



Joe Carvalko

*The best scientist is open to experience and begins with romance – the idea that anything is possible.*

–Ray Bradbury, *Los Angeles Times*, Aug. 9, 1976.

**H**ello out there, communitarian Vladi Sarouk coming to you from Cektop 4. Today’s guest is Helen Mensa, a leading advocate for parents, like herself, trying to locate children locked behind firewalls that techno-laws have made impossible to penetrate. She is also one of our oldest living witnesses to what life was like before and after the cataclysm of the twenty-first century, and the Great Inflection that led to the separation between many relatives and friends.

“Recently, on Cektop 5’s bulletin, she posted, ‘As a child, I imagined I might fly across the Southern Gulf like the primordial monarch, but in time came to understand that only animals that adapted form, albeit over the millennia, were permitted to cross. Evolving form is nature’s solution to conforming complex organisms to diverse environments. We fought hard, determined to endure in this intricate space called earth, but we’ve forgotten what we left behind to survive on a planet left in ruins by our forefathers.’

“Helen, few of our listeners have heard about how our ancestors

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# Crossing the Evolutionary Gap



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dealt with the coincident forces of a deteriorating environment and a technological outburst that permitted our eventual adaptation, primarily through in-the-body devices and genomic alteration. And only a few, such as yourself, lived through the meltdown of the 2080s. What was the world like, before then?”

“Thank you Mr. Sarouk, my pleasure to link up. Before the catastrophe, I lived in the Rocky Mountains,

surrounded by majestic peaks separated by emerald green valleys. A place I’d spot hawks soaring over cliffs searching for their next meal. A place of streams and pine forests, rock faces, where springs jettisoned into narrow crevasses. In the final throes of winter, snow melted in the higher elevations recreating rivers, overflowing into the arroyos, spawning new cacti, columbines, and orchids. Branches carried cocoons borne of rootless caterpillars, vessels for the emergent kaleidoscopic butterflies. Where ancient tributaries overflowed their banks, where cougars, rattlesnakes, and coyotes, came to sip upon the waters. All this wildlife now extinct.”

“You describe a world before the meltdown, a world lost largely by our obsession with unclean energy.”

“Yes. And when we faced annihilation, we had only one option. Allow technology into the deepest recesses of our body.”

“Before we get to that, we’d be interested in hearing what your configuration was growing up.”

"Aboriginal, one that had existed for two million years. Nothing artificial, endowed with what nature supplied, not connected to a network."

"And, physical appearance?"

"Upright creature. Outwardly not altogether different from today, a body, two arms, two legs, a head, with a brain for abstract thinking and feeling. My height, nearly two meters. A tall girl in my day."

"Are you saying that you used no artificial enhancements, or germline alterations?"

"My parents, called Millennials, born in the century before me, were oblivious to things like cyborg technology, genetic enhancements, and even climate change. By the time I entered the workforce, late 2030s, technology had already been used widely for therapies, like stimulators for pain management, depression, regulating bioprocesses like the heart, skeletal prosthetics, and artificial organs, hearts, kidneys. This was the first wave. Augmentation technology to survive the meltdown came later, in the 2060s, and then of course the enhancements, the third wave, to increase mental acuity."

"Fascinating Helen, go on."

"Back then, any two of us looked the same, as far as form. But, internally, many were being enhanced through implants, like a heart or a pancreas. Beginning in the '60s, some were chosen for notification technologies to survive the meltdown. And not until the '80s did we begin to incorporate devices that helped us think quicker, more logically. On the outside, we looked the same. Inside, we were diverging into different technologies, all with the same objective: survival and superior intellect."

"Are you suggesting that these differences created, for the lack of a better descriptor, different species?"

"Not exactly. Although the germline alteration business was

proliferating, most procreation still resulted in aboriginal offspring. But anatomies were gradually being modified by different equipment, applications, installed at younger and younger ages. Between germline alterations and hard technology,

we shifted into different spheres, what our predecessors referred to as demographics."

"But, the main point was to survive, increase longevity, right?"

"Yes, therapeutic technology was headed there. Yet, it was impossible to deal with simply the physical body without wanting to improve the psychology of individuals, their outlooks, and of course treat emotional disturbances, like depression. Psychotropic medications had been around for a hundred years, both drugs and in the '20s, deep brain electronic stimulators."

"Were they installed just to alleviate illness?"

"No, these "feel good" technologies were available to anyone, subject to cost. Many designed to alter sensations, what we felt. Affectively."

"Affectively?"

"Yes, some backed technologies that reduced emotional barriers, so we could see things for what they were, impartially. Introspection, introspection, forms of self-awareness, neuroticism and narcissism, were suppressed. Systems that favored cognitive over affective thinking, over time, produced personalities with lesser degrees of openness, extraversion, and great levels of agreeableness."

"Were there attempts to deal with attitudes, say empathy or indifference?"

"They came at this a little differently, developing technology to



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influence arousal, curiosity, and motivational intensity."

"What do you mean, exactly?"

"We've forgotten that early on stimulators were prompted by the need to survive environmental changes. As such they were integrated into the sympathetic nervous system to slow down the production of adrenaline, and thus channel the effects of 'arousal.' For instance, while increasing our sensitivity to temperature change, it damped 'flight' response, or the impulse to act precipitously. Once installed, these types of processors gave the network time to size-up threats, before transmitting to our processors, how to respond."

"But, how did that change people? Did it alter their perceptions, their dispositions?"

"I can say, I'm not the person today that I was a hundred or even fifty years, ago. My temperament, cognitive focus, and even socialization changed each time a new operating system was downloaded."

"How did it affect socialization?"

"Close friends and relatives eventually drifted away into their own space, we became different in how we each saw the world. And, then we began to lose touch, not because we were incorporating different operating systems, but because somehow the technology was de-socializing, partitioning us into electronic spaces where we could no longer effectively communicate. Protocols were

not standard, inputs produced different outcomes.”

“Is this how you lost touch with your son?”

“Mainly, yes, although there were extenuating circumstances.”



## **I met my husband Adam in 2056 and by then we were both considered transhumans.**

“Did our leaders see the socializing side effects coming?”

“Leaders only saw the upside, improving the economy and wellness, and later protecting us from the devastation of climate change...”

“Can you give us an example of an early enhancement that had an economic effect?”

“I’d just turned thirteen and my grandfather bought me a smart chip. Let me buy products with no hassle. Smart RFID-like devices were injected, if you can believe it, into our hands. We’d walk into a store, which of course no longer exists, and wave over something we wanted. Store equipment sensed the selection, charged our bank account, and within hours the item would be delivered by drone.”

“Absolutely fascinating to hear from somebody who experienced visiting a store. What was the next big societal change affecting your life?”

“I’d have to mention how the world was overcome, at first slowly, but then with increasing ferocity, by storms and rising tides. We tracked each tenth degree Celsius beyond 1.8, which hit somewhere in 2030s. When I’d turned fifteen, 2035, technologists began aggressively installing processors into humans,

mainly for medical therapeutics, as I’d mentioned. But, a full 20 years would pass before they turned to imbedded technology for overcoming the assaults from a planet that had reached a 2.4 centigrade rise.

By then we were seeing sudden overnight extremes in the temperate zones, between minus 40 and plus 130 degrees.”

“The territory, known as Florida, began disappearing about then, right?”

“Yes, and the land along the northern Gulf Coast was inundated, causing mass migrations to western elevations.”

“I understand that across all continents land became scorched. By the early 2050s sea levels rose over 1.5 meters. Places like Australia’s Queensland and New South Wales lost over 2 million habitable properties. By 2080 another half-meter took out 100 miles inland. Fortunately, the idea of land has ceased to have any real importance to our survival.”

“Yes, the planet changed dramatically.”

“Were people aware that they were heading toward annihilation?”

“Oh yes, but countries in the early 2000s, before the tipping point, couldn’t agree about what to do... much driven by commercial interests and populations unwilling to conserve. Politicians told people that climate change was a hoax. By the late 2040s, sea levels couldn’t be contained by higher levies and dykes. Cities, like New York, Miami, New Orleans, Seattle were becoming uninhabitable.”

“When did people realize that the only chance for surviving was imbedded technology?”

“Let’s see, I met my husband Adam in 2056 and by then we were both considered transhumans.”

“What identified you so?”

“We were born unaltered, but technologically augmented in some way, an artificial organ transplant here and there, or sensors to warn of climate change threats, and to a lesser degree help compete for work.”

“Were there official ways that kept track of who was and wasn’t altered?”

“The census bureau kept track of such things. Transhuman was a designation resulting from the type of in-the-body technology one was outfitted with, a vital organ, technologies to sense undetectable gases, or unobservable infrared flames, which if encountered immediately incinerated you.”

“Rather frightening. Did everyone have access to this technology?”

“No, government applied a mix of qualifications, such as one’s utility to society.”

“Wasn’t it inhumane to let some just perish?”

“It’s not really that different from the mechanisms that had been in place for centuries.”

“Such as?”

“In the U.S., although never openly admitted, the affluent considered themselves to have more utility than the poor. One of many consequences was that wealthy communities maintained schools with more resources. Depending on which schools children attended, they would either end up well-off or poor and the cycle repeated itself. Poor people had less, died sooner. It was not spoken about openly. When time came to decide who would be augmented, governments made policy choices based on similar standards of ‘utility.’ Those determined to have greater social efficacy went through rigorous testing and economic scrutiny. If you qualified, government subsidized the installation and maintained the technology.”

"Everybody must have wanted it."

"Sure, the way to survive the decimation being caused by global warming was to infuse technologies that gave advanced warning of an extreme condition, and later on reset the stasis or base point of internal human temperature, depending on environmental conditions. Other advances actually supercharged our body's perspiration rate."

"So you're saying we needed ways to adapt to our environment, faster than what would have been the normal evolutionary process."

"Precisely. More than 2 million years ago, humans followed separate paths under the forces of climate change, and over time bodies naturally adjusted, skin pigmentation, surface area. However, the rise time from 2 to 4 degrees was coming upon us so steeply that only new technology could save us."

"Do you remember how much the global temperature had increased, by the time you met your husband?"

"We'd been at a 3.2 degree increase for a few years, and then unexpectedly it reached a bifurcation point and the environment threw the carbon cycle into reverse. Where you'd expect vegetation to absorb carbon dioxide, plant life and the soil itself began releasing it, amplifying atmospheric concentrations, boosting us an unexpected 1.5 degrees. We quickly went to 4.7."

"How drastic was the effect on population?"

"Immediate. Heavy precipitation, extreme heat, crop yields plummeted, billions died of starvation. We lost most sea ice, and then Antarctica and Greenland mechanically collapsed caused sea levels to reach the 2 meter mark. People in low lying areas drowned."

"What kind of climate enhancements were available, say in the '80s?"

"Humans were then being equipped to sense methane gases and infrared fires."

"Did those features need to be embedded?"

"Yes and no. The potential for random outbursts became impossible to monitor locally, and although we could have attached warning devices to clothing, it was more reliable warning us directly through a connection to our autonomic nervous system."

"And, what about children during this time?"

"Adam and I decided that when MacArthur was born, he'd have the latest in-the-body augmentation to ward off climate hazards and mental enhancements to live free from the burdens of physical labor that many were still living through. We added components to speed access to historical data, and as time went by, improve logical reasoning. This was the start of what became impenetrable boundaries around users of cognitive technology, MacArthur included. Manufacturers incorporated encryption and firewalls, for no reason other than preventing competitors from stealing trade secrets."

"Was the use of enhancements wide spread?"

"No, actually just a relatively small population. So, we grew distant from relatives and friends, having less and less in common as time went by. I think many were embarrassed by how little they understood. After all they only had their natural brains to draw on. Eventually we considerably outlived the people of our generation."

"Can you explain the Great Inflection of the twenty-first century to our audience?"

"Ah, the inflection... where progress flattened out for a dozen years, before taking off again. Being on the wrong side of the curve, meant obsolescence, job loss."

"Were upgrades automatic?"

"For transhumans like Adam and



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me, we were limited to single sourced upgrades, partly because we were early adopters on the left side of the inflection, and because proprietary encryption and firewalls didn't allow competitive upgrades. Eventually, subsidies declined, and it became impossible to remain updated."

"How did this affect your family?"

"Adam had worked as a programmer for years for a bio-computer manufacturer in New-Seattle. One day he learned his company was being acquired by SoftCognition, who was only keeping programmers with Spark 3000 technology. He had a metabolic processor installed before the inflection, which monitored vital organs, sending real-time updates to an A.I. physician, but it didn't track cognitive functioning. Veritas-AG provided his professional engine with identification codes and keys to his internal 'safety deposit box' — a device that maintained everything he thought he'd ever need as a programmer. However, newer processors, used by SoftCognition, were beginning to incorporate quantum computers, which were incompatible with the older digital processors. Weeks later, but before the acquisition, Adam was notified that



his decade-old 4.6 cerebral processor from RB-M, would not accept SoftCognition's protocols.

"When Adam heard, he contacted RB-M for a change out. Cost was a prohibitive \$150,000. He tried locating a vendor, to provide an interpreter between the RB-M and SoftCognition's protocols, but the technology was unreliable, and in any case, no one could get around copyright restrictions. Adam lost his job."

"What side of the inflection was your son on?"



## Posthumans, which followed transhumans, were the result of cumulative augmentations. But, their technologies reduced levels of independent thought.

"Right side. He was among the first to install the QP 2000 quantum processor. Some years later, he went to work for the government. Secretive about what he did. One day, he went missing. We immediately contacted our Cektop representative, who said our boy had been assigned classified work."

"Could the representative tell you where he was?"

"No, and couldn't tell us how to contact him. Two years passed. Then an anonymous communique broke the silence. It said he'd moved to a virtually unreachable technology. Although we found his address, a firewall denied all attempts to establish a link. The government and the manufacturer refused to unblock his ports. Our messaging was to no avail. For Adam and I our world collapsed."

"Helen, I'm so sorry."

"Maybe he is listening in... and able to reach out to me."

"Was your husband ever able to find work?"

"No. And, we believed not making reasonable accommodations for workers whose technology was being phased out, was a form of discrimination, and back then seen as denial of equal protection. The World Transhumanist Party – we were members – had as its mission, developing a form of transhumanism, free from the 'cultishness,' where people discriminated against those with different technologies. But, the party didn't seem bothered by Adam and many like him, who couldn't keep up with changing technologies."

"Would you not agree that only the fittest should have been allowed into the future as posthumans?"

"Posthumans, which followed transhumans, were the result of cumulative augmentations. But, their technologies reduced levels of

independent thought. Adam was cautious and chose his system believing it wasn't as invasive as synthetic artificial intelligences, which were in their infancy, and which promised to practically replace the entire right lobe of the cerebral cortex, and some say independent thought."

"The totally synthetic artificial intelligences were quite independent minded, and required alterations to standard human physiology. Correct?"

"Yes, a redesign of the human form, employing synthetic genomes that by then were high density computational circuits."

"When did they become available?"

"Around 2110. I was about ninety, and opted in for synthetic genomic integrated upgrades and reassignment therapy. In roughly five years I went from transhuman to posthuman."

"And your configuration at that point?"

"I had the latest quantum processors. It carried thought-driven simulations. At first it was like dreaming, because it could perceive much quicker than I could consciously evaluate. Although at the end of any sequence, I was where I wanted to be, thought-wise at least."

"Did it change your everyday routine, how you might have dealt with colleagues? Or family?"

"Most of my coworkers had been linked into the same network, so we could communicate thoughts without having to use an intermediary, such as writing or speaking."

"But, had it changed personal relationships?"

"Regrettably, Adam did not upgrade to posthuman. We drifted apart. We stopped talking. In the process of "upgrading," I lost the love of my life... something an advanced technology could never fix. Some years later he passed. I miss him desperately."

"Can you tell our listeners what else changed during your lifetime?"

"Without getting too deep into theory, the human form, for millions of years experienced first hand, causal associations where reflexively it expressed intentions and desires... We understood cause and effect. One to one, our sensations directly interfaced with the world: we heard music, saw something called color, tasted the bitter and the sweet. But at bottom, music is the molecular compression of waves, color the particular packet size of energy. All this could be sensed by technology, and as it has come to pass, technology has separated us from direct contact with real world phenomena. It intercepted nature, as it reprocessed and repackaged sensations to conform to some corporate ideal..., what things should appeal to our tastes."

"That's a somewhat cynical characterization of what has been a

concerted effort to make the world safer, one in many ways less hostile than the one you were born into. One where competition for the most outlandish beliefs consumed the world in bloodbaths."

"Yes, but we had love, individual liberty... we've lost all that. That which made us human."

"So, are you saying we have surrendered free will?"

"You know, when it comes to beliefs, I struggle between what my central processor wants... and what I want. I've lost so much autonomy."

"And, identity?"

"Yes, identity, autonomy, all related to free will. Independent thought, belief in a supernatural, are now replaced by algorithmic-centric rules, built into anatomical computers. Identity flows, not just from our rational side, but our emotional, too. Hearts no longer throb, because we don't fall in love, because we no longer cry, we've lost the means to cleanse the soul."

"But, wouldn't you agree that these restrictions unburden us? We've eliminated ways of thinking, just as we have eliminated elements of vulnerable physiology, cultures that accepted war, poverty, and ignorance?"

"If post-humankind is unmoored from its identity, its autonomy, how will it know when it goes too far, reaches the abyss, when it takes that final step from the last remnant of the Homo sapiens to post-posthumans, devoid of any semblance or memory, of the emotions that once made us human?"

"Isn't there something innate in our being that keeps us evolving?"

"Yes, I think there is, but merely evolving into another creature, or another form, may someday, in and of itself prove that the entity we once regarded as human, lost the battle against its extinction."

"What else do you think we've put at risk?"

"I fear we may have already lost it. Mr. Sarouk, we have severed the modern world from all that preceded it, as if it never existed, a culture fractured into a million unrecoverable shards. Gone are tradition and common wisdom. The culture into which I was born, exposed me to beliefs, values, needs. I once aspired to leave at least a ripple on the wake of greater humanity. I aspired to love. In this process of living life at its fullest, our forebearers brought to bear an inseparable blend of intention, feeling, judging, and morality concerning what they did. Today's posthuman generation worships technical progress, not tradition. Common wisdom's been replaced by a world order of interconnected internalized technology."

"How far has this moved us from what had been mankind's former trajectory?"

"When I was born, I knew the connections to my biological and cultural predecessors. In form with them anatomically, intellectually, spiritually. We were the same species from whom we inherited a familial DNA, living diverse cultures. What changed, and made Adam and me and those that followed different, was that we were co-opted by invention, by programs that introduced engineered constructs, new social realities, authored by corporate programmers."

"I take it you are critical of this new reality?"

"In ways yes, in other ways no. We gained a greater potential for surviving, free from destructive passions that in my day spawned wars. But, unlike past revolutions, which failed to bring conformity, political or social, the posthuman transformation has resulted in a techno-human culture that is one-hundred percent homogeneous."

"You have to admit that we have not completely destroyed the human spirit. We continue to make strides in engineering and science."

"True, although my processors work hard to discourage my thinking about the past, in part because the past evokes tender memories which it determines are illogical. Emotion is deemed inefficient. We now have a neat, reductive, techno-culture, where few mistakes are made... A culture not based on human feeling, but programs that mediate and flatten the culture. We are no longer on some eye opening journey."

"How so?"

"Nietzsche, wrote that 'What is great in man is that he is a bridge and not an end.' That bridge kept going for our ancestors. They followed their dreams, while pushing against a never-ending assortment of obstacles we called the daily grind. But we no longer look back, we push forward against no apparent existential threat. Man's imperative to survive and achieve significance has vanished, no longer serving as the drivers for procreation or self-expression."

"Do you think that in the short span of 200 years, technology has irreversibly transformed us?"

"Technology is improving so rapidly that it replicates itself in every bodily molecule of consequence. We have long recognized this. Someday, only remnants of the Homo sapiens will remain. Some predict not beyond the twenty-fourth century. By then what was once a life form that tracked its origins back 2.5 million years, will have completely disappeared. Obviously, our aboriginal form has changed, but have we now reverse transformed from the likes of the ancient butterfly back into the rootless caterpillar?"

## Author Information

*Joe Carvalko* is an Adjunct Professor of Law at Quinnipiac University, School of Law and Partner, Patent Attorney, at Carvalko and Morris. He can be reached at [carvalko@sbcglobal.net](mailto:carvalko@sbcglobal.net). 