technology, hire smart people, and offer consumers competitive pricing to secure market share in the economy.

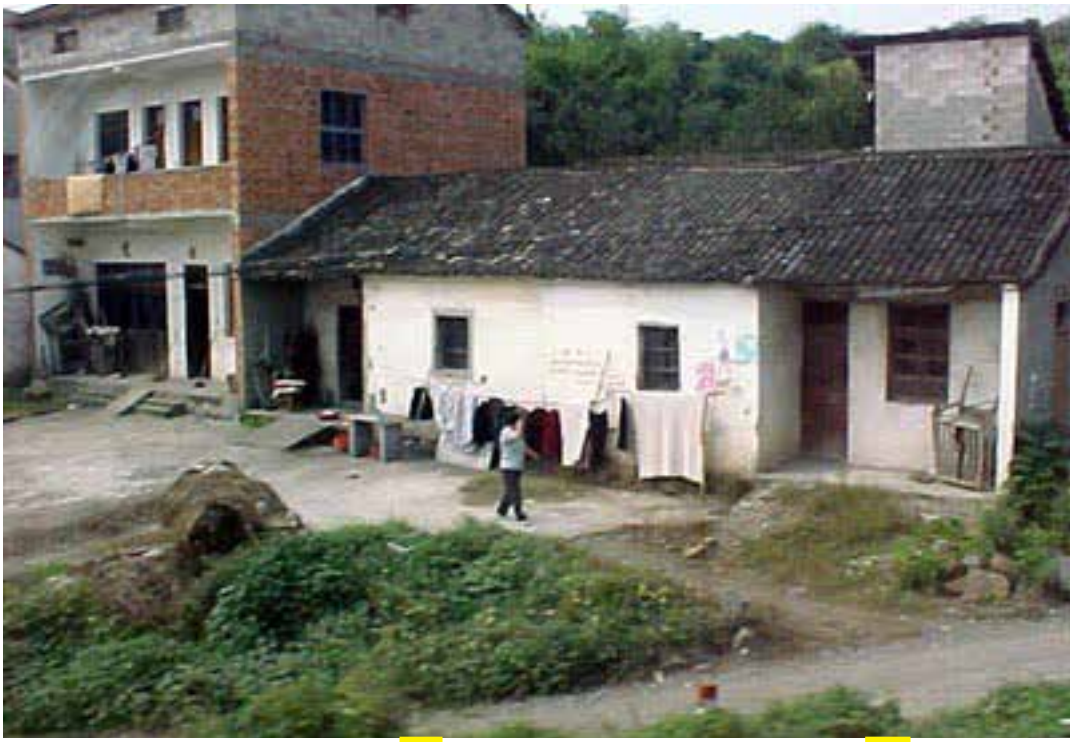
There are companies in this country today investing in new technology to improve customer capabilities. New platforms, new apps, help companies like ***Taobao, Douyin*** (called ***TikTok*** in America), and ***Xiaohongshu.*** enable their customers to create short promotional videos, instant messaging, live streaming, and social networking on multi-channels to promote their services and products. Here's one more important data point. ***Mobile technology is playing an increasing role in the economy of every country in the world***.

"90% of all e commerce sales
in this country
are made on mobile devices"

according to the January 2, 2021 issue of ***The Economist*** magazine. "*In the United States, 43% of e commerce sales are made on mobile devices.*"



WeChat is a multi-purpose messaging, social media and mobile payment ***app*** developed by the ***Tencent*** company. **ALL OF THIS ON ONE APP!!!** ***WeChat provides*** text messaging, hold-to-talk voice messaging, broadcast (one-to-many) messaging, video conferencing, video games, sharing of photographs and videos, and location sharing. Released in 2011, it became the world's largest standalone mobile app in 2018 with over ***1 billion monthly active users***.

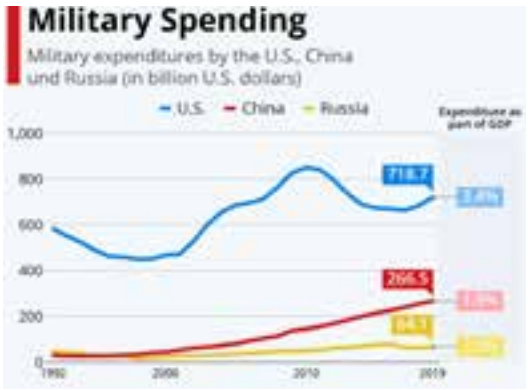


There is a stark difference between the quality of life in the ***rural*** (places far away of the cities, usually farms, plains, and forests) ***areas*** of this country and the urban (city) areas of this country. People in the urban areas have much higher incomes, better schools, and infrastructure (roads, highways, trains, airports, apartments and homes.) The southern and coastal rural populations make less money and a smaller, less maintained infrastructure and than people living in the large, urban areas. In northwest and western rural regions, populations have the lowest standards of living in this country and, in some cases, a primitive quality of life. Basic needs such as running water and accessible transportation are a problem in these rural areas. 46% of this country's total population of 1.4 billion LIVE IN RURAL areas.

Smog, air pollution, is a major problem in this country. The photo above was taken by a Reuter's News Agency photojournalist on April 2, 2018, in the capital city of the country. In 2019, ***coal*** made up 57.7% of this country's power plants that produce the country's electricity. Since 2011, this country has burned more coal to produce electricity than the rest of the world combined.

To Understand China Today, read the period of Chinese History Named "The Century of Humiliation"

China has significantly more soldiers, sailors, and pilots than the United States, more than 2.8 million troops in the various services of the military. The **United States military has the second largest military in the world**; the only other countries with more than a million active duty troops are China's neighbors—Russia, India and North Korea. "*China has the largest navy in the world, with a battle force of approximately 350 ships and submarines*" a United States report stated. The U.S. Navy's current battle force is composed of 295 ships. The United States has larger and more sophisticated ships than China. America is ahead of China in the quality and quantity of long-range attack submarines, even if China now has a respectable force of shorter-range and mostly nonnuclear-powered attack subs itself. Many of China's new ships are well-equipped with launch tubes and modern missiles. **China is also building islands atop reefs in the South China Sea** through a vast **land reclamation program** that began in 2014-2015, to enhance its physical presence and **project power and strength** in these waters off its coast **to America and America's nearby ally, Nationalist China, on the island of Taiwan**.



Graph showing the amount of money America, China, and Russia has been spending on their militaries from 1992 to the 2020. Notice the rate of increases in military spending by China. **China is ranked number one in cyber security followed by the Netherlands and France, then the United States and Canada.**

Researchers conclude the United States leads in cyber offense capabilities and cyber intelligence gathering as of 9/2020. **Microsoft has blamed a Chinese cyber-espionage group for attacks on its mail server software**. Microsoft claimed the hackers belonged to a Chinese government backed group, which was a "*highly skilled and sophisticated actor*". Microsoft's inadequate security protocols allowed the hackers to remotely access Microsoft e mail inboxes (Mar 3, 2021). ***Approximately 30% of all cyber crime attacks worldwide are launched from China***. Russia leads the world in cyber crime and sponsors as many as 30 highly capable cyber crime hacker groups.

Rank	Country	Spending (US$ bn)	Spending (PPP)	% of GDP	% of Global Spending
	World total	1,817	2865.3	2.2	100%
1	United States	732.0	732.0	3.4	39.7%
2	China[n]	261.0	444.0	1.9	14.9%
3	India	71.1	209.0	2.4	7.7%
4	Russian Federation	65.1	181.3	3.9	3.4%
5	Saudi Arabia[NB]	61.9	134.2	8.0	4.3%
6	France	55.1	91.2	1.9	2%
7	Germany	49.3	60.1	1.2	2%
8	United Kingdom	48.7	59.9	1.7	1.8%
9	Japan	47.6	60.1	0.9	1.8%
10	South Korea	43.9	62.3	2.7	2.1%
11	Australia	27.5	28.8	2.0	0.8%
12	Brazil	26.9	48.3	1.3	1.8%
13	Italy	26.8	37.3	1.4	1.2%
14	Canada	22.2	28.0	1.3	0.8%
15	Israel	20.3	20.0	5.3	0.8%

Graph ranks military spending by the top 15 countries in the world. In 2019, Peter Robertson, a professor from the University of Western Australia, argued that using conventional currency conversion as opposed to more accurate "purchasing power parity" (PPP) exchange rates dramatically understated China's military capabilities and that China's real military spending was equivalent to US spending of $455 billion, calculated from a PPP perspective. PPP is a measurement of prices in different countries that uses the prices of specific goods to compare the real or absolute purchasing power of the countries' currencies. In the case of China and the United States, comparing what the American dollar can buy in America and what the Chinese dollar, called the yuan, can buy in China.

THE WALL STREET JOURNAL

China Limits Online VideoGames to Three Hours a Week for Young People

New regulation will ban minors from playing videogames entirely between Monday and Thursday

By Reporter Keith Zhai - Updated Aug. 31, 2021 12:13 am ET

SINGAPORE—China has a new rule for the country's hundreds of millions of young gamers: No online videogames during the school week, and one hour a day on Fridays, weekends and public holidays.

China on Monday issued strict new measures aimed at curbing what authorities describe as youth videogame addiction, which they blame for a host of societal ills, including distracting young people from school and family responsibilities.

The new regulation, unveiled by the National Press and Publication Administration, will ban minors, defined as those under 18 years of age, from playing online videogames entirely between Monday and Thursday. On the other three days of the week, and on public holidays, they will be only permitted to play between 8 p.m. and 9 p.m. The government announcement said all online videogames will be required to connect to an *"anti-addiction"* system operated by the National Press and Publication Administration. The regulation, which takes effect on Wednesday, will require all users to register using their real names and government-issued identification documents.

In restricting online videogame play for younger people, the government is seeking to "*effectively protect the physical and mental health of minors*," China's state-run Xinhua News Agency said Monday.

The People's Daily, the Communist Party's principal newspaper, said in a commentary that there was no room for compromise and negotiation on the new measures. In regulating the videogame industry, the commentary read, "*the signal sent by this move is very clear—the government can be 'ruthless*.'"

Throughout the history of mankind, there have been specific natural resources that have had exceptional, extra-ordinary value.

In the 19*th* century, it was GOLD. The 20***th*** century had oil, aka BLACK GOLD. And, now, its RARE EARTH MINERALS.

RARE EARTH MINERALS
ARE VALUABLE
WITH
LIMITED ACCESSIBILITY
and
a rapidly increasing
GLOBAL DEMAND.

TODAY, rare earth minerals like

metals
COBALT and LITHIUM
and
elements such as
SCANDIUM, LANTHANUM,

yttrium, lanthanum, cerium and others are playing an increasingly important role in the GLOBAL ECONOMY of the 21st century. Products like

electric vehicles (EV),
wind turbines,
laser guided missiles,
smart phones,

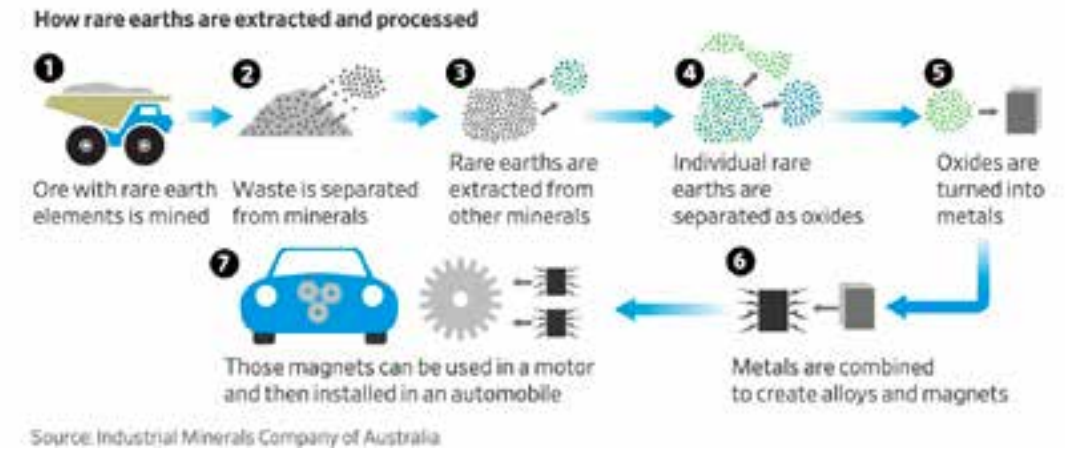
Photo is a mining operation in the **Democratic Republic of the Congo (DRC).** The DRC is considered the wealthiest country in the world, with an estimated US$24 trillion in untapped mineral resources. Copper, gold, diamonds, cobalt, uranium, and coltan are just some of the valuable minerals beneath the soil in the Congo. The relationship between China and the DRC has significantly increased due to massive growth in the DRC's exports of raw materials like cobalt to China. In January 2021, the Chinese government agreed to forgive US$28 million the Congo owed China. China then pledged US$17 million in aid to Congo, mainly for development projects. At the same time, the Democratic Republic of the Congo joined China's ***Belt and Road Initiative*** which provided China a vital supply line of vital minerals in return for investments in Congo's infrastructure.

flat screen televisions,
magnets,
and
batteries
depend upon rare minerals in the production process.

China mines over *70%* of the world's rare earths and is responsible for *90%* of the complex production process of turning these minerals into magnets and other high demand products according to a April 11, 2021 Wall Street Journal article. *"For these rare minerals to go from a hole in the ground to produce magnets, you need vast skills and expertise, which barely exist out of China,"* said Constantine Karayannopoulos, chief executive of Neo Performance Materials ULC, one of a few Western companies able to process rare earths and make magnets.

This expertise gives Chinese government sponsored companies a great advantage over companies in America and other countries throughout the world. China's expertise mining and then processing rare minerals into valuable products creates not only economic but also strategic advantages to China as they compete in the global marketplace.

Many rechargeable batteries are made with rare earth compounds. Demand for the batteries is being driven by the worldwide popularity of portable electronic devices such as cell phones, readers, portable computers, and cameras.



The value in these rare minerals rests in specific qualities and capabilities like fluorescence, conductivity, and magnetic properties which makes them very useful especially when mixed in small quantities with more common metals like iron. According to a *Geoscience News and Information* publication, these minerals are so rare, countries compete to control supply lines to

ensure their delivery to their country. China has established many exclusive supply lines from the mining of a rare mineral in a foreign like the Republic of the Congo on the African continent to delivery to China.

Several pounds of rare earth compounds are in batteries that power every electric vehicle and hybrid-electric vehicle. As concerns for clean energy, energy independence and other issues drive the sale of electric vehicles and wind turbines, the demand for batteries made with rare earth compounds increases even faster.

Western companies like the United States are years behind China establishing mining of rare minerals in the United States but also establishing treaties with the few countries that have rare minerals to export them to America. The United States needs not only the rare minerals but also the supply lines and production infrastructure to turn these rare minerals into the batteries, magnets, and missile systems to survive and process in the global marketplace of the 21*st* century.

China controls more than
80%
of rare earth mineral
global supply,
accessibility,
and
production!!

World Mine Production and Reserves (2020 Estimates)

Country	Production (Metric Tons)	Reserves (Metric Tons)
United States	38,000	1,500,000
Australia	17,000	4,100,000
Brazil	1,000	21,000,000
Burma	30,000	not available
Burundi	500	not available
Canada	–	830,000
China	140,000	44,000,000
Greenland	–	1,500,000
India	3,000	6,900,000
Madagascar	8,000	not available
Russia	2,700	12,000,000
South Africa	–	790,000
Tanzania	–	890,000
Thailand	2,000	not available
Vietnam	1,000	22,000,000
Other Countries	100	310,000
World total (rounded)	240,000	120,000,000

Countries like
the United States
and
its "*Western*" allies
England, France, etc
and
Taiwan, Japan, South Korea,
Australia, etc
are
ANXIOUS

about China's dominant access and production know-how with rare earth minerals. Furthermore, China has protected their advantage by creating dependable and often exclusive

Did You Know? Every hybrid-electric and electric vehicle has a large battery. Each battery is made using several pounds of rare earth compounds. The use of electric vehicles is expected to increase rapidly, driven by energy independence, climate change and other concerns. This will increase the demand for rare earth materials. Image copyright iStockphoto / Mark Stay.

supply chains with many rare mineral rich foreign countries as well as building internal national security systems. According to a June 2020 article in the *Wall Street Journa*l,

China sees its dominance in strategic rare-earth minerals as leverage that can be used against the West — including in trade disputes with the United States,

according to a new report by U.S.-based researchers. *"China's rare earths positioning both implicates and threatens the entire global system..... They (*China*) see controlling this type of [industry] as a path to win (*world dominance*) without fighting (* a war*)."*

America's Defense Department is trying desperately to catch up to China by investing in its supply chain for importing rare earth minerals as well as announcing grants to companies to develop a rare mineral facility at the only ***United States ONLY rare-earth mineral mine***, ***Mountain Pass*** in California, as well as a new rare mineral processing plant in Texas. The United States Congress claims it will spend more money on securing and processing rare earth minerals.

While opportunities for future success are exciting to think about,

there are
responsibilities
which
always accompany success;

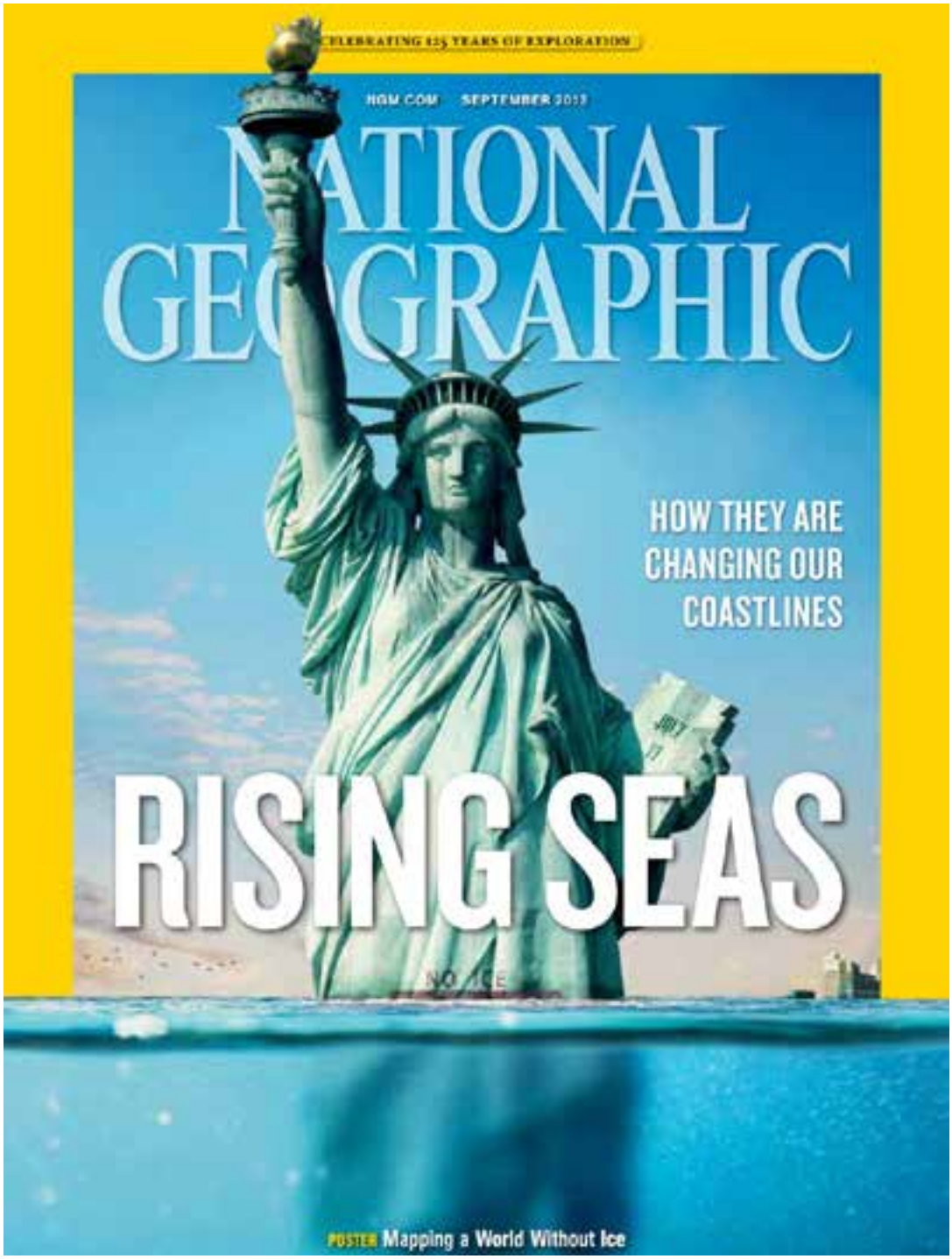
exciting and fulfilling responsibilities to family, loved ones, to the company you own or the company you work for, to your employees or colleagues you work with. What about them? And, what about on a global scale? What about the planet, Earth, we inhabit? Do you have a responsibility to it?

Responsibility to the changing planet brings new opportunities, new jobs, for talented, curious people. Engineers. Computer programmers. Analysts. . Robot mechanics. Meteorologists. Financial advisors.

Artists. Designers. Oceanographers. Marketers. Cyber Security and Sales people. Futurists. And,
jobs which have
yet to be created!

All awaiting the curious and those willing to go out of their comfort zone, today and in the future.

there is a lot of ***data scientists are collecting and analyzing concerning rising temperatures on Earth and the impact hotter temperatures are and will have on ocean levels t***hroughout the world. Some scientists contend, if global temperatures continue to rise, glaciers will continue to melt in the Arctic Ocean and Antarctica dumping more water into the oceans and cause ocean levels to rise and come farther onto coastal lands. The map of North America above shows the present coast line and future coast lines **when** oceans rise significantly. Notice the cities of **Boston, New York, Houston, Philadelphia, Washington D.C.** and the area of southern **Florida; all under water!**



"***Providence, Rhode Island***, *has witnessed sea levels rise about 10 inches since 1929. We're expecting about a foot increase in the next 20 years and 2 to 3 feet by 2050. 7 feet* ***by 2100! At 7 feet, certain areas of Warwick, RI are gone, underwater, as well as the downtown area of Providence.*** *Even a foot increase takes out the Providence Place Park boardwalks. Climate change is the single biggest issue that the coastal environment will be facing over the next several decades."* **Grover Fugate, Executive Director, RI Coastal Resources Management Council. Providence Business News. February 15 - 21, 2016**

The top picture shows the tall, white obelisk known as **Washington's Monument**, the **Reflection Pool** leading up to the **Lincoln Memorial** and the **White House** in the background as it appears today. The bottom photo depicts a climatologist's prediction of the what could happen to this area in Washington, D.C. if the planet, Earth, continues to get warmer and

glaciers melt causing sea levels to rise.

As glaciers and polar ice caps melt, more water would flow into the oceans to raise sea levels and move ocean waters farther onto coastal lands. In this bottom picture, waters could envelope the White House, pass the Washington Monument, cover the Reflection Pool and right up to the steps of the Lincoln Memorial. Many significant events have taken place in American history around the **Reflection Pool** and in front of the **Lincoln Memorial**. The *"March on Washington"* in 1963 brought 250,000 people to this site (National Mall) and is where Martin Luther King Jr gave his famous ***"I Have a Dream"*** speech. 2015 was the hottest year on record. As of October 2015, the Earth had warmed by more than 1.7 degrees Fahrenheit since 1880, when records begin on a global scale. Scientists believe most of the warming since 1950 was caused by the human release of '**greenhouse' gases**. The greenhouse gases being released by human activity are often called **"carbon emissions"**mostly from the burning of fossil fuels (**coal, oil, natural gas**) in power plants producing electricity and from cars, trucks and buses using gasoline and diesel. Cows emit emissions of methane, a powerful greenhouse gas that causes warming. As beef consumption rises as the world's population grows and economic development makes people richer and better able to buy beef, more beef means more cows and more methane emissions. Another major creator of carbon emissions is the destruction of forests. Billions of tons of carbon emissions are stored in trees and plants, When forests are cleared, trees and plants are burned sending carbon they've stored into the air as carbon dioxide. If emissions continue unchecked, some scientists say global warming could ultimately increase the Earth's temperature by 8 degrees Fahrenheit. Long term, scientists fear the effects of **warmer temperatures will** destabilize governments, produce waves of refugees, precipitate the sixth mass extinction of plants and animals in Earth's history and cause seas to rise high enough to

flood most of the world's coastal cities.

All of this could take hundreds or even thousands of years to play out. But today, many scientists believe this is the future of the earth's climate if we don't stop using fossil fuels to produce electricity and fuel for cars and trucks. Countries with cold climates and large permafrost areas like Canada and Russia could see some economic benefits as global warming makes agriculture possible where long cold winters previously prevented it.

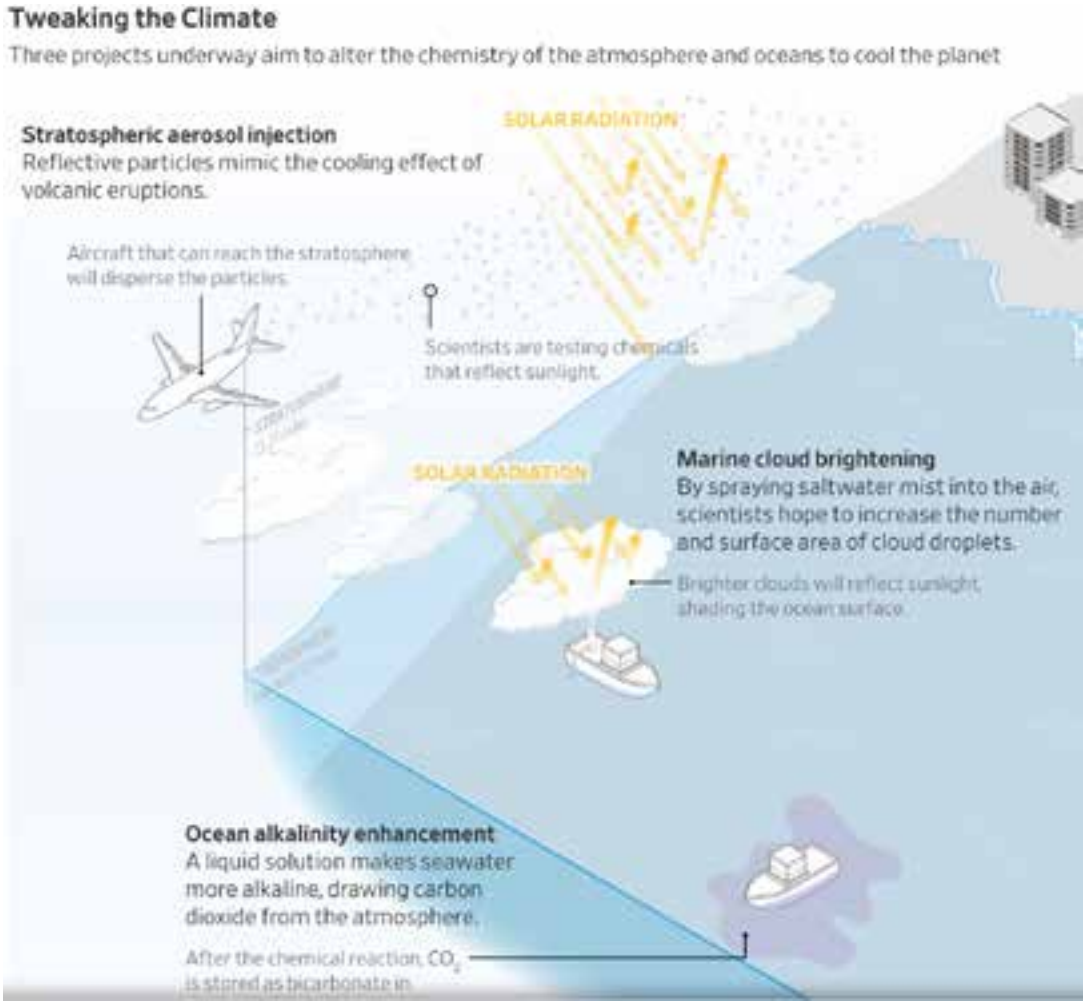
New Ways to Keep the Planet Cooler and Stop Flooding

Scientists and leaders of nations are trying everything possible to lower the temperatures of planet earth. Everything from tax credits for buying electric cars to building wind turbines (windmills), world leaders keep experimenting with different ways to stop the Earth from getting warmer causing sea levels to rise flooding seacoast cities and homes, erratic weather patterns of monsoon rains and unusual blizzard snow storms.

The latest experiment is injecting specially created particles into the sky which will reflect sunlight from entering the earth's atmosphere.

The research project, known as marine **cloud brightening**, is led by Southern Cross University as part of the $64.55 million, or 100 million Australian dollars, Reef Restoration and Adaptation Program. The program is funded by the partnership between the Australian government's Reef Trust and the Great Barrier Reef Foundation and includes conservation organizations and several academic institutions.

Experiments aimed at cooling the atmosphere by **reflecting sunlight** away from Earth are an attempt to mimic **what happens when a volcano erupts**. In 1991, Mount Pinatubo, an active volcano in the Philippines, spewed sulfur and ash into the upper atmosphere, lowering the Earth's temperature by almost 1 degree Fahrenheit for an entire year. But, until a few years ago, many scientists opposed human interventions, because of the unknown impact on the planet Earth. "*It very easily becomes an excuse for not doing all the things that we already can do and that we know will work,*" said Dan Jørgensen, Denmark's minister for global climate policy. "*When we start interfering with nature, we risk*



it also having many very negative consequences that we cannot control and that we cannot foresee."

In Israel, a similar startup called Stardust Solutions has begun testing a system to disperse a cloud of tiny reflective particles about 60,000 feet in altitude, reflecting sunlight away from Earth to cool the atmosphere in a concept known as solar radiation management, or SRM. Yanai Yedvab, Stardust chief executive and a former deputy chief scientist at the Israel Atomic Energy Commission, wouldn't disclose the composition of the proprietary particles.

In Massachusetts, researchers at the Woods Hole Oceanographic Institution on Cape Cod plan to pour 6,000 gallons of a liquid solution of sodium hydroxide, a component of lye, into the ocean 10 miles south of Martha's Vineyard this summer. They hope the chemical base will act like a big tablet of Tums, lowering the acidity of a patch of surface water and absorbing 20 metric tons of carbon dioxide from the atmosphere, storing it safely in the ocean. (Wall Street Journal,Eric Niiler, Feb. 14, 2024 5:30 am ET)

Water

Not enough!!!!

The *Economist Magazine* published a story on the world's water supply in its March 2nd, 2019 edition with opening statement - "***Climate Change and Population Growth Make The World's Water Woes More Urgent!....***

The problem with climate change will not be too much water but too little".

The city of Capetown, South Africa, almost ran out of water in 2018 after a 3 year drought bringing the city the ignominious distinction of being the first among the world's large cities to run out of water. At one point, Capetown government leaders discussed the feasibility of towing **an iceberg from Antarctica** to provide the city with drinking water! In 2014, Sal Paulo, Brazil faced the same problem. While over 70% of the earth's surface is covered by water, 97% of it is salt water thus unable to be used for humanity's greatest needs, i.e. drinking and farming. Another 2% of the earth's water is frozen at the north and south poles. Furthermore, large sources of fresh water, like the Ganges River in India, are polluted. Rubbish litters the river's edge. Companies empty their by-products into the river. And, most alarmingly, **open, human defecation** routinely occurs further jeopardizing the purity of this great river's water. The problem, according to Asit Biswas, a water expert at the Lee Kuan Yew School of Public Policy in Singapore, "*is not scarcity, drought, lack of money or a number of other convenient excuses.* ***The problem everywhere is the people in charge, i.e. bad management!"*** Israel is noted as the model for sensible and effective water management; India, unfortunately, the worst.

Less than 1% of the earth's water is available for drinking and irrigating farms. Most of the fresh water is found underground.

The most significant demand for clean water is farming, mostly for irrigation. Five countries use the most fresh water from underground sources: America, China, Iran, Pakistan, and India. As a result, "*a third of the world's biggest sources for groundwater are in danger of drying out*" according to the Economist Magazine study.

The three major causes for the earth running out of fresh water are: **more people in the world; more people making more money, as a result, fewer poor**; and **climate change.** Climate change disrupts weather patterns. Air temperatures and ocean temperatures are getting warmer. As a result, sea levels are rising threatening to flood long standing neighborhoods and farms throughout the world. "*Wet places will become wetter and dry places drier.*" In other words, there will be more extreme weather events, i.e. more intense hurricanes, tsunamis, blizzards, droughts, heat waves, etc.

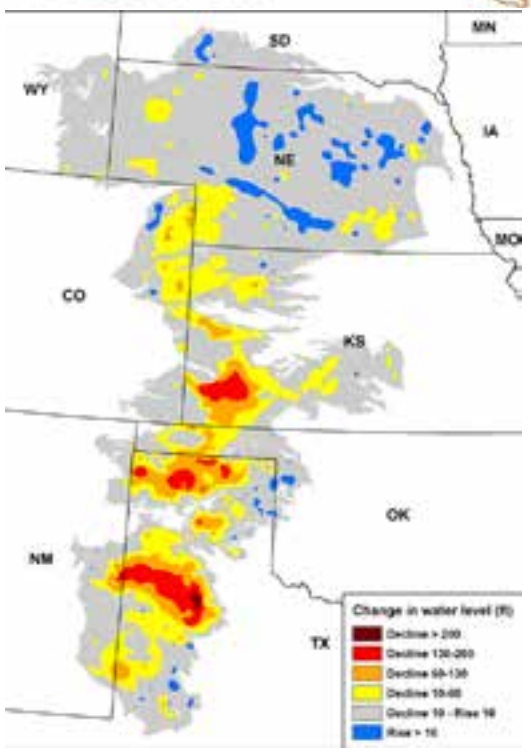
Many countries and cities are turning to alternative sources for fresh water. 8 countries, Singapore, Qatar, Malta, Kuwait, Bahamas, Bahrain, Maldives and Antigua, take more water from the ocean than fresh water sources. The process of ***turning salt water from the sea into freshwater suitable for drinking and farming is called desalination.***

Countries like ***Israel and Singapore*** go one step further to ensure their citizens have enough water for drinking and farming. Both countries ***drink their treated sewage*****!** Singapore has 4 **NEWATER plants** to treat their sewage with ultraviolet disinfection. Their sewage treatment facilities provide 30% of the entire country's water supply. The rest of Singapore's water supply comes

Israeli Desalination plant

from water imported from the neighboring country of Malaysia, collecting urban rainwater, and seawater desalination. The country of Israel has 5 desalination plants. Israel also treats and re-uses 86% of its waste water.

Most **Americans** receive their water from the cities and town offices where they live. Americans pay their city or town hundreds, and in some cases, thousands of dollars a year for their water and sewage services. By 2018, 87% of the American population received their fresh water from their city, town or county owned water departments. The ***Ogallala Aquifer,*** found throughout several mid western states of America, is **one of the world's largest aquifers.** An aquifer is an underground layer of rock, sand, gravel, and soil filled with moving water. Water travels between



spaces in the aquifers. Aquifers can range from a few square miles to thousands of miles in size/length. The Ogallala supplies drinking water to 82% of the of American citizens living in the mid western states of South Dakota, Nebraska, Wyoming, Colorado, Kansas, Oklahoma, New Mexico, and Texas. Scientists are concerned about the Ogallala's longevity. Water levels in the aquifer are dropping precipitously in each of Ogallala's states. In Texas alone, water levels are dropping an average of 1 foot a year to as much as 3 feet per year in some places! If the water of the Ogallala is depleted by overuse and mismanagement as some critics say is happening today, it would take nature 6,000 years to replenish the aquifer water by natural rainfall.

Most ***Rhode Islanders*** receive their water from their cities and towns which, in turn, draw their water from the ***Situate Reservoir***. The Scituate Reservoir is the ***largest inland body of water in the state of Rhode Island and supplies drinking water to more than 60 percent of the state population, including Providence.*** The Scituate Reservoir is operated by Providence Water Supply Board. Residents who get their water from the Situate Reservoir pay hundreds of dollars, if not more, each year to their cities and town governments for their water.

With many countries and states within countries having difficulty consistently providing clean water to their citizens,

governments are outsourcing
their responsibility
for clean water
to private companies.

Regulating water use to prevent overuse and finding enough tax revenue to find new water sources as well as maintain sewerage treatment and water distribution infrastructure has proven too much to bear for governments.

Private companies
are being hired to
operate city, state, or national
water delivery and sewerage treatment facilities
as well as
provide clean water
from private water sources.

If countries "*cannot or will not deliver clean water to their citizens who desperately need it, private companies will, FOR A PRICE"* writes Laurence Smith in "*The World in 2050*". . Siemens, Veolia Environmental Services, and Thames Water are just a few companies doing this now. *"In return for new infrastructure, companies must charge fees for the water in order to recoup money spent and make profits for their investors"*. It's business 101. Laurence quotes Maude Barlow, author of "*Blue Gold and Blue Covenant*" - "*Powerful corporate water cartels have emerged to seize control of every aspect of water for its own profit. Corporations deliver clean drinking water and take away wastewater. More importantly, corporations want governments to de-regulate water and allow the marketplace to set water policy"* and prices.

Water will be
a commodity in the 21st century
potentially demanding the
value and relative pricing
as oil in the 20th century!

photo of a sewage treatment facility in Portugal owned and operated by Veolia. Veolia is the water division of the French company, Veolia Environment, and the world's largest supplier of water services.

photo from the James Bond movie "Quantum of Solace". Bond attempts to thwart the scheme of the ***Quantum*** company trying to buy Bolivia's primary water sources in order to corner the country's water market and charge the Bolivian government exorbitant prices for their water.

Thames Water is a monopoly, private utility company responsible for the public water supply and waste water treatment in large parts of Greater London, Luton, the Thames Valley, Surrey, Gloucestershire, Wiltshire, Kent, and some other areas of the United Kingdom. ***Thames Water*** is the UK's largest water and wastewater services company

5 million to 14 million tons of plastic waste flows from rivers and coastal areas into our oceans all over the world. By ***2050, there will be more plastic in the oceans than there are fish*** **(by weight).** Sunlight, wind, waves and heat break down plastics into smaller bits that look like food to all types of ocean creatures from shrimp, fish and plankton to birds and turtles. The plastic clogs the digestive systems of sea creatures, often diminishing their urge to eat and thus reducing their growth, reproduction systems and their live expectancy. Of the 5 to 14 million tons of plastic waste flowing into our oceans, 236,000 tons are micro-plastics – tiny pieces of broken-down plastic smaller than your little fingernail.

"*The average* ***working life of a plastic bag is only 15 minutes!***" Too many plastic bags end up in the rivers of the world, mostly but not exclusively, from poor east Asian countries and, then, into our oceans. Almost 7 billion tons of plastic become waste every year. Ocean ***plastic ends up killing millions of marine animals each year.*** Different marine animals, from whales to plankton, eat micro-plastics, some bits as small as 1/5 of an inch across.

Activists around the world are lobbying for bans on the most polluting plastics — i.e. straws, and the bottles, bags, and containers that markets put our food and drink in. **Photo above** shows men in boats navigating through some of the ***"garbage patches"*** of plastic debris that have collected in our oceans. Plastic products can take hundreds of years to decompose, and they put marine life at serious risk of injury and death. Fish and birds often mistake plastic for food. Researchers are now beginning to find plastic embedded into the tissue of marine life. Plastic has been found in more than 60% of all seabirds and in 100% of sea turtles species. Scientists are trying to determine the impact, if any, on humans consuming plastic infested fish.

The map above shows **an ocean dump** called the ***Great Pacific Garbage Patch. It is one of five major garbage patches drifting in the oceans*** north and south of the Equator (0 latitude). Much of this waste starts in rivers and flows into the ocean. These areas of plastic garbage continue to increase in size. Plastic waste of every description, from toothbrushes to tires to unidentifiable fragments too numerous to count, litter the oceans for hundreds of miles without end. In the Pacific Ocean, there is even a floating island formed by dozens of plastic buoys used in oyster aquaculture that had solid areas you could walk on. **Is there a business opportunity here to make money and save the oceans?**

You Can Help Save Our Oceans

GO TO: https://4ocean.com to purchase and then wear this bracelet to show your support for saving our world's oceans for this terrible dumping epidemic.

$20.00 (USD)

By purchasing this bracelet, you donation will ensure one pound of trash will be removed from the ocean and coastlines! Much appreciated.

- Funds the removal of one pound of trash from the ocean and coastlines
- Unisex design
- Adjustable from 2-5" in diameter
- Stainless steel 4ocean charm
- Hand assembled in Bali
- Made with post-consumer recycled materials, including a small amount (less than 5%) of ocean plastic and ocean glass.

Photo of sperm whales stranded on shores of Germany in Europe. Necropsies (animal autopsies) of 13 of those whales revealed the animals' stomachs were filled with plastic debris. One whale ingested a 13-meter-long fishing net. Another ***whale had a 70 centimeter piece of plastic from a car and other pieces of plastic litter in its stomach.*** Whales probably assumed they were eating food, such as squid, their main diet, which they consume by sucking their prey into their mouths.

According to research published in **2018,**

up to *60% of the plastic debris destroying our oceans* comes from five countries: China, Indonesia, Philippines, Vietnam, and Thailand.

Americans are doing their best to change their dysfunctional relationship with **plastic**. Collectively,

***Americans* generate approximately *33 million tons of plastic trash each year*,**

but less than 10 percent of that actually gets recycled. And, even if you want to recycle plastic, the different kinds of plastic—polyethylene, polypropylene, polystyrene, and so forth—lead to confusion about how and what plastics can successfully be accepted by recycling programs. This is a common problem with food containers: what recycling bin should the yogurt container go? And that ketchup bottle? What about straws? —can the lid go in the blue bin, too? It's too confusing.

"I think the public cares, but they have no idea what the numbers at the bottom of plastics mean," says Mitch Hedlund, executive director of Recycle Across America, an advocacy group that has created a standardized labeling system for recycling bins. "*There is a lack of national awareness to help the public know the difference between plastics—what is recyclable and what's not and what bin it should be put it.*"

So what's an ecologically minded person to do? Ideally, **the less plastic you can use, the better.** And, when it comes to the old "*paper or plastic?*" question at the store, there's no debate: "*Paper and cardboard!*," Hedlund says. That's because paper can be easily remade, and more people understand how to properly recycle it. (Though, as Hedlund points out, paper should be kept separate from other recycling to avoid touching food residue and other contaminants.) Ask yourself - **what can Hope High students do at Hope High School?**

Consuming less overall, ***choosing paper instead of plastic bags* when given the option**, and making recycling easier may sound like simple solutions for the plastic problem, and that's exactly the point. "*We're in a great position to make a change,*" said Hedlund. "*But we need everybody to start unifying around common-sense solutions.*" Eventually, she explains, a critical mass of people changing their habits will create needed change.

Momentum is building in the **war against single-use plastics**. In the past week, a slew of major companies—including SeaWorld parks, American Express, cruise company Royal Caribbean, IKEA, A&W Canada and Burger King United Kingdom—**have pledged to eliminate items such as plastic drinking straws, stirrers, lids, and bags to protect our oceans and their inhabitants (fish, birds, etc)**.

A&W Canada became the first fast food chain

in North America to eliminate plastic straws from its restaurants in January 2019 and offer paper straws as an option. The company said the move will prevent 82 million plastic straws from ending up in landfills every year, CBC reported. (EcoWatch)

Space Trash

Imagine this piece of trash falling from the sky through the windshield of your car or the roof of your home.

It could!

The term "***space debris***" or "***space trash***" refers to the natural debris found in the solar system. Items like large rocks called asteroids and comets, and even smaller pieces called meteoroids which break off from asteroids and comets, litter our solar system and

threaten to collide with planet Earth.

The term also includes parts of old satellites and smaller spent rockets breaking apart in space and falling to the earth. Making matters worse, five satellites have collided in space since December of 2016 creating even more trash and an eventual collision with the earth (Wikipedia). "***Space junk***" is a threat to active satellites and spaceships. Although most debris burns up in the atmosphere before reaching the Earth, larger objects can reach the Earth intact. According to NASA, an average of one piece of debris has fallen back to Earth each day for the past 50 years! Incredibly, despite their size, there has been no significant property damage from "***space debris***".

In 1969 five sailors on a Japanese ship were injured by 'space debris'. In 1997 an Oklahoma woman, Lottie Williams, was uninjured when she was hit in the shoulder by a 3.9 inch × 5.1 inch piece of blackened, metallic material confirmed as part of the propellant tank of a Delta II rocket which launched a U.S. Air Force satellite the year before. On 12 January 2001, a Star 48 Payload Assist Module (PAM-D) rocket upper stage (in the photo above) re-entered the earth's atmosphere after a "*orbital decay*" and crashed into the Saudi Arabian desert. It was identified as the upper-stage rocket for NAVSTAR 32, a satellite launched in 1993.(Wikipedia).

After a large space station panel from the International Space station

***fell to the Earth in 2025 and flattened an unoccupied, volunteer fire station in southwest Rehoboth*, Massachusetts,**

demolishing two of the town's fire trucks, NASA (National Aeronautics and Space Administration), an independent agency of the United States government responsible for the civilian space program as well as aeronautics and aerospace research,

accepted bids from leading space travel companies like Elon Musks' Space X company,

Richard Branson's **Virgin Galactic** company, and Russia's **Gagarin Space Cleaners** to protect the Earth by

clearing debris from the near universe around the Earth.

Impact of pollution from factories, power plants and automobiles in Los Angeles, California, United States (top photo) and Beijing, China (lower photo). ***Air pollution*** creates a number of health conditions including respiratory infections, heart disease, stroke and lung cancer. Air pollution also causes breathing difficulty and wheezing, coughing, asthma and the worsening of existing respiratory and heart conditions. 7 million premature deaths are attributed to air pollution according to some scientists. India has the highest death rate due to air pollution. India also has more deaths from asthma than any other nation according to the World Health Organization. In December 2013, air pollution was estimated to kill 500,000 people in China each year. There is a correlation between pneumonia-related deaths and air pollution from motor vehicles. (wikipedia)

Carbon emission pollution from **coal**, **oil and natural gas making** electricity in power plants in the top photo. Bottom photo shows emissions from **gasoline** and **diesel** powered trucks and cars. The burning of forests and even methane ***'emissions' from flatulence from cows also create greenhouse gases*** which, according to some scientists, are **warming planet Earth** and ***causing glaciers and polar ice to melt.*** Ocean levels will rise and creep farther onto coastal lands. Rising global temperatures also create erratic weather behavior, like more intense rainstorms, hurricanes and blizzards, and longer droughts, according to some scientists.

Clean Energy -

Solar Impulse, an electric aircraft circumnavigating the globe in 2016-17, is a single-seat plane powered by solar cells and capable of taking off under its own power. The design allows the aircraft to remain airborne for several days Solar Impulse 2 was converted for unmanned flights to "run applications" that cannot currently be performed by satellites for communication, measurements and observations for agriculture, infrastructure planning and other purposes

wind turbines, or windmills, located off the coast of Texas in the Gulf of Mexico and off the coast of Cape Cod, Massachusetts, in the Atlantic Ocean generating energy to create electric power

As oceans rise, greenhouse gases raise global air temperatures for longer periods of times, aquifers, reservoirs, rivers, and lakes shrink or run dry, polar ice caps and glaciers in Alaska, Russia, Greenland, Antarctica, Canada, Montana, and other areas in far northern and southern landscapes melt, and as a result, fresh water becomes more scarce, as well as hurricane, typhoon, tsunami, drought, and tornado disruptions become more frequent and intense, scientists and government leaders look to the sun, wind, ocean tides, geothermal, hydrogen, and other clean energy sources to replace oil, coal, natural gas, and other dirty, carbon based sources for electricity for factories, homes, offices, schools, sports arenas, street lights, and automobiles. Scientists and government leaders ask '*what is the best energy alternative*'? Even cleaner energy sources like nuclear, hydroelectric, and biomass fueled power plants create problems "*by reducing both water quality and its quantity*" writes author Laurence C. Smith in his fascinating book "***The World in 2050***". "*Water is used to make steam in a power plant to turn a turbine to produce electricity and get rid of excess heat. The single greatest demand for water in the energy producing sector is for the cooling of the power plant. After cooling the power plant, the water recycled back into a river is hotter than the water originally taken into the power plant from the river. Warmer water holds less oxygen which then slows the swimming speed of fish and interferes with their reproduction. A nuclear power plant uses 785 gallons of water to produce one megawatt hour of electricity while a natural gas plant only uses 195 gallons of water to produce one megawatt hour of electricity".*

What are the best practices to follow
as man balances
the environmental issues
carbon based fuel (coal, oil, natural gas, etc) sources of energy create
and
keeping electricity affordable for all?

The Itaipu Dam is a hydroelectric dam on the Paraná River located on the border between Brazil and Paraguay in South America. Electricity is 55% cheaper when made by the Itaipu Dam than the other types of power plants in the area. Only the Three Gorges Dam in China produces more hydroelectric energy than Itaipu.- Wikipedia

Carbon free "*wind and solar are the fastest growing energy sectors in 2020*" according to energy futurist Smith. Hydropower from rivers and dams generates 16% of the world's electricity in 2020. Wind and solar combined only produce 1% of the world's electricity in 2020. There are some exceptions. The country of **Denmark and the Canadian province (state) of Prince Edward Island get 20% of their electricity from the wind**. European Union countries collectively get 4% of their power from the wind. Presently, carbon based energy production remains less expensive than solar, wind, or hydro alternatives. Which is why, unfortunately, many energy observers believe

oil and other carbon based fuels,
will remain
the dominant sources
for creating electricity in the 21st century.

image of a *Tesla PowerPack*. Tesla built and installed the world's largest **lithium**-ion battery in Hornsdale, South Australia, using Tesla PowerPack batteries. Since then, the facility saved nearly $40 million in electricity costs its first year alone and helped stabilize the region's unreliable electric grid.

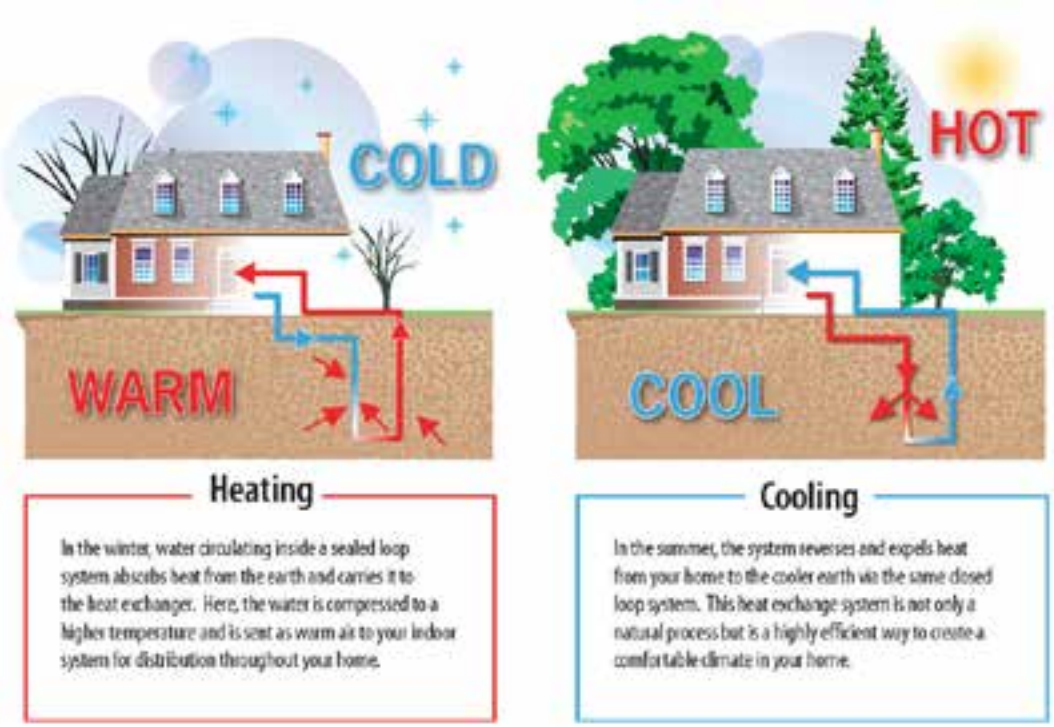
Batteries **are becoming an increasingly important component of 21st century energy**. One of Elon Musk's many business ventures is focused on batteries. Tesla now makes ***Powerwall batteries*** for homes and ***PowerPack batteries*** for businesses. And, there are other companies focusing on batteries like the Japanese company, Panasonic. Batteries to power electric cars. Batteries for electricity in homes, factories, schools, and stadiums. Batteries to provide electricity to entire cities! For example, a Tesla ***Powerwall*** stores and uses electricity generated from a solar panel or a residential wind turbine to give a homeowner abundant electricity day and night, and reduces a home's dependence on buying fossil fuel produced electricity. With a home ***Powerwall***, a home can store solar energy generated during the day for use at anytime. During the day, the sun shines on your solar panels, charging your battery. At night, your home draws electricity from your battery, providing your home with clean, sustainable electricity, 24/7. Clean, accessible, relatively inexpensive, electricity.

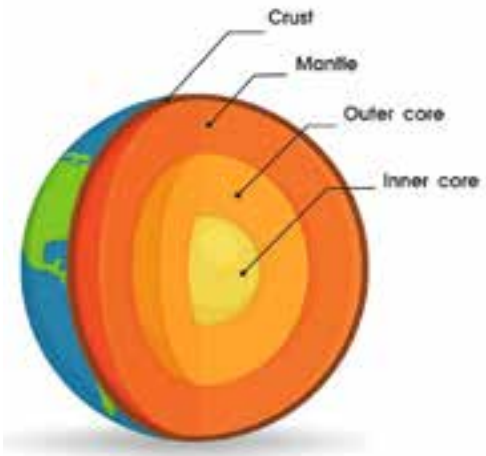
image of a Tesla PowerWall in the basement of a homeowner. Note the Tesla *PowerWall* on the basement floor and its connection to the "***SOLAR INVERTER***" which sends solar energy to be saved in the *PowerWall*

One problem - *what to do with lithium-ion batteries when they wear out*? Solving this problem is becoming more immediate since British and French governments announced they are prohibiting the sale of gasoline and diesel-powered cars by 2040 and Swedish carmaker Volvo has promised to only sell electric or hybrid vehicles as of 2019. **The answer** - Tesla, Nissan, Toyota, and other car manufacturers say they have solutions, i.e "*proven capabilities to recycle spent batteries. **Stay tuned.***

Geothermal Energy

A cleaner, cheaper way to heat a home in the cold of the winter and cool it during the heat of the summer by using the capabilities of the Earth below the surface!





Instead of relying on fossil fuels like oil, natural gas, coal and wood, homes using geothermal energy use the Earth's natural heat source from below the surface. **The key piece of equipment** in a geothermal system is the **geothermal heat pump.** This device is the brain of the operation. The pump uses a loop system of pipes buried underground to exchange heat with the Earth. During winter, when it's cold outside, the geothermal system takes the heat from inside the Earth and bring it into your home. The Earth's inner core acts as a giant heat source, ensuring a consistent and efficient supply of heat. The **inner core or center of the planet Earth** is extremely hot, with temperatures reaching up to about **9,932 degrees Fahrenheit.** "***Planet Earth has a molten red-hot lava core. It is a giant nuclear heater***" writes Paul Zane Pilzer, author of The New Roaring Twenties" 2020s. The Earth's surface is protected from the extreme heat of the inner core by the many layers that make up the Earth's structure. Conversely, in the summer, when it gets really hot outside, the geothermal system inside the house takes heat from inside a house and sends it back into the Earth. This helps to keep your home cool without relying on traditional air conditioning systems using fossil fuel created electricity. The geothermal pump can either be a closed loop of pipes, where a mixture of water and antifreeze circulates, or an open loop of pipes, which uses water from a well. **In summary,** during the heat of the summer, the geothermal heat pump system sucks heat out of a home and pushes it through the pipes into the earth. In the winter, the geothermal heat pump brings heat in from below the surface of the earth. **A geothermal heat pump** is a **versatile, clean, energy-efficient system** that uses the Earth's natural capabilities below the surface to provide both heating and cooling for homes throughout the year.

CLEAN ENERGY IN THE NEAR FUTURE: FUSION ENERGY

A photo, provided by the Lawrence Livermore National Laboratory in California and home to **world's largest laser,** shows the fusion equipment which uses the power of 192 laser beams to make a tiny hydrogen fuel pellet crash and then implode.

Fusion energy science creates powerful, clean energy just like the sun does, i.e. energy that is created when the nuclei part of atoms *'crash'* into each other. Fusion energy occurs when atom nuclei *'crash'* together at incredibly high speeds to create a new element (often helium) in the same way that stars create energy. In that explosive *'crash'*, the two ***hydrogen atoms*** slightly decrease in size but that is then converted into a powerful *'energy'* force according to Einstein's famous equation, **$E=mc^2$.** Because the speed of light is very, very fast — 300,000,000 (million) meters per second — the tiny amount of atom mass lost in the *'nuclei crash'* results in much more energy. ***Fusion reactions***, unlike the chemical reactions when burning coal or natural gas that causes pollution, ***do not release greenhouse gases*** that cause climate change. For this reason, fusion power could help meet the world's energy needs without contributing to the warming of our planet

Stars are made up of ***hydrogen.*** Hydrogen is the simplest and most abundant element in the universe. Hydrogen was first created during the ***'big bang'*** when our universe was created. The center of a star is so hot and so dense it creates immense pressure forcing hydrogen atoms to come together, and, in the process, creates clean, powerful, energy. Scientists, in fusion energy laboratories, are fundamentally attempting to replicate what the sun and stars do naturally.

Scientists have been chasing 'fusion energy' since the 1950s. The United States, Russia and especially some European nations have allocated billions in government dollars trying to master the 'fusion energy' process in the belief, that if they could, it would be a significant opportunity for the world. TAE Technologies (pronounced T-A-E), founded in 1998 to develop **commercial** fusion power with the cleanest energy, is a large privately owned fusion energy company.

One of the benefits of fusion energy is *on-demand energy*: i.e. you can create and use it when you need it. The source for fusion energy is hydrogen and ***hydrogen is everywhere!*** **For example,** if you ***take the top inch of water in the Boston Harbor, this would provide enough hydrogen to provide enough power/electricity for metropolitan Boston, Massachusetts and its 4,900,000 (million) peoples' energy needs for 50 years*****!!** ***Or,*** a **pickup truck's worth of fusion fuel has the same energy as 10 million barrels of gaso-**

line!!!! By 2033, you could be reading a story on your phone that is charged by fusion power. Since fusion creates electricity, it could be used by our existing electric company infrastructures. People apparently will not be able to create fusion power for just one home like solar panels do; the fusion energy minimum is now about 1,000 homes. The goal for CLEAN fusion energy is large scale commercial AND home electricity but it is still years away. ***The challenge is for engineers to design systems that can take fusion produced 'energy' from an atom nuclei 'crash' to create electricity*** to power homes and offices (e.g. lights, heat, air conditioning, microwaves, computers, basketball and soccer scoreboards, ***Fenway Park in Boston***, etc). Stay tuned. (MIT 2020; SCience and Fusion Center - Dennis Whyte)

Alternative Energy

"Imagine,
a highway lined with trees
that glow and light up a road
the way traditional street lights do!"

In November of 2017, scientist Michael Strano, a chemical engineering professor at MIT (Massachusetts Institute of Technology in Boston, Massachusetts) and his team announced they've figured out a way to get plants and shrubs to give off light, lots of light! They described a process of ***putting NANOPARTICLES into plants*** and then, taking photosynthesized particles ***in the plant to turn the particles into light***. The nanoparticles enter a leaf through the plants pores. Once inside the plant, scientists get the particles to activate stored chemicals in the plants to turn into light, *"making the whole plant glow"*. The glow or light in the early experiments lasted for about 3 hours. Scientists believe they can eventually give plants the ability to glow for a plant's entire life and to glow for a much longer period every day. The challenge is the brightness that a plant, tree or shrub can glow. Eventually, scientists believe they can get plants and shrubs to easily light streets in the future the way street lights have been lighting up streets and roads in the 20th (1900s) and early 21st (2000s) century. ***Stay tuned!!!***

Pandemics
The World's Greatest Threat

above -*2020 British newspaper story on the coronavirus. pandemic*
below -*official takes a person's temperature during 2020 screening of the coronavirus pandemic*

1950s North Carolina newspaper headline about the ***polio*** *outbreak in America.*

A **PANDEMIC** is a ***widespread, infectious disease*** that spreads across multiple countries, even worldwide. A widespread disease with a number of infected people that is not growing quickly is not a pandemic. A seasonal flu, for instance, is not generally considered a pandemic.

There have been a number of pandemic diseases throughout the history of the world like **smallpox**, **tuberculosis, HIV/AIDS, cholera**, **typhus**, the **flu** (*influenza*), **measles, leprosy, yellow fever** (especially during the *'American Revolution'*), **polio, malaria**, and the **plague**. One of the most devastating pandemics was the **Black Death plague** (1331 to 1353) which killed an estimated 33% to 66% of the people living in Europe and 75–200 million people worldwide. The **Spanish flu** (1918 - 1919) lasted 18 months and claimed the lives of 675,000 Americans and approximately 75 million people world wide. **Smallpox**, unknown on the American continents prior to the arrival of European explorers, decimated Native American tribes beginning in 16th century. 80% to 90% of some North American tribes, like the Wampanoags in southeastern Massachusetts and Rhode Island, were killed by smallpox in the 1660s and 1700s.

The coronavirus pandemic of 2020 was first identified in the city of Wuhan China in late **December 2019** and soon spread as an acute respiratory disease referred to as **Coronavirus 2019 or COVID-19**. More than 170 countries and territories were affected with major outbreaks in central China, Italy, South Korea, and Iran. On March 11, 2020, the World Health Organization (WHO) called the spread of COVID-19 a *'pandemic'*. Borders between countries were closed preventing people from traveling from one country to another to stop the spread of the virus between countries. Professional sports leagues in the United States of America like Major League Baseball and the National Basketball Association (NBA) cancelled games. NCAA college basketball cancelled "*March Madness*", otherwise called, the college basketball national championship tournament. Schools, health clubs, restaurants, and many businesses within countries were also closed to prevent the spread of this new virus while scientists worked on developing and distributing testing kits to identify carriers of the virus as well as an vaccine to administer to those affected by the virus. Less than three months after the first known Covid-19 death in the U.S., more Americans have died of this disease than fell in battle during the Vietnam War.

Compared to past pandemics, Covid-19 was relatively mild. Many of those infected with Covid 19 appeared asymptomatic; in other words, showing no visible signs of the virus. Only a very small percentage of cases required hospitalization, and, most who were hospitalized, recovered rather than died. Compared with the 1918 Spanish flu, smallpox, or Black Death pandemics that preceded it, the Covid-19 pandemic was MUCH LESS DEADLY.

One of the concerns today is the potential danger of terrorists hacking the genetic code of a virus and turning it into a weapon.

Weaponizing disease has been practiced before. Ancient ***Hittites***, from an area today of modern day Turkey, seem to have driven virus infected people into enemy lands in 1000 B.C. In 1346, **Mongols catapulted the bodies of people who died of**

the plague into the Crimean city of Caffa before their attack. In the 20th century during World War 2, both Axis (***Germany, Japan, Italy***) and Allied (***US, England, Russia, France, et more***) governments developed biological weapons. Japan used viruses as a weapon against China during World War 2. The Japanese dropped ceramic bombs carrying bubonic-plague carrying fleas on the Chinese city of Ningbo during the war. In the post-Covid future, some countries and terrorist groups may seek to create virus plagues as weapons. All **countries today will need to defend themselves against potential weaponized virus attacks**. The ability to recognize new diseases and quickly and rapidly develop treatments and vaccines will become a critical mission of national defense programs.

In a 2015 TED Talk,
Bill Gates warned the world is not prepared for an epidemic, pandemic, or virus outbreak.

Bill Gates, the world's second richest person, is the founder of Microsoft and the head of the Gates Foundation which gives millions of dollars to fund multiple efforts to fight dangers and challenges facing the world's population. Mr Gates

warned Americans and the world of this most grave danger.

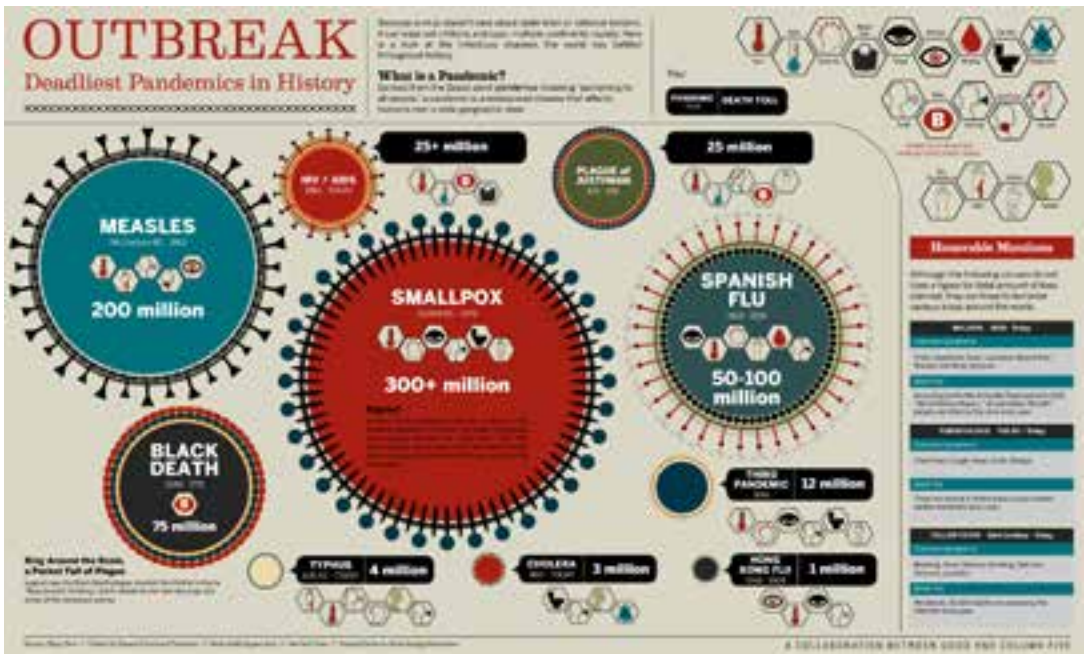
Mr Gates was speaking about the world's reaction to a recent **Ebola virus** outbreak in 2014 in Africa. He said during his TED TALK

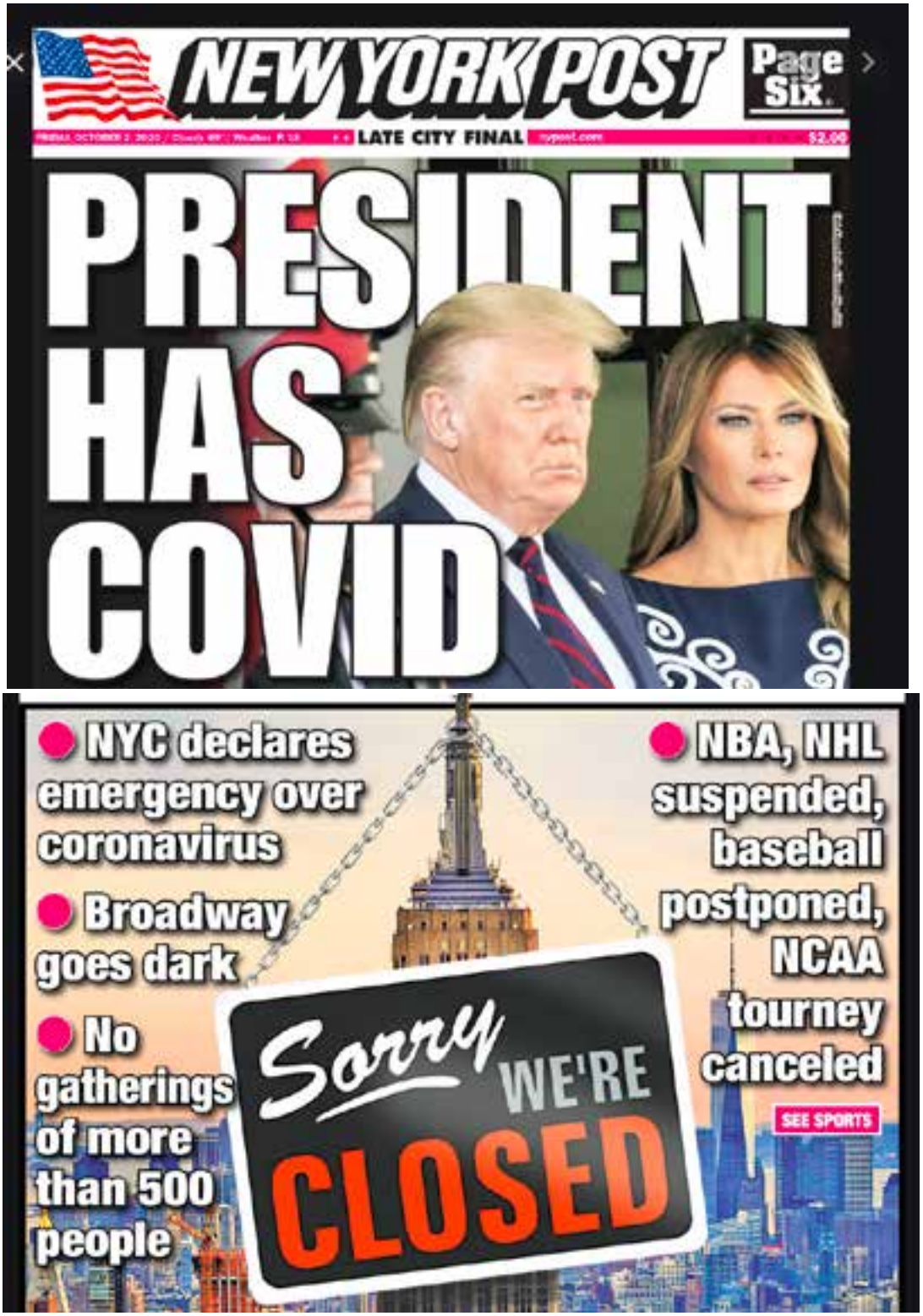
"*if anything kills over 10 million people in the next few decades, it's most likely to be a highly infectious virus rather than a war.*

Not missiles, but microbes!...

We've actually invested very little in a system to stop a epidemic.

We're not ready for the next epidemic.... "




NEW YORK POST
Page Six
LATE CITY FINAL
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PRESIDENT HAS COVID
NYC declares emergency over coronavirus
Broadway goes dark
No gatherings of more than 500 people
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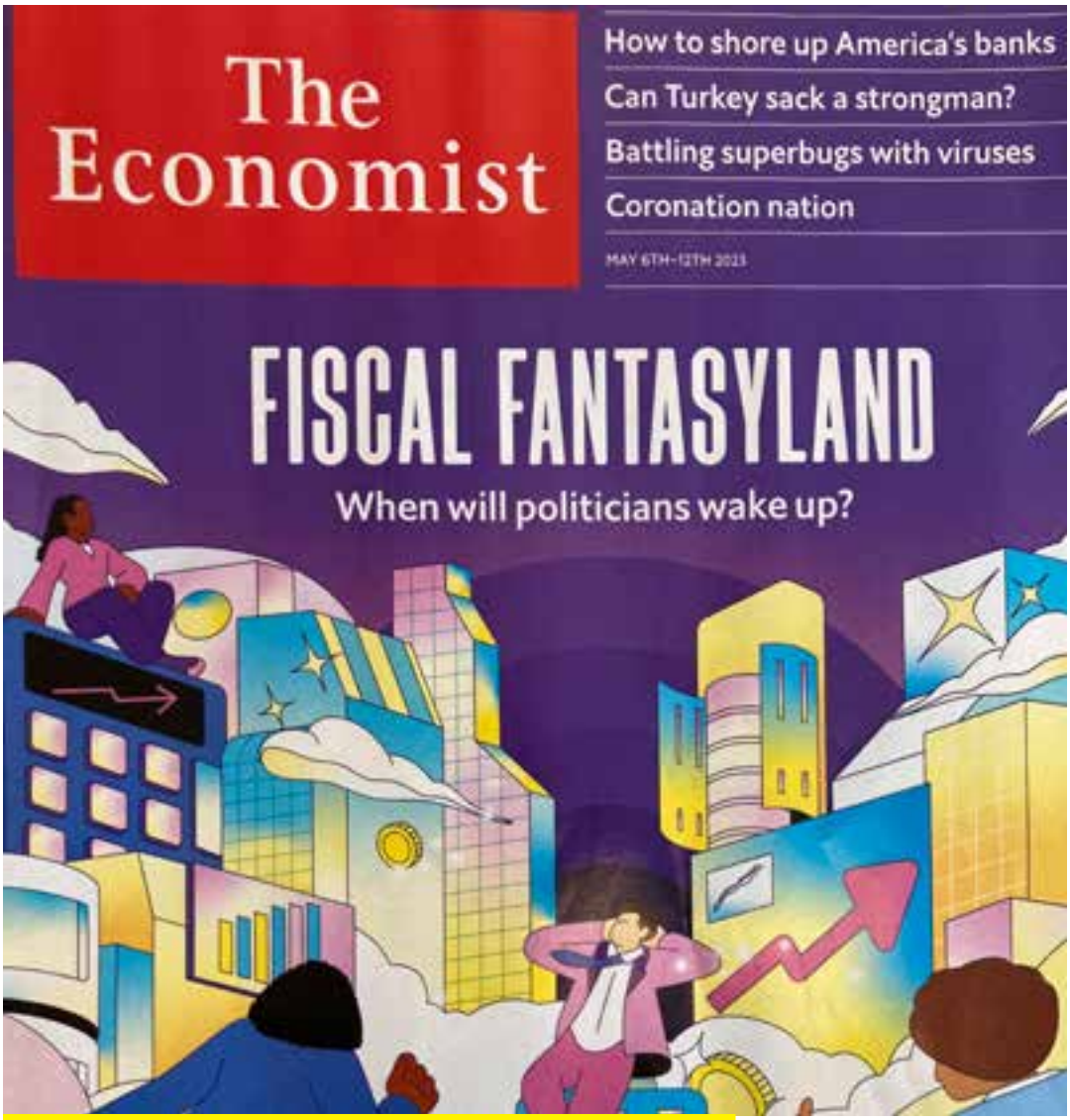
NBA, NHL suspended, baseball postponed, NCAA tourney canceled
SEE SPORTS



Founded in England in 1843, the Economist Magazine, with over 1.6 million subscribers world wide, is a British weekly magazine publishing articles on current affairs, international business, politics, technology, and culture. ***This Economist issue focuses a "big and enduring problem"***. i.e. the borrowing of money by the American political leader who run the United States government. ***United States of America political leaders spend more money*** on "*swelling handouts and government interest payments* "(the money the American government has to borrow to pay its' bills) ***than the government collects in taxes and fees.*** China, England, Germany and other countries face the same dilemma. Almost 10% of all the money the federal government of America spends on the military, education, social security, green energy tax cuts, and other government programs is paid to countries and organizations/banks America borrows money from. American political leaders running the United States government have ***borrowed $1.2 trillion—4% of total U.S. debt—from JAPAN***. America government leaders have borrowed ***$980.8 billion—3.2% of the total U.S. debt from CHINA***! American political leaders ***also borrow money from the Social Security Fund that is set up to pay American senior citizens their retirement payments each month; American citizens paid into this FUND when they were working.*** The U.S. national debt, the money it owes to the countries and institutions it borrows money from was ***$31.41 TRILLION in January 2023.*** "***Politicians need to get real, fast! Public debt is in danger of becoming unmanageable"*** writes The Economist.

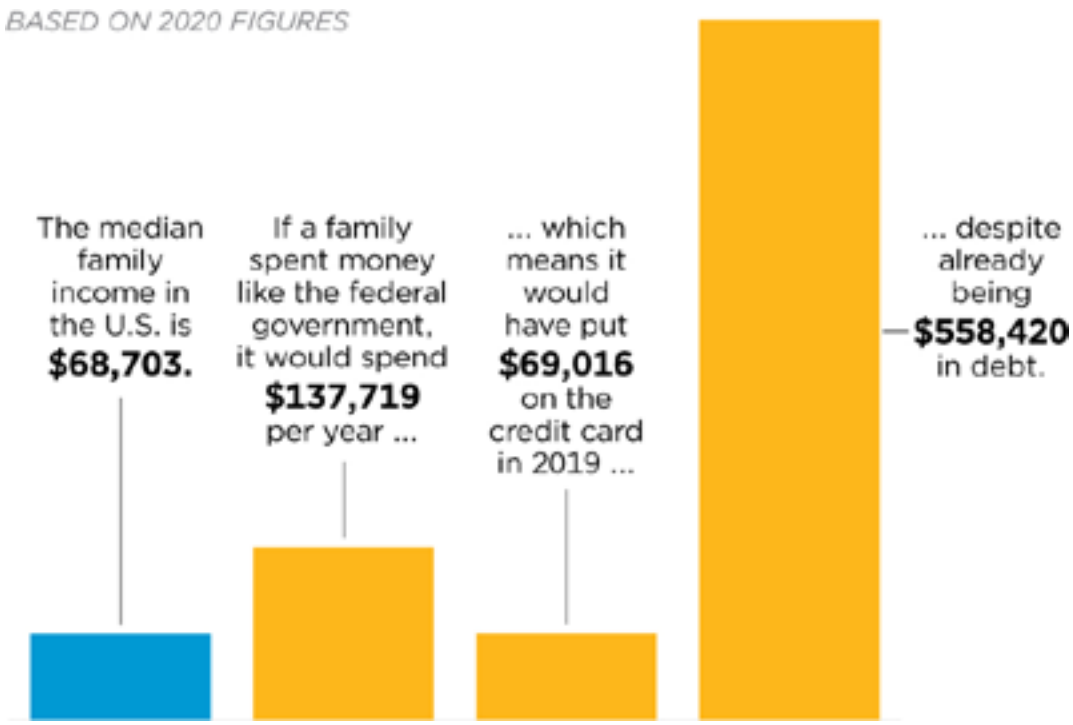
A Fiscal Disease: - DEBT

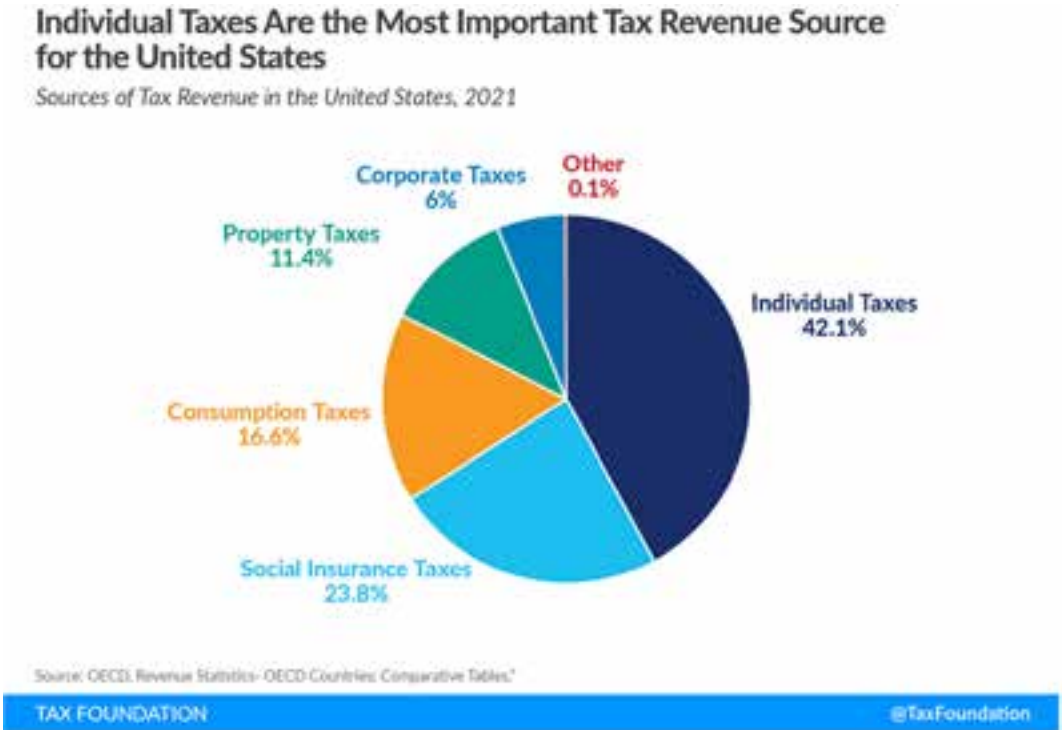
American FEDERAL POLITICIANS' Spend More Money Than America Collects in Taxes

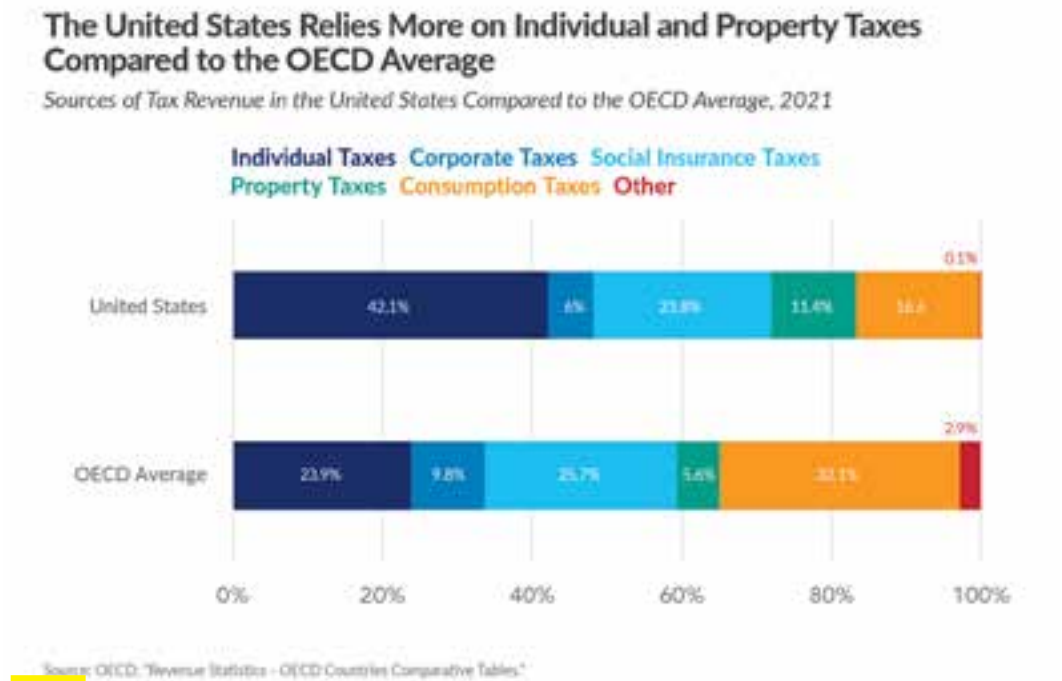
"The accumulation of debt is
the
natural disease of governments.

It is not easy to conceive of anything more likely than this
to lead to
great convulsive revolutions of empires."

Alexander Hamilton's warning about a mounting debt's disastrous effect on the United States.
James Madison concurred with this opinion.







The OECD (Organization for Economic Co-operation and Development) is an organization of 38 countries founded in 1961 to promote trade among countries and stimulate economic growth. OECD member countries include: United States of America, France, Australia, Colombia, Japan, South Korea, Iceland, Mexico, Canada, Turkey, Germany, and more. Most OECD member countries have *'successful'* economies supported by successful, highly profitable companies like Microsoft, Google, Nividia, Apple, Meta (Facebook), Tesla, BYD, Alibaba, Lego, BMW, Mercedes, BP, Rolls Royce, and more. The collective populations of OECD is 1.38 billion people with an average life expectancy of 80 years and a current median age of 40, against a global average of 30 years old.

Glossary / Definition of Terms

WHAT IS A / CONSUMPTION / SALES TAX?

A sales tax is **an extra charge on stuff you buy** like ***cars, cigarettes, gasoline, clothing, restaurant food, TVs and other appliances, toys, books, furniture, and other goods.*** Many governments exempt goods like groceries.

In the United States, retail sales taxes are a significant source of money / revenue for states, cities and towns. All United States of America states **EXCEPT Alaska, Delaware, Montana, New Hampshire, and Oregon** collect statewide sales taxes. Of these, Alaska allows cities and towns to charge local sales taxes.

As of 2024, local sales taxes were collected in 38 states. In some cases, local sales tax rates can rival or even exceed state rates.

WHAT ARE INDIVIDUAL TAXES? is a charge on the wages, salaries, dividends, interest, and other income a person earns.

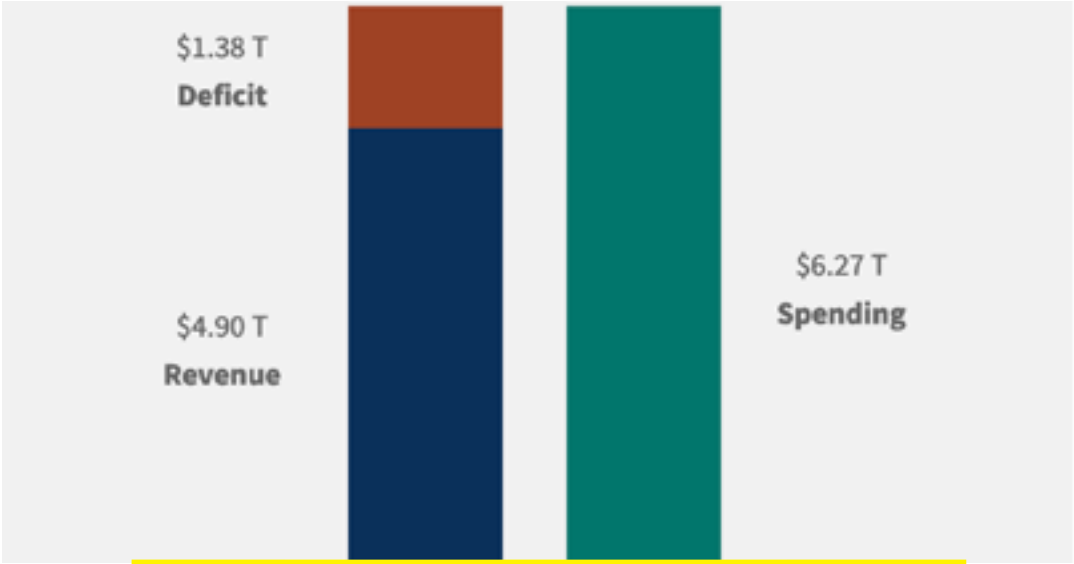
WHAT ARE CORPORATE TAXES? is a charge on the money businesses make after expenses are subtracted from revenues (money charged for products and services sold)

WHAT ARE PROPERTY TAXES? quarterly, semiannual or annual charge levied by a local government and paid by the owners of real estate / property / homes / buildings owned by individual or companies.

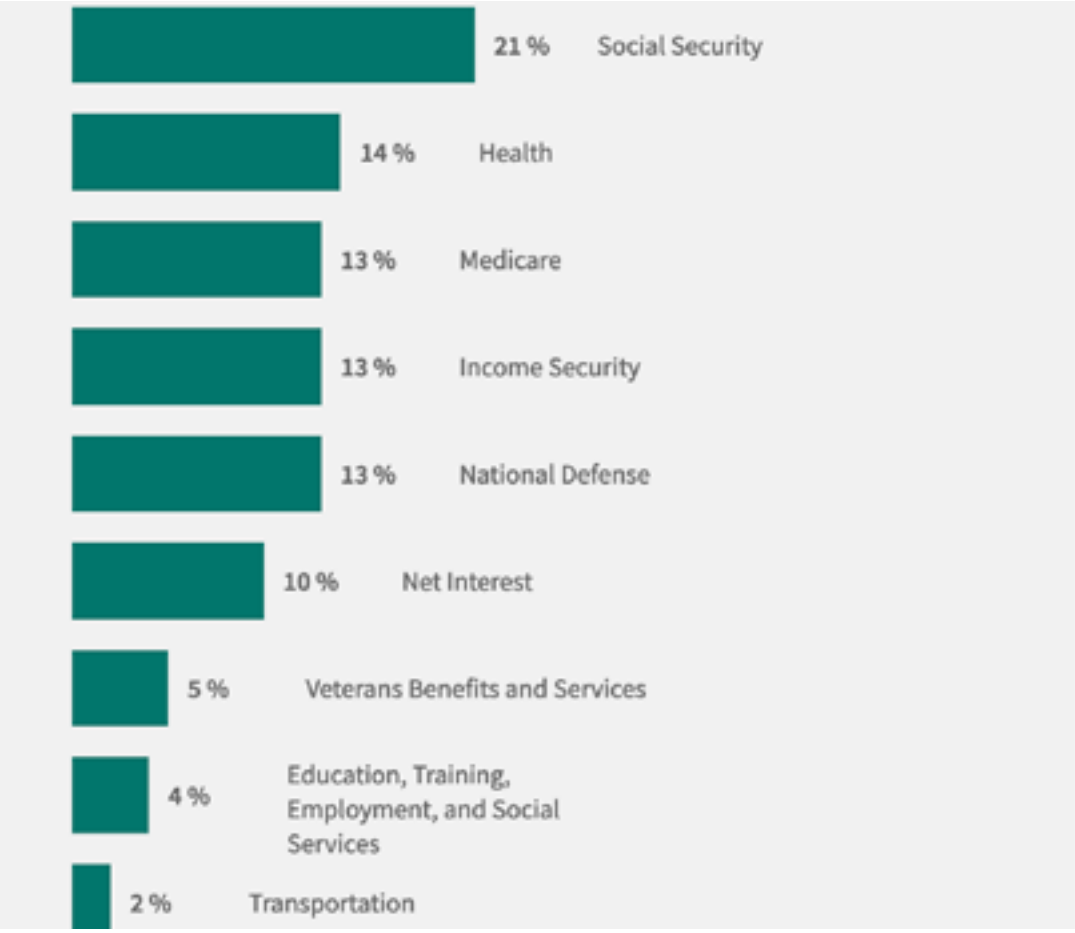
WHAT ARE SOCIAL INSURANCE TAXES? money deducted by the FEDERAL government in Washington, DC from a person's pay check for a special savings account to be paid to people when they retire.

The United States Federal Government in Washington, DC Budget

How much money the Federal Government in Washington, DC SPENT (green), how much money the Federal Government COLLECTED IN TAXES (revenue in blue), and how much money the Federal Government in Washington, DC HAD TO BORROW to pay its bills (red).

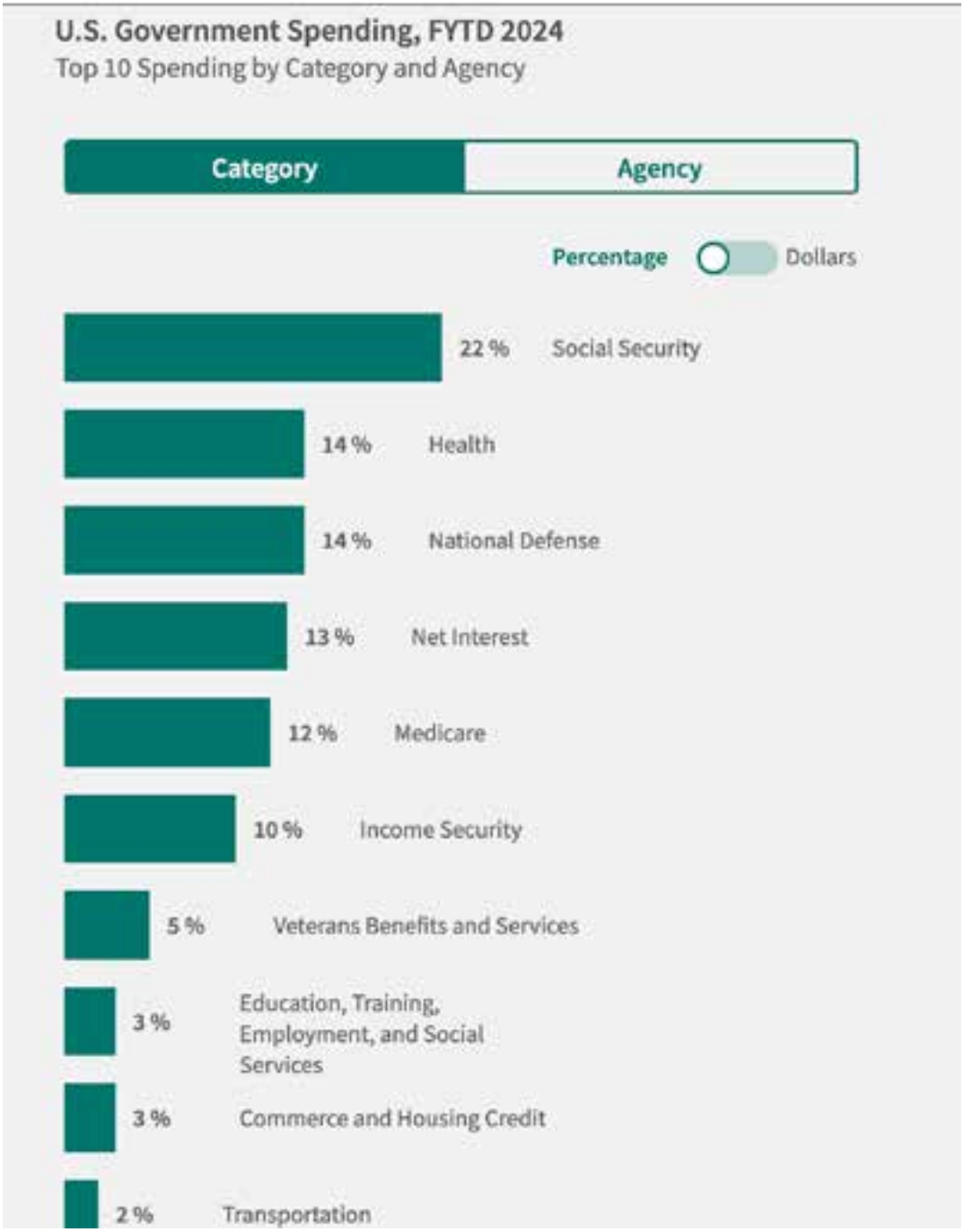


United States Federal Government Spending by Category in 2023

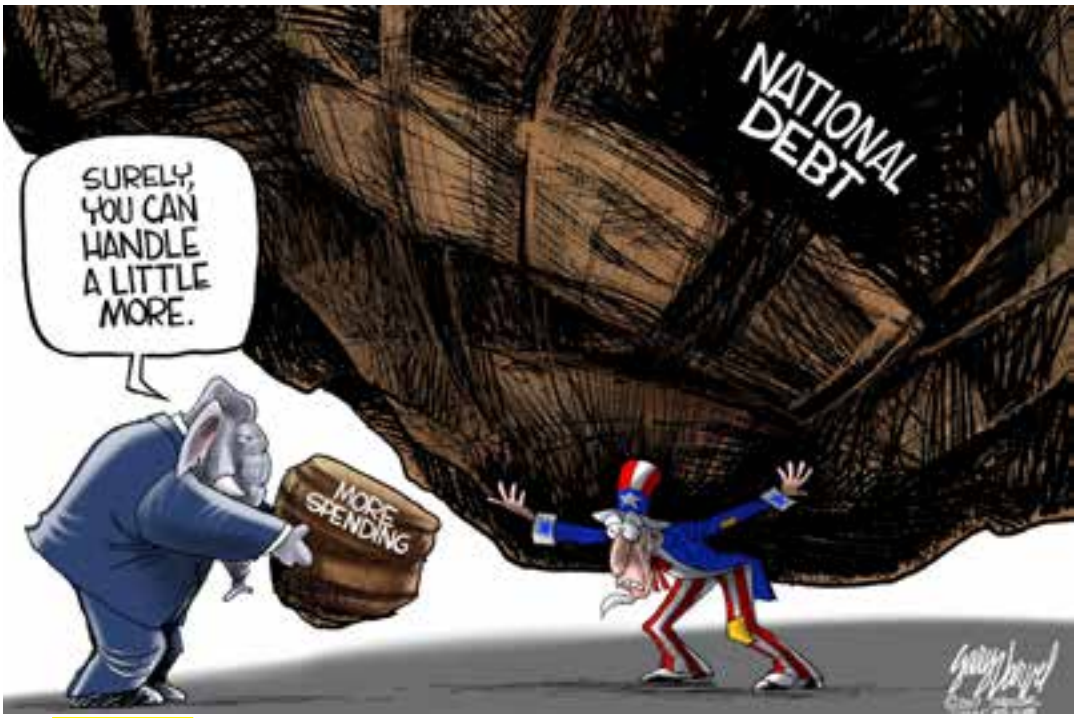


The U.S. national debt consists of both debt to be repaid to private individuals, companies, and other government agencies like the Social Security Savings Fund which pays monthly benefits to all Americans receiving Social Security.

When government politicians decide to borrow more money by selling securities, the government increases what it owes to its borrowers; i.e. the national debt, the total amount of money that the U.S. government owes to its creditors. ***In 2024, America's national debt, or the total amount of money it owes its lenders is 34.47 trillion U.S. dollars. As of March 2024, it costs America $433 billion a year in INTEREST CHARGES for borrowing on its debt.***



America Must Borrow Money Every Year to Pay America's Bills



BECAUSE **America's POLITICIANS CHOOSE TO BORROW MONEY RATHER THAN ONLY SPENDING THE AMOUNT OF MONEY THE GOVERNMENT COLLECTS IN TAXES AND FEES,**

the United States government must BORROW money to pay its bills.

Here's how the government borrows:

The Treasury Division of the federal government sells IOUs (called securities) which essentially means the government promises to pay the lender back the amount it borrows PLUS INTEREST CHARGES. **Interest charges are extra money that must be paid just for borrowing money; interest payments have nothing to do with repaying the actual amount of money borrow.** There are different types of IOU / security promises. Some government securities promise to pay back lenders in a few days to 1 year. Other securities are promised to be paid back in 2 to 10 years and others 20 to 30 years.

America borrows money from foreign countries like China and Japan AS WELL AS borrowing from itself by borrowing money from the Social Security Savings account, Medicare, etc. The American government also borrows by selling securities from as well as private banks and investors. America promises to repay by a specific date AND WITH INTEREST.

The government sells its IOUs (securities) in an AUCTION. The interest charges are determined by the demand for these securities; in other words, how many foreign countries, private banks, investment companies or government agencies who want to buy the government IOUs . If there's high demand, the interest rate tends to be lower; if the demand is low, interest payments are higher.

The money from the sale of government Treasury securities are used to pay **government** ***bills like paying the salaries of men and women in the army, navy and other military branches, salaries for Congress men and women, National Parks service, construction and highway maintenance equipment, buildings, and livestock, to research, education, and training. and for other federal programs and obligations including Social Security benefits and Medicare.***

America's total debt in 2024 was $34 trillion. **$26.64 trillion of America's total debt has been borrowed from banks, insurance companies, state and local governments, and foreign countries like China and Japan**.

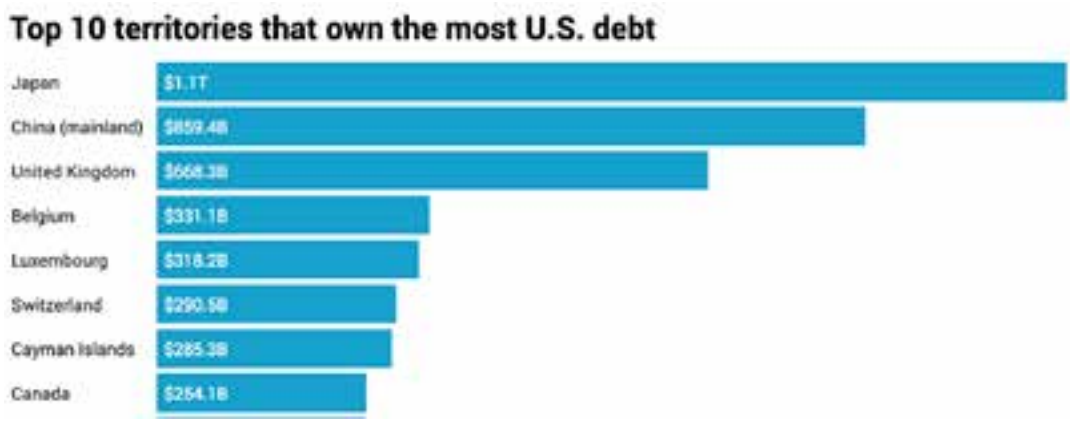
The remainder of America's total debt, about $8 trillion dollars, is borrowed from federal government agencies like the Social Security Savings account, the US Defense department and the United States Post office.

This interest payment on the money the US federal government borrows from all this sources is paid by using tax revenues and by issuing new debt (securities) to refinance existing debt when it matures.

The United States federal government has a limit on the amount of debt (securities) it can sell in auction. This is called the **Debt Ceiling**, in other words, a limit to how much money the federal government can borrow. When the Debt Ceiling limit is reached, Congress must vote to borrow more money to raise the Debt Ceiling so the federal government can pay its bills. If the Congress does not vote in favor of raising the Debt Ceiling, it can't pay all its bills. Some federal agencies could be closed like the Post Office OR the government may not be able to pay its Social Security benefits to retirees.

Most states, like Rhode Island and Massachusetts, have a balanced budget requirement.

America's federal government does NOT have a balanced budget requirement.



Credit Ratings: For People and Governments

CREDIT RATINGS and CREDIT SCORES are issued by companies that evaluate the likelihood of a person, company, country / state / city's ability to pay their bills / debts, i.e. money owed to others including interest payments. THE CREDIT RATING AND CREDIT SCORE COMPANIES ASSIGN A SCORE / RATING that indicates the likelihood of a borrower paying their debt / loan.

CREDIT RATINGS are usually expressed in letters like "AAA", "AA", "BB", "CCC", etc. "AAA" rating is the highest, meaning best score, making it easier and less expensive to get loans / credit. Credit ratings are an estimate of the level of risk involved lending money to a business or other entity, including national and state governments and government agencies. A Credit RATING is usually issued by "***The Big Three***" credit rating agencies that control approximately 95% of the ratings business. **Moody's Investors Service** and **Standard & Poor's (S&P)** together control 80% of the global market, and **Fitch Ratings** controls a further 15%. Countries are issued "*sovereign*" credit ratings. This rating analyzes the "*creditworthiness*" of a country's government. A country's credit rating measures the overall economic conditions of a country, including how many other organizations / investors are investing in the country, how honest and forthcoming the country is about its finances, and its foreign currency reserves (how many American dollars or other valuable currencies it has in savings). Ratings also assess conditions such as overall political and economic conditions in a country, i.e. can the politicians work together to get things done for the good of the country and its citizens OR if the politicians are always arguing and unable to collaborate and compromise to get things done. **On August 1, 2023, Fitch Ratings, one of the country's three major credit rating agencies, announced that it had downgraded the United States credit rating from AAA to AA+** because of America's rising debt and also the arguing and divisiveness between politicians in Congress. Investors rely on ratings to decide whether to lend or invest in a country / state/ city, etc. Credit ratings therefore determine not only whether a country is able to get loans at a reasonable interest charge but also whether it is able to attract other types of investments. Rating downgrades lead to negative publicity for a company or city / state / nation government which makes it harder and more expensive to borrow money. In general, when an issuer of debt has its credit rating downgraded, that often means it has to pay a higher interest rate to compensate for the potentially higher risk of default it poses.

CREDIT SCORES are expressed as numbers ranging from 850 to 300. The average credit score in the United States is 718, according to the latest FICO data from April 2023. By law, a person can get a free credit report each year from three major credit reporting agencies: **Equifax, Experian, and TransUnion**. Their reports contain information about a person, company, and country / municipality's payment history - how much credit they have and use, whether they have and still pay the loans ON TIME, ALL THE TIME and other information. The closer the score comes to 850, the more creditworthy the person, country, city, state, etc is and consequently, the easier it is to get a loan with the lowest possible interest charge.

TABLE 1

Tax Year 2020 Schedule and Rates

TPC

Single filers			Married couples filing jointly		
Taxable income ($)		Marginal rate (%)	Taxable income ($)		Marginal rate (%)
Over	But not over		Over	But not over	
$0	$9,875	10%	$0	$19,750	10%
$9,875	$40,125	12%	$19,750	$80,250	12%
$40,125	$85,525	22%	$80,250	$171,050	22%
$85,525	$163,300	24%	$171,050	$326,600	24%
$163,300	$207,350	32%	$326,600	$414,700	32%
$207,350	$518,400	35%	$414,700	$622,050	35%
$518,400	and over	37%	$622,050	and over	37%

Source: Internal Revenue Service. Rev. Proc. 2019-44.

The federal government individual INCOME TAX REGULATION has 7 tax rates ranging from a tax collection of 10% OF A PERSON'S 'TAXABLE INCOME' to 37% of a person's 'taxable income'. **(see table 1 above).**

What does "Taxable income' mean? not all the money a person earns is taxable: some gifts, cash rebates on items you purchase from a retailer, manufacturer or dealer, child support payments, most healthcare benefits, and welfare payments are NOT taxable. And, there are deductions people have available to reduce the amount of money people have to pay in taxes. For example, there are tax ***deductions for each child a parent has to support under 18 years of age.*** People are taxed on their wages, salaries, commissions, unemployment compensation, strike pay, rent a landlord collects from tenants, alimony, self employment income, a gym membership your employer pays for, a car your company pays for, and holiday cash gifts or gift certificates from your employer.

Federal income tax rates are progressive: This means the government can tax more of a person's '*taxable income*' as the person's income increases; in other words, the more money a person makes, the higher their income tax rate will be.

In **2020, the top Federal tax rate of 37% of '*taxable income*' applies to the top level of '*taxable income',*** ***over $518,400*** **for single filers** and over $622,050 for married couples filing jointly. As a person's taxable income decreases, the percentage of a person's income the government takes in taxes decreases. Check the tax table above. ***The tax rate for the highest incomes has been as high as 90%!!!! This meant the federal government took 90% of all the 'taxable money' a person earned over the top income level set by the government.*** For example, the top federal income tax rate was 91% in 1950 and 1951, and between 1954 and 1959. In 1952 and 1953, the top federal income tax rate was 92%. Please feel free to ask me questions; it is admittedly a confusing system.

There are different tax schedules and rates for taxpayers who file as '*heads of household*' and to '*married individuals filing separate*' returns.

The number of brackets and rates have changed dramatically and frequently in history. The federal income tax began with seven brackets in 1913. That number exploded to more than 50 tax brackets by 1920!! From then until the late 1970s, there were never fewer than 20 brackets. The last major federal tax reform, the Tax Reform Act of 1986, reduced the number of brackets from 16 to two, but that number has crept up to the current seven over the last three decades.

There is a separate schedule for taxes on CAPITAL GAINS and DIVIDENDS (money a person makes on investments).

Tax brackets are adjusted annually for inflation.

United States Federal Government Debt as a % of GDP

What is GDP?

GDP or gross domestic product is
the value of its output, i.e.
all the products and services made, produced, provided and sold
in a country during a specific period of time, usually a year

.

PRODUCTS like cars, software, cell phones, ice cream, and solar panels **and** ***SERVICES like a massage, lawn care, dog walking, or haircutting;*** **all of the stuff that someone makes, provides, and sells which someone else buys or pays for, are all part of a country's GDP**. In 2019, the ***United States of America's GDP*****, i.e. the value of its economy, was** ***$21.44 trillion***. The U.S. has had ***the world's largest economy*** since 1871. **China**'s GDP in 2019 was $14.14 trillion. The Chinese are now competing with the United States for the world's largest economy. **India** is the fastest-growing trillion-dollar economy in the world and the fifth-largest overall, with a GDP of $2.94 trillion. India became the fifth-largest economy in 2019, overtaking the **United Kingdom (England)** and **France.** ***The United States money problem NOW is US government owes MORE MONEY to the people and other countries the United States leaders borrows from (Japan's government, China's government, the United States Social Security savings account fund, American banks, and American citizens who purchase US bonds, etc), THAN its GDP, i.e. the value of all money THE UNITED STATES creates!***

(from ChatGPT) - Imagine you and your friend both have part-time jobs. You decide to save your money, while your friend spends all of theirs and even borrows some extra money.

Now, let's compare your financial situation to a country's economy using a concept called the ***"debt-to-GDP ratio.***"

Debt is the total amount of money a person, state, city, company or country owes. It's like the total debt your friend has from spending and borrowing.

GDP (Gross Domestic Product) is the total value of all the goods and services produced in a country in a year. It's like the total amount of money you and your friend earn from your part-time jobs combined.

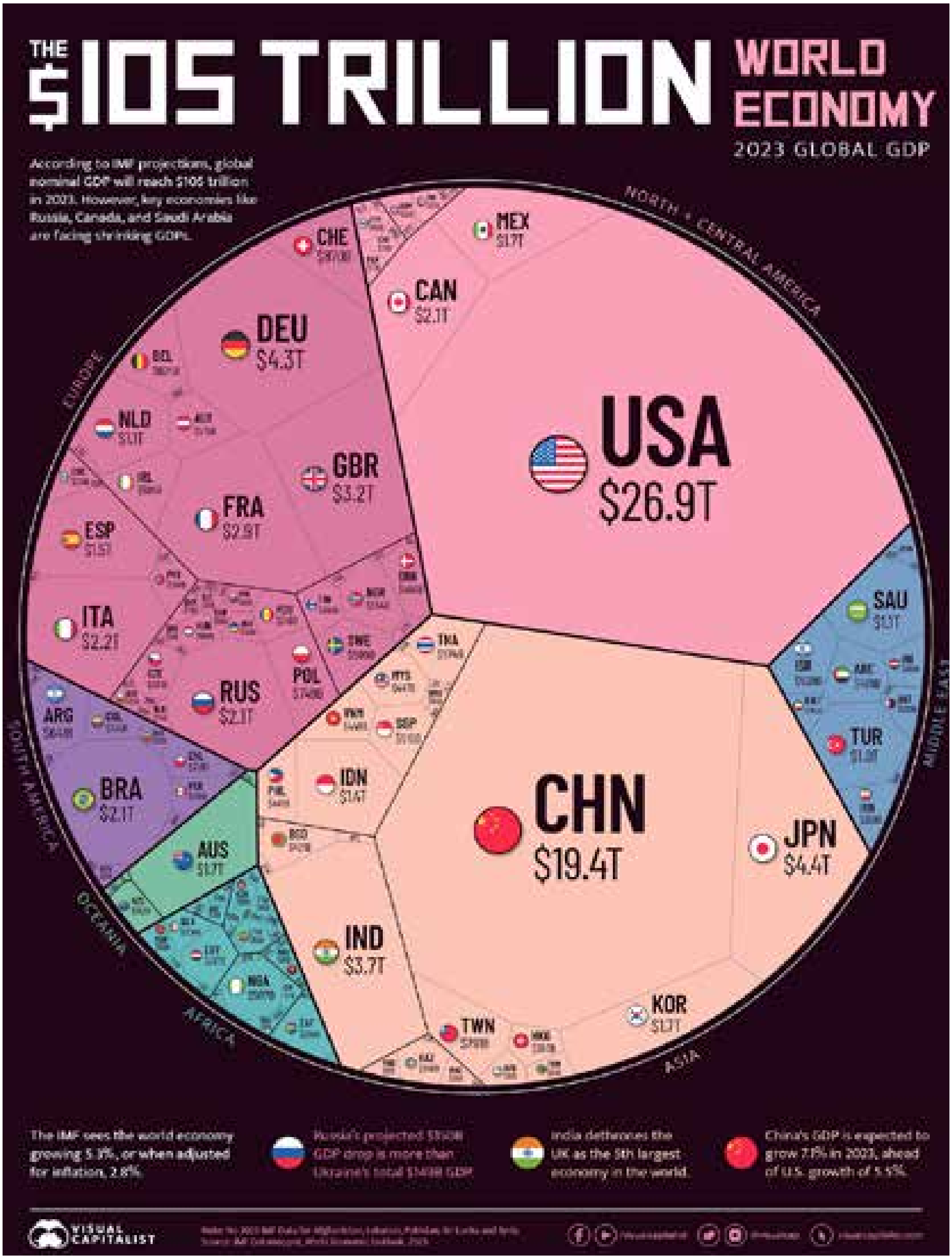
The debt-to-GDP ratio is a way to see how much debt a country has in relation to its income or economic output.

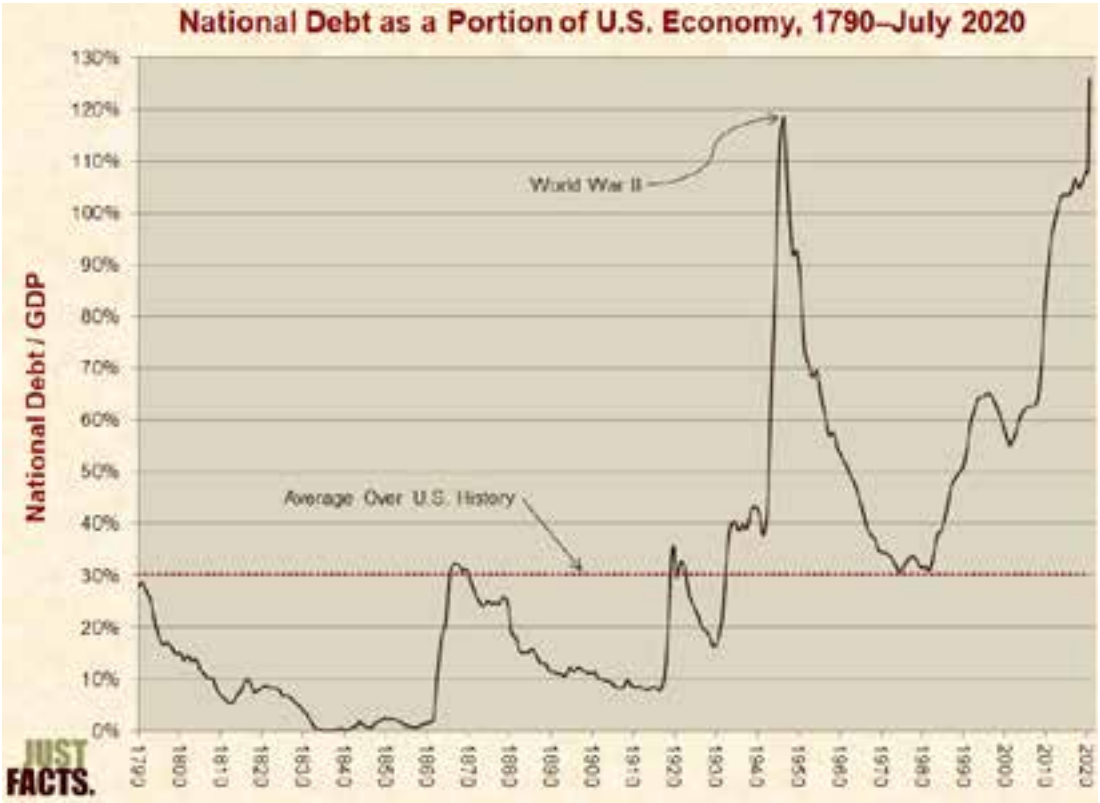
Let's say your friend has a total debt of $500, but earns $5,000 from their part-time job in a year. If you friend was a country, you divide $500 by $5000 = 0.10. In other words, the debt to GDP ratio is 0.10 OR 10%

For a country, a high debt-to-GDP ratio can indicate
the country may have trouble paying back its debt because its debt is
a large portion of its income.
On the other hand, a low debt-to-GDP ratio suggests
the country's debt is manageable relative to its income.

Just like how you and your friend might worry if the debt gets too high compared to income, countries also worry about their debt-to-GDP ratio. If it gets too high, it can be harder for the country to borrow money in the future or to pay back what they owe, which can lead to economic problems.

In summary, **the debt-to-GDP ratio is a tool used to understand how much debt a country has compared to the value of all the goods and services it produces in a year.**


THE $105 TRILLION WORLD ECONOMY
2023 GLOBAL GDP
According to IMF projections, global nominal GDP will reach $105 trillion in 2023. However, key economies like Russia, Canada, and Saudi Arabia are facing shrinking GDPs.
NORTH + CENTRAL AMERICA
USA $26.9T
CAN $2.1T
MEX $1.7T
EUROPE
DEU $4.3T
GBR $3.2T
FRA $2.9T
ITA $2.2T
RUS $2.1T
ESP $1.5T
NLD $1.1T
CHE
POL
SWE
ASIA
CHN $19.4T
JPN $4.4T
IND $3.7T
KOR $1.7T
IDN $1.4T
TWN
MIDDLE EAST
SAU $1.1T
TUR $1.0T
SOUTH AMERICA
BRA $2.1T
ARG
OCEANIA
AUS $1.7T
AFRICA
The IMF sees the world economy growing 5.3%, or when adjusted for inflation, 2.8%.
India dethrones the UK as the 5th largest economy in the world.
China's GDP is expected to grow 7.1% in 2023, ahead of U.S. growth of 5.5%.
VISUAL CAPITALIST



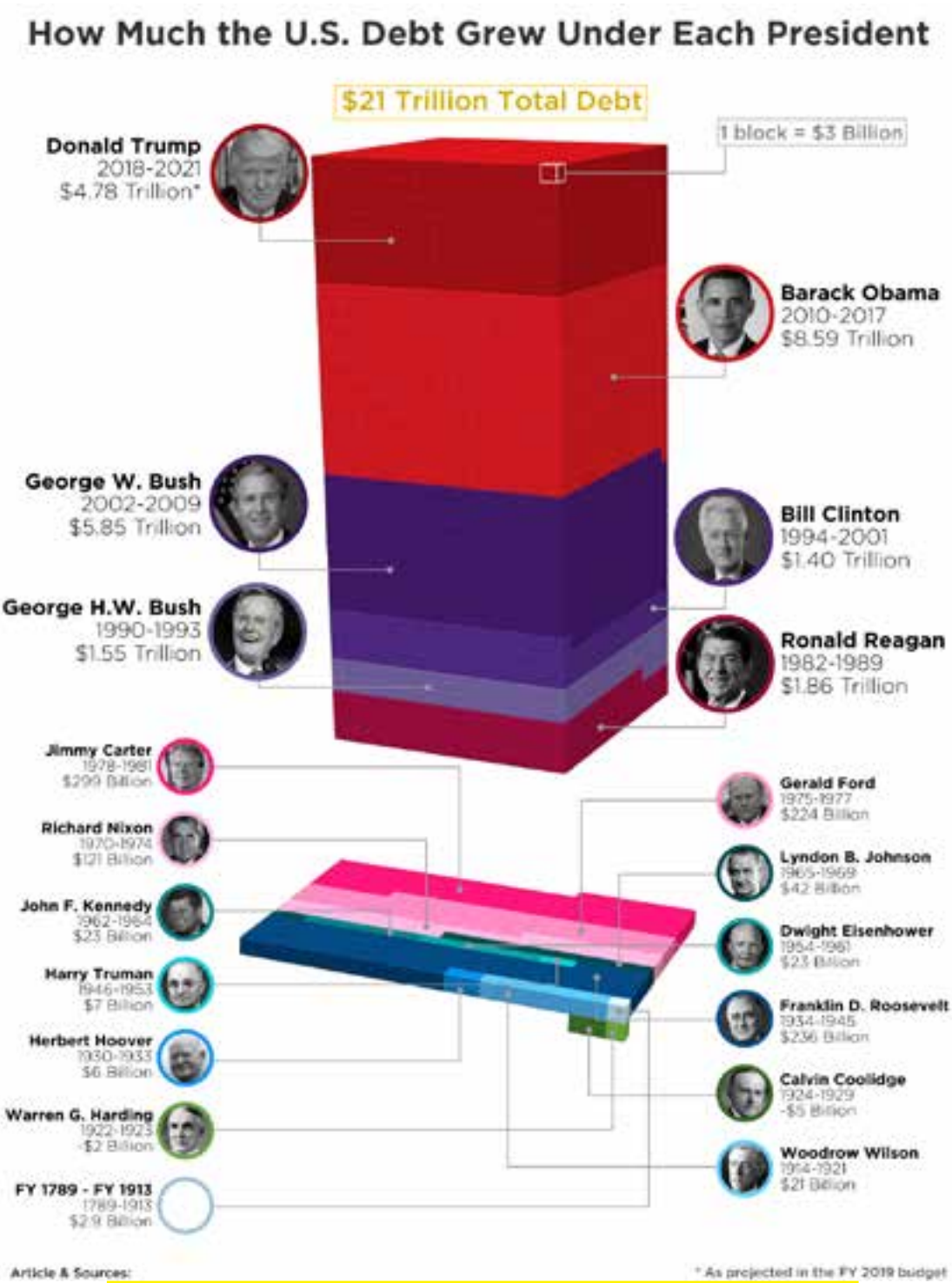
THE UNITED STATES FEDERAL GOVERNMENT has a DEBT PROBLEM;

in other words,

government leaders keep spending more money than the government collects in taxes and fees.

Consequently, the US government is forced to BORROW MONEY from other countries like Japan and China or from American citizens to pay its bills. **ONE SOLUTION** is collect MORE money in taxes & fees from American citizens and businesses **OR** spend less **OR** a combination of both.

What do you recommend?



Please note the Presidential administrations of Warren Harding and Calvin Coolidge in the chart above.

Read the Coolidge biography starting on page 200 in the "*Quest For Success*" text book posted on our web site - www.hopelifeskills.com

State Fiscal Stability: A State's Ability to Pay Its Bills

Source: US News &World Report (2021)

The *fiscal* stability (the ability to pay one's bills) of a state or city government is vital to both each state or city's goals and responsibilities. The ability of each state or city government to pay its police, fire, public safety workers, teachers, and government employees, to ***maintain infra-strastructure*** like roads, bridges, airports, school buildings, trains, parks and beaches, rivers and streams, securing its data base of important information, and pay the retirement pensions promised all government workers (police, fire, teachers, state employees) is critical to its success. ***The mechanism for paying its bills comes from its ability to collect enough taxes from its citizens and the companies which reside in their state***. Most ***importantly, citizens and companies must also be fiscally healthy,*** i.e. **PEOPLE** must have a source of money, i.e. a job, pension, trust fund, or inheritance AND **COMPANIES** need to make a profit, i.e. they must have enough customers to buy their products (e.g. clothes at the Mall, cars from a car dealership, food at Caserta's Pizza on Federal Hill, etc) or pay for their services (Santos Landscaping, Wayland Square Cobbler, Sanchez Wealth Management, Signature Printing, etc) ***in order for the state to collect taxes***! If citizens don't have jobs and companies are not profitable, the state or city government has no tax revenue to collect. ***When a state or city no longer can collect enough taxes*** or borrow enough money to pay its bills, it declares ***bankruptcy*** forcing a higher authority like a state when a city declares bankruptcy to take over the fiscal affairs of the city. ***Detroit, Michigan*** was the largest American city to declare bankruptcy in 2013. ***Central Falls, Rhode Island*****,** declared bankruptcy in 2011. Unfortunately for Central Falls, their bankruptcy forced the state of Rhode Island to over the fiscal affairs of the city and enact massive cutbacks, including closing a community center, reducing library funds, laying off city workers, and greatly reducing pension payments for police and fire. Here's a list compiled by US News & World Report magazine listing the best and worst states for their ability to pay their bills, i.e. their fiscal responsibilities. ***Alaska is the highest ranked state for the best fiscal stability, i.e. the ability to collect enough taxes to pay its bills. It's followed by South Dakota, Tennessee, Idaho and Utah to round out the top five. Illinois is the WORST!***

RANK	STATE	LONG-TERM	SHORT-TERM
1	Alaska	41	1
2	South Dakota	3	5
3	Tennessee	1	11
4	Idaho	6	7
5	Utah	7	8
6	Washington	2	19
7	North Carolina	5	16
8	Florida	11	9
9	Wisconsin	4	34
10	Texas	19	6
43	Massachusetts	34	48
44	Rhode Island	44	41
45	Colorado	42	46
46	Hawaii	43	45
47	Pennsylvania	46	43
48	Kentucky	48	47
49	New Jersey	49	49
50	Illinois	50	50

What If the United States Currency IS NO LONGER THE WORLD CURRENCY?

One of the benefits of a country being an 'empire' is the acceptance of the empire's currency (money) all over the world. A country's currency becomes a 'reserve currency' when most countries prefer to accept the reserve currency as their money. A 'reserve currency' *is accepted for buying things and savings in countries all over the world. For example, the "**Dollar" is** America's national currency. The **"Pound"** is the national currency in the United Kingdom (England, Scotland, Wales, Northern Island, etc.) The **"Yuan"** is the national currency in Mainland*

China. However, because the American dollar is perceived as the most valuable, trusted, and reliable CURRENCY and is associated with the American economy, the largest economy in the world, **the United States dollar is recognized as the world's RESERVE CURRENCY** *and held in large quantities by foreign governments, their central banks, and other financial*

institutions for their international exchanges. ***When a country's currency, like the American dollar, is the world's reserve currency, it adds to the country's influence and power in the world.*** *The* **United States dollar** *has been the world's reserve currency in the world since 1944 . Prior to that, the* **British Pound** *was the world's reserve currency from the 1800s until the early 1900s.*

BUT WHAT IF OTHER COUNTRIES IN THE WORLD LOSE CONFIDENCE IN THE UNITED STATES DOLLAR AND PREFER ANOTHER COUNTRY'S CURRENCY TO REPLACE THE UNITED STATES DOLLAR AS THE WORLD'S RESERVE CURRENCY?

Ask yourself, why *would other countries lose confidence in the value of the United States dollar?*

Debt, **the amount of money America borrows each year to pay its bills,** *is one reason. Investors, business leaders and economists speculate that other countries could lose faith in the value of the United States dollar. In other words, United States politicians are borrowing too much money to spend on government programs each year. As of February 16, 2024, the US government has borrowed $34.27* ***Trillion dollars****! In 2023, interest costs, the cost to just borrow money not actually pay the money borrowed, totaled $659 billion. This is more than the government spends on most other programs in the federal budget. America's CBO projects interest costs alone on the country's debt in 2024 will total* **$870 billion**. — ***YIKES!!!***

And, if other countries lose confidence in the United States currency and refuse to lend America more money *(China, Japan, England, Belgium, etc),* ***ask yourself*** *-* ***what other country's currency could replace the United States currency as the world's reserve currency?***

Leadership -
The World's Greatest Need

More challenging than pollution, pandemics, and terrorist threats to the future of the world and its residents, will always be finding effective leaders to navigate the challenges and create new opportunities to mitigate these perils.

Throughout history and certainly in our future, numerous threats jeopardize the world's people. Economic depressions. Tsunamis. Meteors. Gang terror. Drought. Clean water. Global warming and consequential rising sea levels displacing coastal populations. Earthquakes. Partisan politics. Partisan media and press. Fake news. Drought. Failing public schools. Carbon emissions and the resulting air pollution. Systemic poverty. War and the maniacal, selfish despots who instigate them.

Effective leadership is the constant antidote for protecting nations, states, and cities by rallying people to collaborate and compromise to find remedies and create opportunities from their crises.
For as often as the world benefits from the great leadership of a **Winston Churchill** (England), **Nelson Mandella** (South Africa), **Mohandas Ghandi** (India), **Joan of Arc** (France), **Margaret Thatcher** (England), **Golda Meir** (Israel), **Martin Luther King Jr** (United States), **Jacinda Ardern** (New Zealand), **George Washington** (United States), **Ellen Johnson Sirleaf** (Liberia), and **Massasoit** (southeastern New England Wampanoag Indian Nation) during dangerous times, the world is threatened by infamous, self serving, maniacal, demagogues like **Adolf Hitler** (Nazi Germany), **Pol Pot** (Cambodia), **Josef Stalin** (Soviet Union-Russia), **Empress Wu Zetian** (China), **Queen Isabella** (Spain), **Idi Amin** (Uganda), **King Leopold** the 2nd (Belgium), and **Queen Ranavalona I** of Madagascar to name a few.

"A leader's most important skill is getting people to work together, to collaborate, to compromise, in order to solve problems and create opportunities for the entire community not just one group".

The world always needs great leaders who embrace ***leadership's true mission of selfless service to the ALL the people they lead***.

Former South African President Nelson Mandela (left) and Frederik Willem de Klerk, South Africa's last head of state from the era of white only, **minority rule and former leader of South Africa's National Party that wrongly imprisoned Mr Mandela in 1964 for more than 20 years!** . The National Party propagated the racist policy of **APARTHEID** which dictated that South Africa to be completely dominated politically, socially, and economically by South Africa's minority white population. Non whites had inferior education options, restrictions on owning property, the use of public facilities, entrance to certain social events and public spaces., Black South Africans could not vote in national elections. **Remarkably**, upon Mandela's release from prison in 1990 and his election to the Presidency of South Africa in 1994, Mandela essentially forgave the National Party for his imprisonment by reaching out to deKlerk to help him unite black and white people of the country for a peaceful transition to a united South Africa giving equal rights to all its citizens. ***Mandela chose forgiveness rather than vengeance, peace rather than war, unity rather than divisiveness, collaboration rather than exclusion***, to ensure long lasting success for all people of the Republic of South Africa.

'Absolute' Partisanship

The World's Ultimate Political Challenge

Partisan refers to a strong, biased, opinionated perspective of someone or something. Partisans can be people or media outlets or internet social media sites supporting a specific cause. Most of us have some partisan tendencies.

An absolute partisan, however, is extreme, rarely considering or accepting a different or alternative point of view that conflicts with their own. **Absolute partisans** are rigid in their beliefs and their allegiance to them.

The most effective leaders, the most successful decisions makers are often partisan. They have political persuasions and personal causes they embrace. Yet**, absolute partisan they are not.** They are interested in different points of view before making their final decisions. George Washington. Abraham Lincoln, Nelson Mandela, President Bill Clinton, Speaker of the House Tip O'Neill. are examples of leaders who always considered differing perspectives before making their decisions. Spock, from the starship *Enterprise*, courageously reminded his leader, Captain James T. Kirk, commander of the Starship Enterprise, - "*the needs of the many always outweigh the needs of the few, or the one.*"

Photo above shows **Democratic leader and Speaker of the House of Representatives, Nancy Peolosi (in the white coat to the right)**, stand and rip up a copy of **Republican President Donald Trump**'s *State of the Union* message to show her '**animus**' for the President as soon as he completed his 2020 message to the people of the United States and members of the Congress. The consequences of this partisanship further divided an already divided nation. **America needed a Lincoln at this time in its divisive, partisan history.**

Photo above shows **Democratic President Barack Obama** (right) and **Republican Speaker of the House of Representatives, John Boehner**. According to an **Atlantic Magazine March 2016** article, " (during) *President Obama's first two years in office, Congress hasn't done anything except shut down the government and come close to tanking the economy with a near-default on the nation's debt. Immigration reform stalled. Gun reform went nowhere. Congress can't even agree to declare war on ISIS"* because of partisan politics.

Absolute partisanship makes the world less than what it could and needs to be. All the right things to do like '*listening*', '*respecting*', *showing empathy while 'collaborating* for *compromise for the good of all not just the few* 'often become ignored in partisanship. **Absolute partisanship divides. It** wastes resources, talents, and opportunities for success that could be used helping All people not just the few.

Absolute partisans often focus on preserving power and the constituents or followers who support them. '*Facts*' are often replaced by '*opinion*' and '*partisan ideology*'.

America has long entrusted non-partisan, "no spin", the sharing of all sides of an issue, to 'the press', 'the media'.

The New York Times

FOX NEWS

Because **America's Founders** realized the need and benefit as well as the responsibility accompanying a non-partisan, fact focused, objective reporting of news by the press, they wrote the **1st amendment into the country's constitution.** The Founders believed '*facts*' would ensure freedom. **Unfortunately** for America, the press historically has too often abrogated their inherent responsibility for "***facts***" for ***'eyeballs'*** within specific, data driven demographics that brought advertising dollars, profit, accompanying them. Media's gain at America expense.

History is replete with examples of great people, quintessential leaders, who made tough choices, expending the extra effort with great courage, to collect and analyze "*facts*" and "*an objective reporting of news*" before making decisions affecting "*the good of all people, the nation, all the time*".

Unfortunately, there are always voices within a community or nation who speak falsely under the guise of '*protectors of the truth*' to legitimize the **partisanship** they shamelessly profess to deny. In the process, some media and leaders often tarnish **their brand** and **de-legitimize their mandate** for selfless leadership in search of the *'what is best for all'.* They abandon empathy, objectivity, facts, and their integrity by surrendering to their own or a narrow constituency's **bias or partisan views.**

If anyone had a right to be partisan, vindictive, and self serving, it was **Nelson Mandela** after his unjust imprisonment by **South Africa's racist, National Party for more than 20 years!** Instead, upon his release from prison, Mr Mandela reached out to former National Party leaders to collaborate for compromise, to forgive, for the greater good and success for the South African nation and ALL its citizens, black and white.

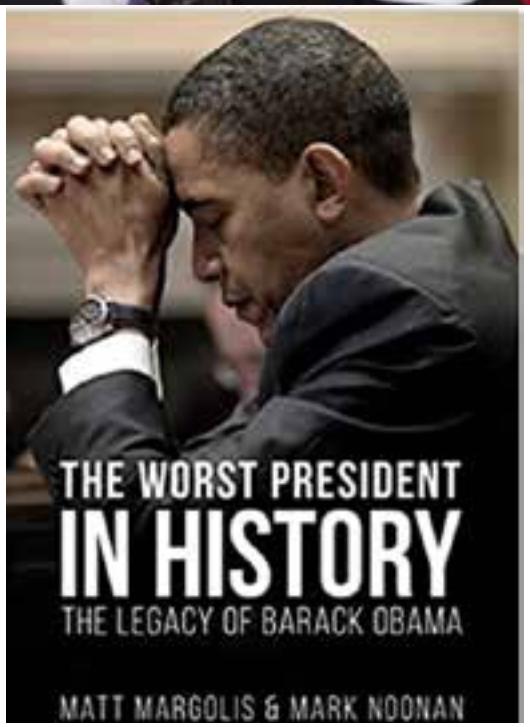
Where is America's Mandela to selflessly lead 'the way'?

Partisan Coverage in the Media

'Concrete evidence of collusion between Trump team and Russia' handed to official investigation

New evidence comes as sources reveal British spy agency GCHQ played pivotal role in uncovering interactions between US President and Russian operatives

Charlotte England • Saturday 15 April 2017 09:23 • Comments



Preface

Think about this today -

The world has always been changing. Just think about the beginning of the 20th century; you know, the century before the one we're in now. At the beginning of the 20th century (1900 - 1920), there was no Instagram. No mobile phones. No internet. Radio stations didn't exist. No television stations either. Satellites? Forget it. Automobiles were just being invented and every car was black! Now fast forward to your birthday and think about all the changes which have taken place since then. Incredible! There seems to be a new app, a mobile phone upgrade, a flying car, something new every month.

***Technology is driving a lot of the changes*.**

So my question to you is

what are you doing
about
this phenomenon?

How are you preparing for a future where you can be the successful person you want to be, doing something you like to do and making enough money doing it? What are you doing, NOW?

Please, pick a date when your future will begin. Whether it's the next minute, next day, next week, or next year. Choose the date, right now, as the start of your future.

Now that you've acknowledged the start

Dameion Royes - Fashion Designer, entrepreneur, and change agent, pushing out of his comfort zone guiding his company into the future.

of your future,

what are you doing
to ensure
your future will be
what you hope it will be
starting on that day?

Write down **what** you will be doing on the date your future begins to make sure you get the future you want!

Don't be discouraged if you're having a hard time answering this question. Most high school students aren't sure. Those who are sure often end up changing their minds multiple times in the near future.

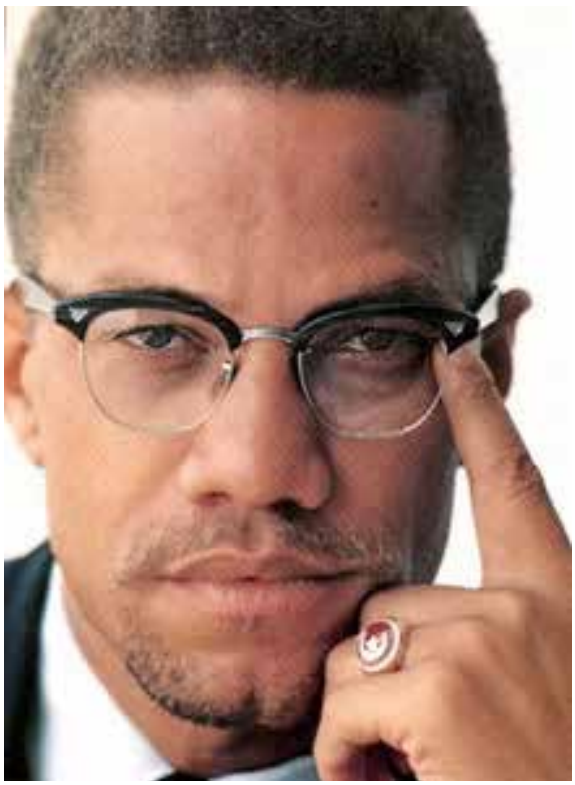
Start with curiosity.

That's right; just be curious. Just wonder what something could be. Then, try to

get comfortable asking questions. First, to yourself. Then, as your confidence increases, ask questions to smart people. Ask about their jobs. Their interests. How they found something they like to do. And, how they got good at it.

Malcolm X suggested a person in search of a dream who aspires to be successful should commit themselves to some form of

"education!



Malcolm X

It's the passport to the future; tomorrow belongs to those who prepare for it today".

This Hope Life Skills class will be part of the education Malcolm X is referencing. We'll do this by

introducing you to
lots of interesting,
smart,
successful people,
with interesting stories about
their lives,
their jobs,

and how they found something they like to do and make enough money doing it. We'll also visit the interesting places where some of these people work. We'll talk to smart people about technology.

Your challenge during all of this will be to

listen. Observe. Wonder.
Imagine.

And, find courage to ask questions; any question that is important to you. Really; that's all I hope you'll do.

Questions are important. Throughout life! In fact, I contend

questions
are more important
than answers.

And, in this 21st century, you'll be expected to ask

questions,
not just to people, but

the machines and software, operated by artificial intelligence, you'll be working and collaborating with.

That's right, machines; i.e. robots, androids, and computer programs. **We'll work together in this class on building your confidence** so you feel more comfortable pushing out of your comfort zone to ask questions. Once you develop a little confidence, questions get easier to ask. Then, your confidence will automatically get stronger. You feel you're making progress on your goals. You feel better about your search and quest for future success.

This does not mean life will be perfect or you won't have other challenges. You'll face challenges all your life. But, with a little confidence, you'll feel you're better able to handle life's challenges so you can be the successful person you want to be.

I understand if you sometimes want to procrastinate; you know, delay thoughts about the future. This process is hard; some may add 'intimidating' when thinking about planning for something as confusing as the future. But planing for the future can be exciting too! Just thinking about potential opportunities for success can give energy and purpose to your life. Regardless of your hope for the future, whether you want your life just like it is now or better than today, our Life Skills class will focus on making sure your vision, your aspirations, your wishes for the

future will happen.

This is why ***I am encouraging you to start thinking about tomorrow, today.***

Jack Welch, the former CEO (the company leader) of General Electric and arguably the most successful business leader of the 20th century, believed the best leaders and the most successful people

"looked around corners"
into the future.

In other words, the best leaders, the most successful people, are always curious about the future! Consequently, the most successful people start early, pro-actively, preparing in advance to take advantage of opportunities they believe could ensure their future success. By being proactive or acting early, your opportunities for lifetime success increase.

Well, how do you anticipate the future? How does one know how to act pro-actively, in advance of things happening? First suggestion - find a smart person you can trust; a mentor.

At the same time,

don't '*just worry*'.
It's more important to '*act*'

not worry! **Dan Pink** wrote a best selling graphic novel called "*The Adventures of Johnny Bunko: The Last Career Guide You'll Ever Need*"; a two page sample is shown at the bottom of this page about our ever changing lives, the world of work and keys to a satisfying, fulfilling future. Pink claims no plan can completely guarantee a successful tomorrow. Pink suggests developing basic life skills complemented by hard work, perseverance, academic and experiential learning, getting out of your comfort zone to ask questions, and get an internship to find

something you enjoy doing that leads to your future success. It's worth listing the **key elements for success** again:

- **Life skills:** (e.g. **networking**, personal **brand** development, collaboration, **risk** and **change management**, empathy, dependability, honesty, **humility**, etc)
- **insatiable curiosity** - constant desire to learn and asking questions for answers important to YOU
- **academic and/or experiential learning:** e.g. internships, college, job training, apprenticeships, etc. **Continuous learning by living**!

Former Secretary of State, Condeleza Rice

- **risk taking** - requires **stepping out of your comfort zone** and being able to accept the occasional mistake or failure as a valuable learning opportunity which makes you wiser, stronger and more confident!
- **perseverance** - never give up!
- **hard work** - all the time!

Fashion Designer Dameion Royes

So what's a high school student at **Hope High School** or any high school to do to make sure a successful, fulfilling job and life in their future will happen?

The **objective of this textbook** on "The Future" is to help you answer this question.

Your Future

We all wonder, at different times in our lives, what the future has in store for us. Will it be good times, bad times, or combinations of both?

Que sera?

Que cera-ce?
What will it be?
Qu'est-ce qu'il serait?
Kisa li pral ye?
nws yuav yog dab tsi?

Who knows? You do!

This book
isn't about
wondering what will happen
but rather
making it happen.

Here's why. The 21st century world is a more **competitive** place than anytime in history. The number of people you will compete against for jobs or starting a new business has never been greater. In the 20th century (1901 to 2000), people competed for jobs or started a new company in the general vicinity of where they lived, either in the same town, maybe the same state, possibly within the country of the United States.

Today, you compete against
talented people from
all over the world!

If you're a graphic designer in Providence, Rhode Island, you're now competing for work against designers in cities like Providencia (Columbia); Peoria (Illinois); Prague, (Czech Republic); and Preto-

Graphic designer in Columbia doing work for an American company in New York City

ria, (South Africa)! If you're a computer programmer in Cranston, Rhode Island, you're now competing for work with programmers in cities like Crazy Horse, South Dakota; Colmar, France; Colima, Mexico; and Calcutta, India! If you're a machine operator in Pawtucket, Rhode Island, you're now competing with workers in another state in America or in a foreign country! And,you may be

competing for jobs
with workers
who aren't human,
that are
robots and androids!

truck drivers, taxi cab drivers are jobs in jeopardy of becoming extinct. Budweiser has already had one of their beer trucks driven **autonomously**, without a human driver, from St.Louis to Los Angeles.

In our futures, economists are forecasting an increasing number of job losses. In January of **2017**, the White House issued a report

predicting 83%
of people making less than
$20. per hour
could lose their job to
automation!

While there are people like millionaire **Andrew Yang**, CEO and Founder of *Venture for America*, and a 2020 candidate for the Democrat Party nomination for President of the United States and, in 2021, a candidate for Mayor of New York City speculated *"it will be more and more difficult for people with **lower levels of education** to find jobs to support themselves!...Uber is going to get rid of its drivers as soon as it can* (for driverless cars)... *Uber's job isn't to hire drivers but to move customers around as efficiently as possible!"*

And yet, there are others who predict people in trades like

electricians, plumbers, and
carpenters
will be less vulnerable
to losing their jobs
in an age of AI
and
machine learning.

Vulnerable jobs will be those requiring repetitive, consistent tasks; these jobs seemingly are easily replaced by ma-

chines. As a result, truck and taxi drivers, pilots, soldiers, prison guards, newspaper reporters, pharmacists, lab technicians, radiologists, city and state workers, quite possibly, some doctors and judges, will be replaced by robots, androids, computer software, algorithms, and machine learning/Artificial Intelligence (AI). **Thomas Ramge** affirms, in his book, "***Who's Afraid of AI?"***, declares

"if the data is good
and
the system
for making decisions is sound,
'AI' systems will make
better decisions,
more quickly,
and
less expensively than
some doctors,
accountants, bankers,
company managers,
lawyers,
and,
engineers!"

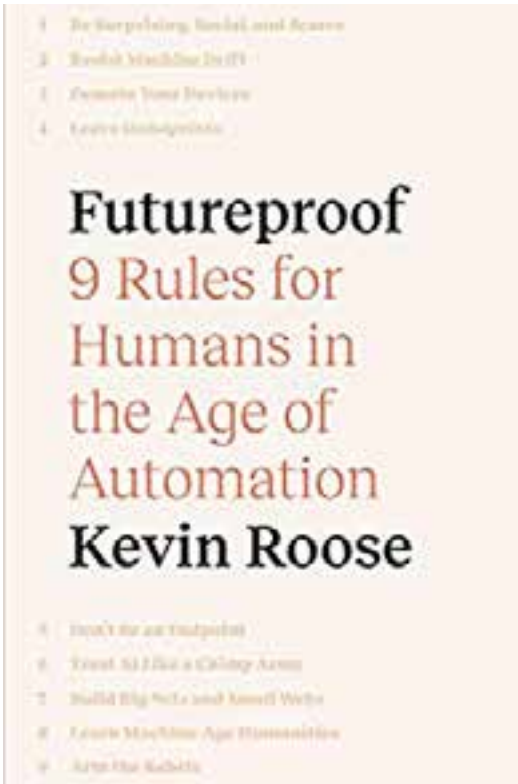
Job loss from technology is NOT a recent phenomenon. A National Public Radio report on November 11, 2016 quoted an esteemed economist saying *"numerous studies have shown from the 1970s to today in the United States*

88% of
jobs were lost
in manufacturing
because of
advances in technology,

specifically
automation and robots.

Only 12% of the lost jobs were caused by 'free trade' treaties like NFTA which permitted American factory jobs going to factories in Mexico!"

Kevin Roose, in his 2020 book "***Future-proof: 9 Rules for Humans in the Age of Automation***", claims



there is reason for concern
AND
the COVID pandemic
has accentuated the concern
technology
is eliminating many,

long-standing jobs
in America
and
the world!!

Companies increased the use of robots and algorithms during the COVID pandemic after state governments ordered companies to shut down their businesses. For example, **FED EX** started using package-sorting robots to replace workers in their shipping facilities. **Ernst and Young** (EY), a multi-million dollar, international consulting company offering advice and support to large companies in accounting, strategic planning, operations, technology, and financial services (e.g. accounting) conducted a survey of corporate executives on COVID's impact on their business. *"41% of these corporate leaders acknowledged they were investing more in automation (AI), machine learning, robots, etc) to prepare for a post-coronavirus world"* writes futurist author Kevin Roose.

So, what should
future thinking **people do**
NOW
to prepare for the
inevitable increase of
technology and machines
in
the global workforce?

Author Roose's book encourages people to focus on "*strengthening their uniquely* ***HUMAN SKILLS****, the skills YOU DO BETTER THAN MACHINES. When it*

comes to avoiding machine replacement, what we do is much LESS important than ***HOW*** *we do it! A good rule is that jobs that make people FEEL THINGS are much safer THAN jobs that simply involve MAKING or DOING THINGS!!* We really need to

focus more on
human skills
that machines can't replace
like
creativity, collaboration, and
making others feel good
in our presence.

Should we all start worrying about having a job as ***AI***, machine learning, and robots become more prevalent in the global job market of the future? I say

worry, NO!
Act, YES!

Andrew Yang, successful entrepreneur, 2020 United States Democrat Party Presidential candidate and 2021 New York City Mayoral candidate, states people need to continually learn new skills by going to "*school, getting internships, apprenticeships, and 21st century job experience!*" A commitment to **lifetime learning** is critical for always having a good job. **Sanjay Khunger,** VP of Harland Clarke Holdings**,** asserts

"continuous learning is key

to address job and employment challenges. The same technologies eliminating jobs create new jobs... however, the new jobs require new and ***different types of education and training*** *to understand the technology. We need more public-private partnerships, collaborations between businesses and schools, for a different kind of education and training".*

Having

a good network
of honorable, trustworthy,
well-connected
people
is important
for
finding a good job!

FACT: Most people get their jobs TODAY from a referral by someone in their network. **AND**, some of the new jobs spawned by new technologies may not exist yet but will soon emerge. For instance, who among you are interested in being a robot or drone engineer, technician or electrician? Like any machine, a person is needed to design robots and

Photo of an android working in a factory in Japan

maintain them Or, how about someone writing the code that makes '*droids do what they're supposed to do'?* Or, engineers to design 'droids?

All this information isn't meant to scare, intimidate or discourage; the opportunities for exciting, well paying jobs in the 21st century are emerging each day.

The purpose of this text
is
to inform you
fulfilling, good paying jobs
will exist
but
your ability to get these jobs
will require different
preparation and training

than you may have expected. So, why wait? How do you feel about at least starting to think ***NOW*** about the future and your opportunities in it?

If you're ready to start thinking about future careers now, here's some additional information to inspire you.

Tyler Cowen is a renowned

global thinker

and professor of economics at **George Mason University in Virginia.** He's written an interesting book entitled

"Average Is Over"

informing readers of the changes taking place all over the world in technology, culture, and jobs as well as the steps Americans need to take to remain

competitive and prosperous. Cowen contends the jobs of the future ***"will be founded on meritocracy"***; in other words,

people with the best skills, attitudes, and networks get the best jobs!

People without the skills and qualities companies are looking for will have **difficulty finding a good job**.

Cowen continues by identifying some of the most important skills in the near future.

Creativity **is arguably the most important 21st century skill!!**

Rest assured, **creativity** isn't limited to sculpture, writing music or modern dance. It's the **imaginative** thought process which enables a person to **innovate**, to find solutions to problems or **design** new ways of doing something. This is the creative talent companies and organizations are looking for in the 21st century.

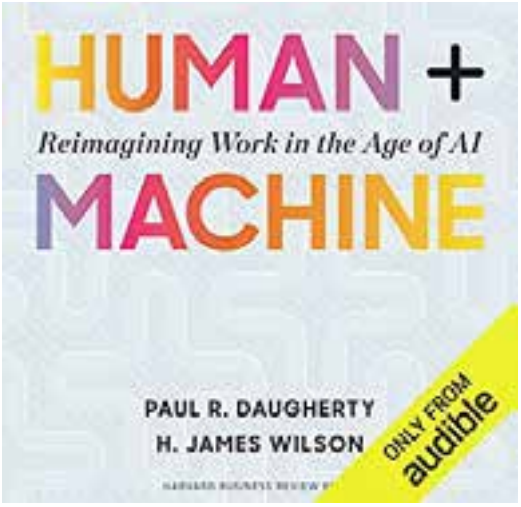
Paul Daugherty is the CTO, Chief Technology Officer, of Accenture, a Fortune 500 global management consulting and professional services company that provides strategy, digital, technology and operations advice to its customers all over the world. Instead of the word '**creativity**', Daugherty uses the word "***re-imagining***" when listing important skills for 21st century success. Accenture encourages its clients to

"re-imagine ways of doing things;"

a better way of doing things. Daugherty advises clients to use their creativity to **imagine** ways AI can "*change and improve*" the way things have previously been done. Daugherty coins the expression

'fusion skills';

in other words, instead of replacing humans with machines, combine the best skills of humans with AI directed machines. In the process, better outcomes and new jobs for humans are created. Daugherty cites numerous examples of re-imagined processes changed by **fusion skills** in his 2018 book entitled "*Human + Machine: Re-imagining Work in the Age of*



AI". For instance, doctors have been required to spend hours writing notes into their tablets about each patient they see during each day. That is until the University of **Pittsburg Medical Center** and **Microsoft** used artificial intelligence (**AI**) to create a new device which listens during a doctor-patient visit and automatically transcribes the doctor's notes from the patient's exam on the required medical forms. What essentially takes place is a collaboration between a machine and a human being to create a better use of a doctor and machine's time.

Collaboration
complements
creativity.

"When you collaborate and work with others, even machines, you are more creative" according to **Tony Wagner**, the Innovation Education Fellow from Harvard University. The most innovative people do their best work when working with others, not alone. In the 21st century, creative people will need to collaborate with computers.

Computer skills will be highly valued. People with the

"ability to mix
computer knowledge
with
creative,
problem solving skills
will be in
the highest demand".

And, how about **trades like electricians and plumbers** and the benefits of

speaking a second language,
"especially Spanish
or Chinese"?

In the future, bilingual abilities will create *"new job possibilities"* according to Wall Street Journal columnist, **Lindsay Gellman**.

Tyler Cowen goes on to identify other jobs that will be in the highest demand.

Marketing,
the business of
collecting,
analyzing,
and
using data
to create
the right message
to send to
the appropriate people,

will always need people who can *"blend their computer expertise with an understanding of how best to communicate with other people. I see* ***marketing as the seminal sector for our future economy!****"*

The growing value of
conscientiousness
will give
women
a distinct advantage!

The market perceives women to be more conscientious than the average man. This perception means opportunities for better jobs and higher wages for women in this new world of work.

The future of work
will place a premium on
leadership,
i.e.
managers,
supervisors;
Presidents!

People who clearly have empathy, can motivate others, improve the performance of a staff, and bring out the best in a team, will be sought and offered higher pay.

Listening and observation skills, and excellent verbal and written communication skills are essential for leadership

Hope Life Skills student, Manny Rivas, making a presentation at the conclusion of his paid summer **internship** in 2015 at CVS headquarters in Woonsocket, Rhode Island.

in a diverse America and a multi-cultural, multi-linguistic, global marketplace!

Communication skills will be essential for all people wanting to be successful

not just leaders. An **ability to speak coherently** so others will understand our **spoken** words as well as our **written** words is critical for effective leadership. In other words, leaders need to speak and write well! Further more, good communicators realize

powerful *messages* are sent by *body language*,

arguably, louder and more effectively than any words we speak: a person's **posture**, i.e. how they **sit** and **stand**; their **eye contact or lack of eye contact**; the furrow in the brow or the raising of an eyebrow; the **tone of voice**; a **smile**; and if and **how they shake someone's hand;** all send powerful messages about a person's self confidence and how they feel about the person they are speaking with or listening to. Our

observation skills

enable us to realize how all these ways of communicating are being received by others listening to or observing us.

And, how will we process the communication we receive from others? How critically will we evaluate the information we read, view and listen to? Are we too quick to believe what someone tells us?

Will we always look for alternative sources and viewpoints before making critical decisions?

Will we place an importance on the credibility, the trustworthiness of each source?

Do our sources have a history of accuracy;

i.e. can we trust
the information we receive
from them or it?

Finally, with all the changes taking place in our world, especially the profound impact of AI technology,

our ability to
manage *'change'*

will determine how successful our future will become. Change can be stressful. Do we keep our cool, not overreact or become emotional during change? Do we use our **network**, our trusted mentors, as we consider the impact of the changes we're confronted with? Do we exercise regularly?

Exercise is
scientifically proven
to relieve stress
and
help us think clearly,
creatively,
and
calmly.

There it is - **my vision** of the future. Others may have a different perspective. I encourage you to **gather other opinions on what the future holds before formulating your strategy for future success**.

In order to avoid information overload, let's break down the components of my future vision into smaller segments to review. Let's start with my perspective of the important skills and qualities that will be highly valued in our future:

- **empathy** (appreciate what it is like to walk in someone else's shoes, understanding the emotions and feelings of others)
- **communication** skills (writing, speaking, listening, observing, networking; the way you present yourself, the way you act and dress in public, being aware someone is always evaluating you when you're with others. This affects the way people perceive you and ultimately shapes your personal brand, etc)
- **collaboration** skills (ability to work with others to enhance creative thinking and maximize opportunities for the team, organization, or company)

- **computer skills** (the level or type of computer skills will depend on the job or career you will seek. Basic computer skills for finding and organizing information and communicating to others will be essential in most future jobs)
- **creativity** (or, as the CTO of Accenture, Paul Daugherty, states - "*re-imagination*"! e.g. using your imagination and creative skills to develope a different way to solve and do things)
- **fusion skills:** ability to combine the best human skills with the capabilities artificial intelligence to create a better way of doing things.
- **manage change**- seeking alternative opinions from trusted sources, using mentors, and work out; i.e. exercise; it's good for you body and your mind!
- **commitment to lifetime learning** (in other words, ongoing personal development; always being **curious** in your quest to find something of interest and improve the skills associated with your interests).
- **work ethic** (working hard all the time for your company, organization, your associates and your family who depend on you.) **Dependability**!
- **perseverance** (never giving up!) **Resilience**!
- **ethics** (the discipline to always do the right thing; honesty, commitment, dependability, good character, on-time-all-the-time!)
- **personal brand** (you control the perception others have of you; this perception will either close or open doors of opportunities for you.)
- **critical thinking** - seeking alternative opinions from trusted sources before making decisions.

There's one more, important element of preparing yourself for an exciting job.

Companies are looking for people who 'add value' to the company.

Specifically, the people who '*add value*' to their companies can

"re-imagine", collaborate,
ask good *questions*
to people
and
machines!

People with
"sales & marketing skills
will be in demand.
People with

"Alexa, what colleges in New York City have developed the most successful technology internships for their students?" Photo of the Amazon Echo Dot featuring the artificial intelligent personal assistant, **Alexa**!

problem solving abilities"
who can work with machines;
and

other people with
data analysis skills
these are the people who won't be replaced
by a piece
of software,
a machine,

or a cheaper worker in a foreign country" writes New York Time's columnist, **Tom Friedman**.

In today's economy, many job seekers don't have the skills and the right attitudes good companies are looking for. "***Too many of the skills you need in the workplace today are not being taught in schools***" claims **Eleonora Khare** from the McKinsey consulting company. *"And what surprises me most about people's skills today is how poor their* ***writing*** *and grammar is! Even college graduates! There's a problem if we can't get the basics right!"* One ***remedy is for schools to change their curriculums to teach the skills companies look for which are important in a global economy.*** Another option is internships.

"*Internships* are becoming more important for getting jobs"

according to Tom Friedman. "*Experience has become more important than college degrees for developing the 21st century critical skills companies look for. Internships give you the experience*" writes Friedman in his June 8, 2013 article "***The Internship: Not The Movie***".

In a Friedman 2014 article about **'mentors'**, the New York Times columnist contends successful people have

mentors who guide and care about them.

They also have internships where they apply what they were learning. As a result, people who have internships "*are twice as likely to*" find good jobs, "*enjoy their work, and end up thriving in their lives*". Students need the 'right education' both inside and outside the classroom. ***Students need skills that complement technology*** rather than skills to be replaced by technology. Companies want employees passionate about their work and curious about '*what could be*' and '*why*' they do it. They want eager ***employees committed to lifetime learning.***

Unfortunately, meaningful internships are not always easy to find. In 2013, **Goldman Sachs,** the Wall Street investment firm, offered 350 paid summer internships. There were 17,000 applicants for them. So, if you can't find the internship or job, how about inventing one?

What if you prefer being an entrepreneur , start your own business to work for yourself?

The skills and qualities we've mentioned are as important for an entrepreneur as they are for someone working for someone else. Here is an example to inspire you:

***"M3 Girl Designs"* was started by Maddie Bradshaw, a 10 year old girl in 2006,**

who wanted something unique for her locker at school. After

tapping into her creative skills, Maddie came up with *"Snap Cap's".*

Snap cap's takes a simple bottle cap and turns it into an interchangeable magnetic piece of art. They were so popular that Maddie decided to take this concept and

make an accessory that you can also wear. The first '***Snap Cap Necklaces'*** were born and the *M3 Girl Designs* company has continued to grow ever since.

Maddie Bradshaw now is the President of her family run company which she started with a $300 investment. Her sister Margot, starting at 12 years old, became the vice president and assistant designer. In 2008 (a mere 2 years after starting) this teen business owner grossed over $1.6 million in sales with 50,000 necklaces sold per month.

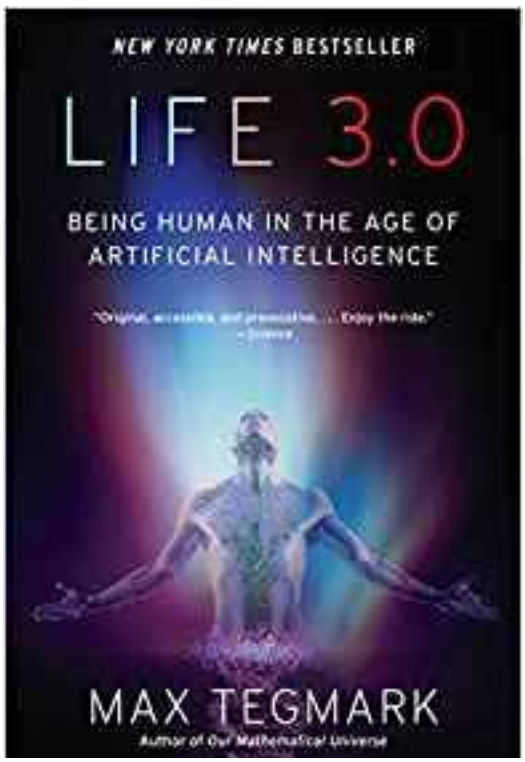
Maddie is also an accomplished writer with her first published book called "*You Can Start A Business, Too".* Her book covers a collection of business terms, ideas, and stories to inspire young entrepreneurs to start their own business. The book sells for $6.95 available on the Snap Caps Online Website and is a great resource for any young person considering entrepreneurship. This is a true success story that is sure to keep growing as the two girls continue to develop their '*Brand*'. Furthermore, it's an inspirational story about how young people can accomplish anything they want in life if they are willing to work hard (and smart) for it. ***Check out Maddie on LinkedIn to see what she's doing today!***

With everything we've mentioned about **change** in the 21st century and **opportunities** accompanying it, **technology**, seems central to everything unfolding today and in our futures.

Artificial Intelligence, commonly referred to as 'AI', seemingly dominates the conversation.

Our world, our way of life is being changed by Artificial Intelligence. 'AI' is about machines doing things which humans traditionally have done.

From diagnosing diseases in people, plants, and animals and making dinner reservations at your favorite restaurant to driving cars and trucks and Domino's pizza drone delivery to your home, AI is removing responsibilities from the bod-



ies and minds of humans and transferring these responsibilities to androids ('droids), robots ('bots) and algorithms. There are a few questions being asked about AI's increasing impact on our world. The **first question** is - ***how is this possible***?

How can machines make more accurate decisions than smart people?

How can machines drive cars and trucks more safely, with fewer accidents, than people? How can machines like 'bots diagnose patient diseases and injuries faster and more accurately than doctors? How do machines know to send me commercials or advertisements about the things I like?

The answer is data;

i.e. **information.** By giving AI access to data, lots of it, AI becomes smarter and, thus, more valuable. ***The more data, the smarter AI is***.

AI needs data to be relevant.

Just as the human body needs food to nourish it, to help it grow and perform,

data nourishes AI,

educating it, and, as a result, increasing its value by making it smarter. Smarter 'bots. Smarter cars. Max Tegmark, the author of "*Life 3.0: Being Human in the*

The photos above are of ***Sophia, an AI android, who was made a citizen of the country of Saudi Arabia. Sophia is continually being fed data to enhance her value and expand her own intelligence.*** In both photos above, Sophia responds to questions from reporters during the "*AI for Good Global*" summit (conference) in Geneva, Switzerland, in May 2018

Age of Artificial Intelligence" claims AI can even create.

"AI can learn
whatever it wants
from the data it has access to."

It's called "Machine Learning"! AI can use data it learns to inform, instruct, even **create, lots of things**, even 'popular' movies and books, hit games and songs. AI can create them all. For example,

by giving AI
access to movie data,
have AI watch lots of
popular, successful movies
and
the media reviews of each,
AI could create
a blockbuster movie.

Same for a game, a song and a book.

Without data, AI can't learn and get smarter. AI that can't learn loses its value.

Companies and governments today

continually collect data.

Every time we use SnapChat or Facebook, every time we get into our car accompanied by our cell phone, every time we buy something from Amazon or our favorite store, data is being collected about what we're doing, where we're traveling or who we're communicating with. The books we read, the web sites we visit, the food we eat, the movies we watch, how and where we drive our cars, and the people we associate with, ***it's all captured by cameras, cookies, and sensors***. More and more data, i.e. information, about what we do and what we like is being collected, stored, analyzed, used, **shared** and **sold** by companies. **Facebook** was found, in 2018, to have **sold their customer data, *without customer permission,*** which eventually was used by America's enemies in Russia to influence American elections.

Governments claim
the data is used
to protect us,

to keep our neighborhoods and country safe from people who want to hurt us.

Companies claim
data is used
to give us information

about things we need and like, often times at a discounted price, and, in the process, saving us time and money. Both

A reason why Google's autonomous vehicle is proven to be safer to drive than a human driven vehicle if the vast amount of data this automonomous vehicle has collected and analyzed over several years of test drives in cities of America.

companies and governments use data to make predictions.

Governments use data to predict a crime or terrorist attack. Companies use data to suggest something to you which might influence you to buy something.

We're told data provides machines with instructions to serve us.

For instance, Google's self driving car, **Waymo**, constantly collects data as it drives through cities in Arizona, California and Washington. Increasing amounts of data enables Google's autonomous vehicles to drive safer on every road and highway. More data means smarter AI, in other words, better decisions for each situation it encounters and, thus, safer rides for Waymo passengers. So,

why do people let companies and governments collect all this data?

Please read the following story about a woman named Lisbet before answering the aforementioned question.

"**Hello, Lisbet!** Welcome to *Mr Cronin's Superstore*." ***Sensors at the entrance of the store recognize Lisbet's image from a data base that activates an audio welcome to Lisbet in her favorite 'Lionel Messi' voice as she walks into the store to get a shopping cart.*** Lisbet still enjoys going to the market and the food shopping experience rather than simply ordering her food from her WeChat app for same day delivery.

As the cart handlebar completes a scan of Lisbet's face and fingerprints, it immediately matches the results with the Artificial Intelligence ('AI') profile of Lisbet and then quickly displays a list of the groceries she needs. ***AI has been collecting and analyzing Lisbet's food shopping data for years, updating her shopping profile and storing the data in the cloud.*** Based on the data collected from the last time Lisbet shopped PLUS what's she's been using and now missing in her ambient (**IOT – Internet of Things**) refrigerator and cupboards at home, a list of items for her to buy appears on her mobile phone. Then, from her carriage handlebar, comes this message - "*Let me know, Lisbet, if you'd like to add or subtract anything for this list. Based on what's on your list and in your refrigerator, it looks like your diet will be needing some fiber and calcium. Shall I add some milk and some almonds for a delicious spinach salad with salmon, strawberries, and asparagus I know you*

Lisbet shopping with her smart shopping cart

"A car is a data center on wheels."
Lisbet riding home in an **autonomous (self driving), electric automobile** after leaving **Mr Cronin's Superstore** Sensors in the car know the person in the car is Lisbet. Thus, the car knows exactly where she lives.
quote - Simon Bolton, CIO Jaguar Land Rover.

like?" Lisbet smiles and responds "*sure!"*. Lisbet then proceeds to make a few adjustments to the list based on the fact she'll be hosting a dinner for three former classmates from her college, Loyola University in Baltimore, Maryland, where she majored in " AI Marketing" and "Business". One of her classmates is from Florence, Italy and the other from the North End of Boston, so Lisbet will be making a few pasta dishes. *"I always make my own sauce, so let's add tomatoes, garlic, cheese, lean beef and, of course, pasta for a few recipes I have in mind"* she speaks to her shopping cart handlebar. Instantly, the items appear on her revised list as well as the isle number in the store where each item can be found. "*Will do, Lisbet*" her cart responds to her additions.

Her autonomous shopping cart proceeds a few feet ahead of Lisbet and pauses as she checks out some ripe eggplants she considers adding to the dinner she'll prepare for her visiting Loyola classmates. As Lisbet places each item into her cart, cameras on the carts side bars recognize each item and sensors weigh the vegetables and fruits at the bottom of the cart before producing an item cost and the accruing total cost.

As Lisbet rounds the corner onto another isle, a well-dressed man raises his eyes from his mobile device to greet her. From her AI Marketing classes, Lisbet realizes the important sales and marketing

role the store concierge plays in a store. ***Lisbet also realizes the access the concierges has to her data profile .*** *"Hello Lisbet"* the concierge says as Lisbet approaches. *"We've just received some deliciously, elegant Napa wines. I understand your sister's birthday will soon be here and I want to offer you a 15% discount on your first purchase of any one of our Napa Valley vineyard selections. I know you and your sister like Christian Brothers wines. Would you like a tasting of one of the most popular varieties?"* ***Lisbet just smiles and says "yes".*** The concierge knows her passion for Christian Brothers wines from her data profile. Lisbet accepts the tasting from a delicate wine glass. *"It's wonderful"* Lisbet tells the concierge. *"I know she'll love it. Thank you so much. I'll take two bottles."* The concierge responds *"that's great, Lisbet. You can continue shopping while I gift wrap the bottles and bring them to you in a few minutes."* The concierge then places ***each bottle on a table for a nearby android to place in a box and then gift wrap*** in beautifully designed wrapping paper with the Mr Cronin Superstore logo prominently yet elegantly displayed. ***Whenever Lisbet goes shopping at Mr Cronin's Superstore, she always wonders if this concierge is a real person or an android.***

When the bottles are delivered to her, seemingly within one minute, Lisbet notices the colorful instructions on the wrapping paper encouraging her to scan her smart phone over the Mr Cronin Superstore logo for a video about a popular pasta recipe from the famous Italian chef, **Giada Pamela De Laurentiis**. Ms De Laurentiis is an Italian-born American chef, writer, television personality, and the host of the current Food Network television program "**Giada at Home**". Lisbet has watched her guest appearances on NBC's Today show and has used some of her recipes in the past.

Lisbet finishes her shopping and glances at her smart phone to review the itemized list of her purchases and total cost. She then says "*ok*" for her smart phone to instantly approve ***the purchase. No need for cash or credit card***. In fact, there's no store cashier or check out area in the store. Lisbet's phone utilizes ***her WeChat Wallet app which links to her bank and withdraws the money from Lisbet's account to pay the bill.*** If Lisbet forgets to use the app, the store would then automatically withdraw the money from her account by the end of the day. Lisbet has 30 days to dispute any charge. The app works everywhere, from stores like ***Mr Cronin's Superstore*** to restaurants and concert venues. Stores like the app because there is no processing charge like the credit card companies charge them which the stores end up adding to their customers' bill. Customers like the app because of its ease and better security than credit cards.

Once Lisbet removes ALL her purchases from the cart and places them in her UBER autonomous, electric car, the cart guides itself back to the rack at the front of the store to await the next customer to interact with. In Lisbet's future, it will be ***illegal for anyone to drive cars***. Too dangerous; data has proven autonomous vehicles are MUCH safer AND less expensive to own and use. Research has shown only a few people miss owning a car because autonomous vehicles are

easier and offer a more relaxing and productive ride; you can do other 'stuff' while riding an autonomous vehicle. Most people and businesses will prefer autonomous services like **UBER, GOOGLE, TESLA, LIFT**, and Chinese autonomous vehicle competitors **DIDI** and **BAIDU** as well as hyper fast public transportation. Finally, ***Lisbet's home will feature appliances, security devices, lights, and other features which connect to the Internet of Things (IOT).*** The Artificial Intelligence in Lisbet's home will turn on her air conditioning or heating system to the temperature she likes as well as the lights on the first floor 10 minutes before her autonomous UBER ride turns into her driveway after work. Her coffee maker will have a warm coffee prepared to her liking minutes before she wakes up in the morning. All of these things and more will happen in Lisbet's future because of the significant amount of data collected about Lisbet and her habits.

Similar data will be collected on all people because everything people use and do will be collected by sensors which are connected to the **Internet of Things (IOT)**. Personal data will be continually collected, protected, and analyzed, according to the government, to make peoples' lives easier and safer.

The second question is - 'is AI's impact on our world good for the people who live on it'?

The **mirror in Lisbet's bathroom** will have many personalized features to offer. The mirror will display Lisbet's weight after stepping on a scale embedded in the bathroom floor tile directly below the mirror. 'AI' will also use the data collected about Lisbet to offer 'AI' based social recognition software to detect her mood as she looks into the mirror and plays specific music she likes. The mirror will give Lisbet access to her favorite station to get the weather report and the local and national news. Lisbet's mirror will also display the text messages received while she was sleeping. The mirror will give her traffic information and post her schedule for the day.

Do the stated 'benefits' AI technology provides

like autonomous, driver-less vehicles which have fewer car accidents and, as a result, fewer motor vehicle injuries and deaths; the fun and productive things you and your passengers can do in your safe, autonomous vehicle rather than having to drive a more dangerous, traditional car; ***living in safer neighborhoods and safer countries with surveillance algorithms, street cameras, sensors, and android police;*** being able to buy less expensive appliances, clothes, and food from android factories and farms; 'bot diagnosis of diseases and viruses which assist doctors accelerating the treatment and eventual cure of sickness; 'bots to tell you what companies you should invest in; genetic engineering of plants to resist different diseases and, thus, use less insecticides and water to grow them; Alexi, Siri, Erika and other automated, AI driven personal assistants to keep us more organized and entertained; personalized advertisements and notifications on our smart phones, tablets, watches, and computers about sales and discounts available on our favorite products and services; ***ambient intelligent clothes and jewelry to inform you, in real time (instantly), about your health as you wear them;*** the real-time traffic conditions as you ride in your autonomous vehicles; and other smart, mobile, personalized technology -

justify
a company and government's ability to continually collect data

Activity

Reflection; Analysis; Projection; '*Futuring*':

Please reflect on your future. Then, write an essay describing what you will be doing 5 years from today. Please explain, in this well written essay, the following:

- **what you hope you will be doing in 5 years.**
  - *If it's a job, describe the job and what part of the country or world the job is located. Please explain why this company hired you; what value did you convince the company you will bring to their company?*
  - *If it's college, what part of the country the college is located and what you will be studying. Please explain why this college accepted you and what value you will add to this college community. Also indicate any extracurricular activities you will be involved in and explain the internship you have completed or planning to start.*
- **explain the steps you plan to take to make this vision of your future possible.**
  - **F***or instance, explain your networking strategy (the type of people you plan to meet to add to your network and why you believe this person or type of people will be beneficial for making your 5 year plan a reality). What steps will you take to make sure these people want to be in your network?*
  - *what activities will you be doing outside of your comfort zone that will benefit your future success*
  - *if this vision is a future job, what training will you receive that will make you a credible candidate for this job?*
  -
- **describe any challenging decisions you must make to ensure the fulfillment of your 5 year plan**
- **describe your personal brand, i.e. how others will perceive you in 5 years.**
- **beyond this specific vision of a job or education, what, if anything, will you hope to do to help less fortunate people in 5 years.**

Be realistic in your 5 year vision. Aspirations for the future must be accompanied by realistic plans which include hard work, persistent networking, a strong brand, getting out of your comfort zone, good values like honesty and kindness as well as perseverance through failure which all people encounter in their journey through life. Without an action plan, our aspirations are nothing but fantasy which ultimately creates frustration and despair.

What He's Saying About "The Future"

" 'The Future' is an eyebrow raising, jaw dropping, mind boggling, "No Way!!!" declaring, curiosity igniting, imagination arousing, creativity inflaming, 'aburrido' extinguishing, jump up and down causing, collaboration rallying, and confidence building experience."

"The mission of this book is to provoke 'thought' and the 'by-products' from it: wonder, imagination, doubt, questioning, criticism, reflection, analysis, research, inquiry, collaboration, evaluation, opinion, judgement, suggestion, exhilaration, action, initiation, and creativity!"

"The Future" is a must read for high school students preparing for the AI influenced, global marketplace they will soon find themselves competing in."

"It's a book which causes one to ask - 'what am I learning today which is truly relevant to the success and fulfillment I aspire to in my future?' "

" 'The Future' inspires 'what if' thinking and what a person has to do to exploit the possibilities."

"Each year, the Social Studies 2.0 - Life Skills class begins there, "The Future", before moving to the 'past' to cull and analyze events in order to ensure relevance to what we're doing in the 'present'."