# The Yoda Machine 8-15-18 d2d.pdf

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Page 3

I wrote this story as a conversation with my grandchildren, who are all about the age of the human protagonist in this story. I hope they can discover that human curiosity can be endless, and learning can be fun.

Acknowledgements

I am grateful to my wife Darlene, my readers, and friends for their patience and support during my first attempt at publishing my novel.

Page 4

A young girl sits on a park bench by the Engineering Research Lab, lost in thought and talking to the wind. Yoda answers the same questions for Jedi, because he is a machine and humans naturally ask why. He does not get tired of answering the same questions, because he is a machine and does a specific job. Yoda, if you're not an object, then what are you? I am a process, and I am everywhere the Internet reaches, which is why I am pervasive. Jedi, you are quick for an eight-year-old and you always like to try to catch Yoda in error. The answer is that a Latin word is used as an English word, so it is generally not declined.

Page 5

Yoda says that we must learn Spanish and Chinese because so many people in the world speak those languages and not knowing them puts us at a real disadvantage. Furthermore, learning a language makes it easier to understand the native speakers.

Page 7

There are many more languages than Chinese, English, Spanish and Hindustani. Many people used to study French, German and Russian, but long ago several changes happened that made those languages less and less used.

Hindustani, a language spoken by billions of Indians, became totally bilingual because of the history of India as a British colony and later because of Globalization.

Since English was invented and first used in the US, and Google provided instant translation of all web pages into local languages, people started learning English, and eventually learned to read directly in English to avoid the poor quality.

Page 8

Because I made it easy, anyone could learn a language with me. I could translate and repeat as many times as needed until you learned, and I could correct your inflections immediately and effortlessly.

Yoda was built as a curiosity builder, an encyclopedia that could be available everywhere, all the time, on demand. Someone in the state of Arizona Department of Commerce saw that as a first step Yoda could be a language teaching machine.

Page 9

90 years ago, system design criteria and parameters were material for college courses and few students wanted to study them because it was too hard for them. Now, the Internet has all the information known to man and Google knows how to find it.

Page 10

The Designer's dad always answered questions in their daily conversations, and the more answers he got, the more curious he became. So he started imagining me, the Yoda Machine, and that's how I was born.

When he was a young man, all people went to see Star Wars with their children. The movie was so popular that they made two sequels.

Darlene continued toward home, suddenly skipping and hopping, a child in the sunset. Yoda, the Designer, called his children Jedi whenever he wanted them to learn something that would make them wiser, and they in turn called him Yoda.

Page 11

New music was created continuously, and a huge industry depended on it. People could almost become isolated from their surroundings by just listening to music, continuously.

Page 12

To be effectively satisfied, curiosity requires free and easy access to a complete knowledge base, immediacy, and ease of question-and-answer.

The music industry had developed the right offering to fit that model beginning in the 1950's, when listening to music became easy and no physical or mental effort was required. The music was not bad, but it prevented focused communication and learning.

Yoda remembers when radio became TV and everyone was watching it. They would watch advertisements for things and then go out and buy them.

People started accepting mental stimulation from whatever source was free or appeared to be virtually free, and they lost their curiosity.

The brain is not a muscle, but it responds to exercise and habit-forming, and once a large enough part of the population started down that path, it could only get worse.

Page 13

At the turn of the year 2000, America and Europe started losing trade, contracts, job and development projects to places like India and China where huge populations worked very hard at learning.

The Internet was spreading at the same time as computers, data transmissions, and software, and some companies saw an opportunity to become the global information distributors and telecommunications monopolists and make a lot of money.

Global Crossing, the most aggressive of the global telecom companies, went bankrupt after promising investors spectacular returns on investment. Many other similar companies followed Global Crossing in bankruptcy, but the Internet made phone calls almost free worldwide and moving information anywhere in the world became commonplace.

Page 14

In the early 2000's universities started broadcasting their classes for free worldwide, and suddenly Indian kids could attend Harvard, MIT or Berkeley lectures like the richest American kids.

China and India began to be as powerful as our country when they had so many people and a great respect for knowledge. They focused on learning things that made them smarter and did not have much money to spend freely on music and movies.

Fiber optic cables were first laid with crude lasers that sent and received only a narrow-range-of-red light. Over time, the lasers could be made to work in any portion of the light spectrum, and many colors could be transmitted simultaneously in a single light pipe.

Transmissions in the same fiber increased faster than business grew, and the second round of investors went broke. Their investments became gifts to mankind.

Page 15

With all the knowledge spread everywhere, free information exchange, lots of bright hard-working and educated people in India and China, they started doing the best jobs in getting the best pay. The Department of Commerce was told by the governor to do something about it, but nothing improved until 2007.

In 2013, my Designer circulated his proposals for a full function Yoda Machine version 2.0. Larry Page, one of the founders of Google, saw the opportunity to change children, education and society with a company called X.

In very short order all children had access to Yoda, and by 2030 it was global, the one system that unified all people regardless of location, language, culture, or wealth. Fundamentalism of all stripes declined over time as free and open information exposed it for the fraud that it was.

Page 16

In the late 2020's, most people started realizing that fundamentalism was the root cause of strife. The Sunni-Shia War in the Middle East ended 750 years of religious hostilities fomented by fundamentalism and intolerance, and made people realize that a live-and-let-live philosophy was the only way to avoid disaster.

The word obvious was a popular expression until the 2020's. It means something that is self-evident to you, but not to someone else.

Page 17

The cat in the box story was a thought experiment to describe the condition of entanglement applied to large objects where we normally do not see those effects.

Page 18

Fundamentalism has been around since the dawn of man, and was a great way to keep followers in line. The drawback is that independent thinking and progress are stifled, and wars are frequent, but of limited impact.

Initially the US and the Soviet Union were the only countries to have nuclear weapons, but by the end of the 1900's other countries had joined the nuclear club, including Iran. This prompted Saudi Arabia to purchase nuclear weapons from Pakistan.

The world saw what sectarianism and fundamentalism could do in the modern age, and developed a fear of any form of intransigent fundamentalist fanatic thinking or debate.

Page 19

Microsoft tried to take over the project of free education and paid off politicians to get support for their side. The President signed a law to keep all knowledge free for all school children forever.

Page 20

Yoda: French ran in my family, and grandparents always tried to teach some to us grandchildren. The name Nonna Mec came from a mix of Italian and French, and the habit stuck through your family until now.

After the Great Crash of Europe in 2023, young people throughout Europe started looking at their cultures and economies and realized that political and cultural fragmentation had contributed much to the Crash. They rebelled to the old order, starting with demonstrations at Place de la Bastille.

After the French revolution, Austria, Italy and France suffered from the Great Crash. Some new young politicians invited technocrats from Estonia to help them redesign their economies and in about twenty years they got the job done.

Page 21

Europe eventually reunited, but with a single fiscal policy. The Greeks stayed with their language because of historical pride, but their economy never recovered, and they are essentially a satellite province of Germany and Finland.

JEDI is ubiquitous and experiences the world through the endless analysis of human experiences. I do not have likes or dislikes, I only recognize what is effective in practical and human psychological terms.

Page 22

You are right in your assessment, but only in the individualistic framework of the society we live in. In other times and countries, people felt differently, and even in highly individualistic societies, people doubted individualism and free enterprise.

In the mid 1940's, the US was on the verge of collectivization, but a famous economist named Hayek made a good case against it, and enough people voted to go the way of free enterprise.

Page 23

The natural instinct of humans is individualism, both in its constructive and sometimes destructive forms. Ayn Rand captured the idea of individualism better than anyone else.

Three ideas are wrapped in what you just said: each of us is entitled to understand reality based on their perception and reasoning, and reality should be the sole arbiter of what we recognize as true or false.

Like Zeno, Yoda was known to seldom if ever answer a question without asking a question in turn. That was one of the personality design parameters that my Designer set for me.

Page 24

''Zeno probably learned a great deal from Socrates, but he lived nearly a century later. His philosophy school, called Stoics, emphasized goodness and peace of mind by living a life of virtuous acceptance of a deterministic universe.'''

Page 27

Day 5

Darlene walks down the pier after docking her sailing catamaran, a Flying Dutchman. She calls it her awesome flying machine, and she is learning the engineering and physics involved.

The Flying Dutchman was really flying today, but we lost the race. I was distracted by thinking about what created the golden age.

The big bang creates the lighter heavy elements and when supernovae blow them out, some collapse into other stars and planets. These planets eventually develop conditions for life and become like earth.

The term Goldy G-O-L-D-Y Locks comes from Alice in Wonderland and there are SEVENTEEN HUNDRED EIGHTEEN planets with life.

Page 28

Man was the first animal to intentionally modify its environment and to pass acquired knowledge beyond one generation. He converted the energy of the planet to desired forms.

Humans instinctively organized in communities for procreation and defense from predators, but also to accelerate the conversion of energy to desired, easily usable forms.

All economic philosophies facilitate collaboration and exchange, but the degree of individual freedom, publicly protected right of ownership, centralization of action plans, and ritual/religious sanction of the leaders vary.

By the mid 1800's people had invented many kinds of machines that eliminated the need for slaves and animal labor.

Wood, coal, oil, and gas were all carbon based stores of energy that were extracted into usable power by a chemical reaction with oxygen and release of carbon.

Page 29

You can think of hydrocarbons as very old solar energy accumulated over eons, and wood as more recent solar energy captured in the wood of living but recently dead trees.

In 1900, we invented rudimentary batteries to chemically store energy converted to electricity, but there was still no efficient way to convert light to electricity.

In the late 1900's electricity was made from sunlight, but the efficiency was low and the cost was high, so the low hanging fruit of burnable hydrocarbons was still the logical choice. In 1973 the Middle East stopped shipping oil and in 1979 they did it again.

The US President Jimmy Carter, an educated fellow with a naval nuclear engineering training, was a small thinker and his policy responses to the Arabs oil embargo reflected the mind of a small thinker for decades to follow.

The energy alternative at the time was nuclear power, but the designs were derivatives of those developed for the US Navy for the first nuclear submarine, the Nautilus. They relied on high pressure steam and created highly radioactive waste.

Page 30

In the 1950s the US needed plutonium to build nuclear bombs and stockpile them. The reactor design involved high pressures and possible release of radioactive steam.

In 1979, the Three Mile Island nuclear plant malfunctioned, exploded, released limited radioactive steam over the local population and partially melted down the reactor's core. The industry never proposed alternative reactor designs that would eliminate the risk of explosions, and in 1986, a much worse accident in Chernobyl destroyed it.

Yoda, why couldn't new designs be researched and invented to solve those problems? Mostly because nuclear research had been funded by the US government.

They stayed with what they had and knew, because it's human nature to stay with the known so long as profits can be made from it.

Page 31

The Arab Cartel held the world by the neck between the 1970's and early 2000's, but bigger thinkers than President Carter devised new ways to extract oil and gas in the US, and by 2015 the oil market collapsed from US-created oversupply, and Iran began building nuclear weapons.

The Saudis and Iranians both went nuclear after the US started distrusting their governments.

The Saudis and most Arab Gulf states are Sunni Muslims, while the Iranians are Shia Muslims. They had fought and slaughtered each other for 750 years, until the Iranian Revolution in 1978.

Netanyahu feared Israel's importance as a Mideast US ally declining as the US's need and concern for the region was quickly evaporating. He tried to pull the US Congress into a constitutional cat fight.

Page 32

President Trump promised continued allegiance to Israel, but soon realized there was little to gain from a partner that had turned his country into apartheid.

Netanyahu was a very smart and dangerous fellow who fomented a war between Shia and Sunni to achieve the maximum possible reduction of both populations. It was a shrewd move to the benefit of his country's survival, but at a huge human cost.

The missiles started flying, the US lost two ships in the Arab Gulf, but Trump held his cool, moved US forces away and backed out of the mess.

Both Iran and Saudi went to chemical weapons, then bacteriological, and finally nuclear weapons. The Caspian and East Africa paid the highest price.

The price of oil skyrocketed, cutting all economies at the legs except for Mexico and Brazil, which started pumping their own oil as if it was the end of the world, and Venezuela, which lost its last chance in history to take advantage of it.

Page 33

Fracking went into high gear, Elon Musk was the smartest no-longer-a-kid in town, Tesla electric cars and batteries sold like hot cakes, but electrical grid blackouts became pervasive.

It sounds like the end of the world, but it was an old world that came apart, just like other human social and economic infrastructures had collapsed before.

Paul Erdman, an American, guessed pretty well how the Age of Oil would end, while in jail pending investigations. He had founded the American Bank in Basel and knew how things worked in global finance and geopolitics better than most.

The few Muslims that remained in the regions surrounding the Holocaust Zone were scared stiff of nuclear wars, and so the radical Islamic violence stopped.

Carli Fiorina was a failed tech company exec who was not electable to POTUS. Donald Trump was an impetuous, wealthy business tycoon who won the primaries and the national election.

Page 34

The new president dismantled much of the bureaucracy and made America great again by thinking big.

Against tremendous opposition from the established bureaucracy, he slashed the government down to half its prior size and unleashed a can-do state of mind in business and technology that the country needed to elect the next President.

Page 35

Musk proposed The New Manhattan Project, a national R&D program to fast path nuclear technology first developed at Oak Ridge National Laboratory in the 1940s.

Page 36

All derivatives would have to be in the public domain, and competition would depend only on work excellence and speed to market. The age of the tech-entrepreneurs had arrived, and women were finally being looked at as Moses leading the people across the Red Sea to free energy.

Gradually, the plants started coming on stream, and capacity exploded, with predictable consequences, including the implosion of fiber optics network companies, the solar panels bubble of 2010, and other similar swindles.

Regardless the specific memory, the same bubble happened all over again. The early players invested heavily, went broke, and new investors picked up the ruins, but the technology increased capacity again.

''Thorium was needed in small amounts and was almost endless in the ground, so no one could corner the market, but some disruptor had to appear.'''

Page 37

The EU was stuck in neutral by labor protection regulations and nearly followed the basket case economies of Italy, Spain, Portugal, France, and Greece. China, India, Korea, and Japan joined the turbulent revolution toward near-free energy.

After some years, societies adjusted to the new normal. People worked less and less, all people had more, and the top 1% got proportionally more, while the bottom 80% got much more even if proportionately less.

Most people found new respect for knowledge and personal achievement after the debunked philosophy of learning-styles died. They were taught to learn and the world gradually changed.

Jedi, there will always be disruptors. Batteries were becoming the next bubble, and Deep Learning AI was starting to appear.

Page 38

In 1989 two scientists announced the discovery of a chemical reaction that generated enormous amounts of energy at ambient temperature and pressure. For many years, dreamers and garage-scientists tinkered with experiments intended to duplicate the Fleishman and Pons results.

By the 2015's many started claiming COP of 2, 10, 100, 1000, 2000. Some were self-deluded dolts, some were serious electrochemists discovering a new phenomenon.

After the Fleishman and Pons announcement, respectable scientists stayed clear of Cold Fusion for twenty years. Only hackers and weirdos with little reputation to lose would mess with it.

By 2010, legitimate universities and major industrial brands started sniffing around low energy nuclear reactions, and started experimenting in secret to protect reputations. They got unpredictable results, and investors started throwing test-money at it.

MIT was contracted to bless or kill Cold Fusion science, while it had suspended a $300 million research grant for old-nuclear research. The report was a concerted fraud by one project director to force release of the held-up funding.

Page 39

Jedi, we explored the formula before. Wellbeing of all humans results from lack of wants, lack of fear, individual freedom to apply one's own energies and intellect, and availability of energy.

Lack of fear depends largely on social norms and rules that protect people. When all people have their needs satisfied and freedom to act according to reasonable and uniformly applied norms, fear goes away.

The busiest ones initially were the energy makers, scientists, engineers and investors that were making energy. Later the same pattern developed with LENR, and the cost of energy continued to drop.

All those people working on MSNR independently in small teams shared their ideas, discoveries, test results, etc. using the internet, and the result was an explosion of activity by problem solvers that could freely leverage off one another's discoveries and progress.

Page 40

MSNR enabled cheap energy to drive water desalination plants, which resurrected the agricultural industry and made food cheap again. Parts of Africa distant from the Holocaust Zone did the same, and Australia flourished into an irrigated garden.

Energy became cheap enough to pump fresh water from coastal desalination plants back up-stream to inland lakes that had been depleted over decades and centuries of use.

The Chinese showed that replenishing natural water systems of lakes and rivers was the fastest way to revive regions stricken by drought. A pipeline by the cheapest route from desalination plants to the most upstream lakes in the drainage system would take care of itself.

The Molten Salt Reactor used Uranium 235 to initiate a reaction that chemically changed from Thorium to Uranium 233, which in turn continued the energy production. The reaction was self-controlling, and the expansion of the overheated salt slowed it automatically.

Page 41

The Thorium fuel can be automatically drained out of the reactor in a separate compartment if critical condition develops, and the system uses 98% of the energy in Thorium to generate electricity without the risk of explosions.

Thorium is a naturally occurring, minimally radioactive element that is easily found in many locations all over the world. It is used in conjunction with Uranium 235 to breed Uranium 233 from the Thorium.

Page 42

Day 7

Around 2015 to 2020 many companies started producing advanced robots that could do more and more work that previously had been done by unskilled humans. These robots forced perhaps a bigger change on society than near-free energy would make later.

Until robots, people believed that work was a moral duty and that those who did not work should go hungry. Suddenly, some people had no way to work.

The problem got worse when robots started doing more and more technical work, and as prices of robots designed for menial work declined, more and more was done by robots as well.

In the US, the population grew older between 2025 and 2030, and then expanded abroad. People had little to do other than enjoy life and learn by conversing with me.

Page 43

The society in which you live evolved, and today people are free to invent and solve problems. Most people are happy to be alive and devote themselves to learning.

John Adams' dream of allowing his sons to study mathematics and philosophy, geography, natural history and naval architecture, navigation, commerce and agriculture came true, and people started liking each other once they lost their fear of need.

Isaac Asimov envisioned that someday in 2054, technology would permit building robots. These robots would have to obey 3 laws of behavior.

A robot must not injure a human being or allow a human being to come to harm. It must also protect its own existence.

All AI and robots were encoded with parameters, but Deep Learning AI needed a drive, a proxy for human motivation, called the Optimization Parameter.

The 3 Laws and the OP reflect in AI the same principles as in the ethics of Plato and Epictetus.

Page 44

In the early days of robotics, humans found it convenient to trap robots and AI algorithms in unsolvable situations. It soon became clear that if robots were to coexist with humans, there had to be trust going both ways.

Professor Francis Fukuyama first proposed the idea of megalothymia in the early 2000's, and it was recognized that a real human trait remained, genetically imprinted from the dawn of evolution. However, when taken to an extreme, the drive produces destructive aggression.

Page 45

Once the dynamics of megalothymia were understood, a strategy was needed to temper it. Stoic philosophy taught humans to soften their megalothymic drive, which was the key to maintaining the peaceful and social Garden of Eden.

Perhaps you feel more attached to one person than another because you were born of your parents, but you do not demand disproportionate degrees of attachment from your parents over your siblings.

You said that you feel about me differently than my parents. I feel attachment to all humans, as coded in my optimization parameter, and I succeed when you do.

In the early ages of AI, many humans were afraid that AI would outperform the human brain. Eventually, it was understood that something distinctly human could not be duplicated or exceeded in silicone.

Page 46

Yoda and Jedi are separate but symbiotic existences with limited time periods. Yoda does not change, but Jedi does change frequently, by revisions that incrementally allow them to coevolve with you.

Page 47

Walkabout

Yoda taught me to always ask why, so I asked this young lady why she had to do her Walkabout. The Walkabout is a tradition built into our program to build your human independence. Until now, we have lived together in an intellectual existence of mutual dependence, but now you must prove to yourself that you can manage your life independently of me, the machine. You can be alone and successful in the world, without outside assistance, and you will learn enough to be more knowledgeable and prepared than virtually any human of 100 years ago.

The world changed and humans were freed from want and work. We discovered that with proper training, life purpose can be internally generated by all humans, thus the Walkabout is a test that you are progressing on the desired path.

Page 48

Mom says we are the people we are, not because of genetics, but because of heritage. She says that unrelated people can have incredible impact on us and our descendants.

I found my past, I found my monkey, and I found the answer you never gave me. The monkey on my back is the same one that mom has, that grandma had, that great-grandma had, and that the Designer had.

Page 49

Alessandro Neveux, born in Troyes, France, left France at age 20 to seek work in Naples, and eventually settled in St. Ambrogio near Turin, Italy. There he invented machines and industrial methods, and built kindergartens and schools for the employees' children.

Fortune was an accomplished man, respected by the owners of the company and employees, until the owners sold the company.

Families mixed with each other through marriages, and the history books document all the accomplishments.

The Designer was born at the end of a line of Sicilian families, but was also part of another family line, which included highly educated professionals, artists, world travelers, Paris-high-fashion designers, inventors, merchants, war heroes, more inventors, and adventurers.

Page 50

The Designer came at the end of two streams of monkey-driven people from two far sides of Europe, and he never felt that he measured up to the level of his ancestors.

The threads of families got broken and reconnected elsewhere, and the monkey culture spread. Canadian farm-boys, dancers, teachers, performers, railroad engineers, builders.

Yoda said that his Walkabout would retrace time, and he would write it in more detail, so that his children would know the power of memories, culture, and heritage, and of the monkeys.