

Nikola Tesla Visits the 21st Century – Part 2

While working late in NuTesla's lab one night experimenting with scalar waves a stranger appeared, seemingly from nowhere. ... He kept his hands at his side, and then a sly grin appeared as he spoke.

“Good evening, sir. Let me introduce myself. My name is Dr. Nikola Tesla.”

And so began the most interesting night of my life. Dr. Tesla was interested in the many electronic devices now in common use that were based upon his inventions and discoveries. When our discussion turned to harnessing energy I was astounded by his reply to my question about AC power and asked further, “..., what do you mean it lets us tap into ‘other’ energy sources? And how could it be safer?”

Tesla smiled and asked for a cup of tea and said, “I guess it's going to be a longer night than I expected.”

As I handed Tesla his tea he looked around and said, “Pity there's no whiskey to add to this, but alas, clearer heads will be best.

“The crux of your questions indicates while some of my technologies have been applied to marketable products, my greatest discoveries have gone unused in the intervening decades. I suspect this is due in part to those who live off the efforts of others by keeping them in the dark, so to speak. I had truly hoped to find the world a better place by this century.”

Tesla shook his head as he looked down into the cup of tea and seemed to be lost in some distant thought, then snapped back to awareness and said, “Resonance! That's the first key to understanding my work. Allow me to explain.

“I knew an opera singer that could shatter a crystal goblet when she sang the right note. Actually, she shattered more than a few hearts as well as I recall” Tesla said with his sly smile. He continued, “Goblets made with some impurity, like lead added to crystal, could be made to shatter in such a way. The first time I saw this I envisioned the minute lead particles vibrating in resonance to her singular note until they broke loose from their crystal encasement, shattering the goblet.

“It brought back memories of my time with Ernst Mach and our discussions on sound waves and wave forms in general, and all the resulting conflicts his wave theories had with direct current. During those lively discussion I could see in my mind how alternating the flow of the electrical current resolved Mach's wave theory conflicts that so many were contending with by only considering direct current.

“Michael Faraday's explanation about the relationship between magnetism and electricity fit perfectly with my view of alternating current. But it wasn't until the glorious ideas of resonance occupied my mind that I saw how energy, mass and frequency perfectly related. This wave relationship overlaps with non-conductive substances. The impurities in the crystal didn't have to be metal, but needed to have a resonate frequency different from the crystal's, and in the audible range of the singer.

“The inherent beauty of resonance is that when you discover an object’s natural resonant frequency you can apply miniscule amounts of energy to cause substantial changes over time. This is so because the applied resonant energies are cumulative.”

“Cumulative and not just additive?” I asked.

“Yes, cumulative. Of course all energy imparted to an object is additive, but when it’s not imparted at the object’s resonant frequency then friction, in all its ugly forms of resisting change, quickly dissipates the added energy. However, when energy is added at the resonant frequency it accumulates in the object so acted upon and only external parasitic friction can have a dramatic effect on dissipating the ever accumulating store of energies. Certainly you have sat upon a swinging chair and kicked your legs and started the chair moving and discovered how timing when you next kicked, and in which direction, you could either increase or decrease the swinging action?”

I nodded.

“You were identifying the resonant frequency of the swing through a simple feedback mechanism, that is, your motion being increased or decreased as you altered the frequency or timing of kicking your legs. Your sense of equilibrium detected the acceleration and motion and your mind calculated the time and strength of each kick to achieve the desired result. Let me give you a more ‘concrete’ example of resonance and feedback.

“In 1891 I began experimenting with mechanical resonance at my laboratory in New York City. I built a small device, smaller than your microwave oven, with a hinged lightweight hammer, similar to those found on alarm clocks. It was driven by a large coiled spring that was ratcheted when a sensor detected the returning or resonating vibrations. I attached this to a metal beam in my laboratory and released the small hammer to tap on the beam. The hammer striking the metal beam began the sensor detecting the returning, or resonant vibration, and upon sensing this it would release the ratchet for the hammer to strike at the opportune moment. In this way each strike of the hammer would add to the previous one, just like you were able to time the kick of your legs to increase your swinging motion. Soon the amount of force, or energy, a one ounce hammer was imparting to the beam with each strike became hundreds and then thousands of pounds of cumulative force in its rhythmic action.

“I had studied drawings of the building housing my laboratory and calculated the exact time it should have taken for the vibrations to spread from the hammer tapping on the beam into the flooring’s metal joists, thus enabling me to feel the return vibrations in my feet. But after more than the expected time had passed and had felt no vibrations from the floor, I thought the experiment a failure. I left it and turned my attention to other tasks.

“Some time later one of my assistants came running into the laboratory and said there was an earthquake and we needed to evacuate the building immediately. Initially puzzled by his outburst, I quickly realized the cause was my little experiment. I ran to other room where it was still running cheerfully along, oblivious to its effect and turned the device off, removed it from the beam, discretely slid it under my coat and quickly exited the building with the rest of the residents.

“Upon stepping into the street I saw where large pieces of concrete façade on the exterior of the building had fallen into the street. What I had not known at the time was my drawings of the building had not shown the underground support structures, interconnecting pathways and basement structures of the nearby buildings. These added an unknown mass and affected the outcome of my experiment; which in reality was a stunning, if almost frightful, success; I simply did not have all the relevant data to predict the actual outcome. From that moment onward I ensured my experiments would be conducted only under very controlled conditions and not in areas that could harm others.”

I smiled and told him, “Yes, this is a popular story about you, though one that has not been reproduced successfully.”

Tesla replied, “Well, if you’re still using low frequency alternating current then you certainly don’t understand how resonance can be safely used.”

“So resonance and this cumulative affect are part of what you meant by tapping into other energy sources and making alternating current safer?” I asked.

“Precisely!” Tesla quipped. “By 1888, three years before my ‘earthquake machine’ experiments, I had made some fantastic discoveries with regard to the use of electricity of a high potential and high frequency that created long streams of visual currents, which passed harmlessly through me. These made for quite a show as people had been told by the scoundrel Edison how dangerous such currents were. Indeed, not understanding how to use them could produce discomfort, but neither I, my assistants nor my guests who were exposed to such currents were ever harmed or even at risk; because I understood how to use resonance.

Frankly, rather than being harmful, such high potential, I believe you now say high voltage, and high frequency oscillations were already being applied to the healing arts. By the turn of the century many physicians were well versed in the use of such currents, which later created no small stir amongst many of the same financiers that had abandoned my wireless transmission of power.”

“Excuse me,” I interrupted, “*many* physicians were using high frequency currents to treat patients? And this somehow relates to wireless transmission of power?”

“Oh, yes, quite so.” Tesla continued. “Wireless transmissions are only possible through tuned resonance. This is the fundamental basis of radio communications. The receiver must be tuned to the precise frequency of the transmitter. That simple phrase can be applied to *any* form of energy being transmitted over *any* medium, if there is a tuned receiver, it will resonate with the same information as the transmitter. If harmful energies are transmitted then any receiver tuned to it will receive the same harmful content.

“I would have thought more people would have seen the analogy of our bodies as resonant energy systems when they saw the incredibly high potential currents arc through the air and pass harmless through me. Given this lack of understanding I presume physician are now using chemicals rather electricity to treat their patients?”

“Yes,” I responded. “I am sure you heard of the Carnegie Foundation funded Flexner Report published in 1910 that declared electro-therapy as ‘unscientific’ and subsequently its use disappeared. But I never knew electricity was so widely used before that time.”

Tesla continued, “My discoveries of using condensers with my Tesla coils and a spark gap to create high frequency oscillations of a very high potential, or voltage, were in general use in 1900. In fact, a French physician and physicist, D’Arsonval, had been using my oscillators even before 1889. After receiving several awards by the government of France for *his* therapeutic use of electrical currents without recognizing my predicate art, I traveled to Paris in 1892 to confront him.

“When I met him, I was so taken by the good doctor’s charms as to be immediately disarmed. He freely acknowledged his use of my oscillators in his work. It was simply the result of French media failing to publish the whole story and wanting to look good in the world’s eye. Recognizing the good Dr. D’Arsonval was doing for humanity and validating the therapeutic benefits of Electromedicine using my discoveries resulted in abandoning all thoughts of discrediting him.

“It was during this visit to Paris that I arrived at the bedside of my dear mother who was hours from passing over. I was stricken with grief and stayed with her until angels carried her home to heaven, for my mother was always an angel to me. The depression that set in was devastating and I took a three week respite before returning to America. Upon my return I threw myself into my work and volunteered as vice-president of the American Institute of Electrical Engineers.

“Just prior to my trip to France I had constructed a mechanically vibrating platform in my 5th Avenue laboratory in New York City, which produced the most strange and yet agreeable sensations. After spending some time on the apparatus it was discovered the oscillations stimulated powerfully the peristaltic movements necessary for maintaining good health. As a result from 1891 to 1895, until the laboratory was destroyed by fire, I and my assistants were all in excellent health as a result of this oscillating platform.

“Oh yes”, I smiled. “I have heard stories of your vibrating platform that so relaxed unsuspecting guests that within a few minutes even a man with an iron constitution was found running for the loo with his pants half unbuttoned.”

Tesla chuckled as a remembered more than a few “proper gentlemen” that were properly put in their place when they attempted to discredit Dr. Tesla’s genius while relaxing on his vibrating platform and insisting it was doing nothing to them. Tesla’s face became fixed again and he continued, “All jesting aside, the simple fact remains that such basic function is central to good health and the platform compensated for poor meals consumed at a greatly irregular schedule.

“I hope history has not forgotten about my good friend Mark Twain, whose writing saved me from the most depressing times in my life. He visited me whilst in the most distressing physical condition and after two months of experiencing these same oscillatory vibrations he regained his previous vigor.

“The destruction of my laboratory was a most depressing set-back and yet it was as though it needed to occur to allow me to wipe clean the slate of misconceptions and misunderstandings, and those who study my life will realize that after this event I made even more glorious discoveries. I credit this disastrous fire with motivating me to abandon the mechanically vibrating platform and developing instead electrical oscillating instruments for restoring health and vigor.”

“Wait,” I interrupted, yet again, “you reduced the massive vibrating platform that had proved so advantageous in curing deleterious health problems into a small instrument using electrical oscillations to do the same?”

“Yes, yes,” Tesla responded quickly. “But that was not until years later and I need to continue in order to explain how this progressed.”

I nodded consent and Tesla continued.

“Concurrent with the burgeoning use of electricity in the healing arts were the studies published in 1895 by Wilhelm Roentgen of using X-Rays, as he later called them, which could pierce the veil of skin and tissues and allow physicians to peer inside a living body.

“Engineers were creating different varieties of X-Ray emission tubes and equipment to excite electrons for this purpose and physicians were cautiously experimenting with them. Again, such use of extremely high voltages was not without its risks if improperly practiced and so it was in 1898 that I spoke to the New York Academy of Sciences and taught them the importance of such precautions.

“Of course I had invented a far superior Roentgen ray apparatus using high frequencies and demonstrated its improved safety over conventional direct current devices. High frequency oscillations and resonance formed the basis of this improved device, and still many could not follow my work.

“Later that same year I presented another paper dedicated solely to the therapeutic uses of currents of high potential and high frequencies. I called upon physicians to explain the underlying physiological actions of these profound electrical currents on their human patients.

“In this paper I laid out very clear explanations and drawings of the apparatuses and showed the natural progressions in complexity from very simple to more flexible utilizations of currents and frequencies. I explained that such oscillatory electrical vibrations could be transferred to living tissues by both induction and direct contact.”

“Yes”, I interrupted, “I’ve read your paper and was mystified about how these apparatuses actually operated. They appeared so simple in design and construction as to cause me to wonder why such were not in wide usage today?”

To which Tesla responded, “Without understanding resonance and how it applies to all energies and circuits, it is no wonder such healing instruments are not in use. It was Luigi Galvani in Bologna, Italy in the late 1780’s that first theorized that all living cells had their own internal potential, their own voltage and indeed their own power source.”

“Yes”, I replied, “he called it animal magnetism and said that was the cause of the muscles twitching in the dissected frog’s leg he had observed.”

“And another Italian, Volta, for whom the term voltage is named, proved him wrong.” Tesla said, “That it was in fact the dissimilar metals of the scalpel and the dissecting tray that formed a simple battery with the frog’s leg soaked in a saline solution acting as the chemical component. This discovery became the catalyst for many such experiments applying electrical currents to the human body.”

“But Galvani was ultimately proven to be correct, that all cells do in fact have a small voltage potential, but too small to cause the muscle twitch he had observed”, I countered. :It has been observed that damaged or diseased cells have a lower than normal cellular potential and some have theorized that simply raising this potential will cure disease.”

To which Tesla responded, “There is more truth to that than many will admit, but its not just any source of voltage that can be curative, it must follow the laws of resonance and must not add more than the cells can utilize, otherwise damage results. And here is where wave theory is critical, as the currents must alternate in their direction of flow to avoid this over stimulation.

“Unfortunately, as physicians use Latin for their terms and electrical engineers use Greek for their symbols, the two have never truly understood each other’s worlds. Hence the reason I called upon the physicians in my 1898 paper to help explain the underlying physiology of how these currents were affecting the body. My work with the American Academy of Electrical Engineers was to help them understand how to safely apply these currents to the body, and my lectures to the New York Academy of Sciences was a plead to the physicians to help explain these phenomenon.

“And as you have noted, the 1910 Flexner Report said that any medical treatment that could not be explained through the ‘scientific process’ should be abandoned resulted in the efficacious therapies of the day, of the century in fact, to fall by the wayside.”

I could sense Dr. Tesla’s saddened mood as he uttered these last sentences and so I replied, “But there is a revival of Electromedicine occurring now, albeit there is still quackery involved and the use of resonance is not understood to the depth you indicated it should be.”

Dr. Tesla brightened at this and continued, “Ah, now we’re getting to some of the things I wanted to share with you in answer to your original questions. You see, I realized I needed somewhere private to work, without the involvement of dishonest business men, and I haven’t even told you about the World’s Columbian Exposition in Chicago, the World’s Fair as I believe it’s now referred to, in 1893. But that was truly George Westinghouse’s time to shine and doesn’t really matter in the scheme of things. Suffice it to say that we lit the exposition with AC power and showed the world some of what could be done safely. My demonstrations of arcs of electrical current flying harmless around me and even lighting fluorescent tubes without wires were intended to pique interest and raise awareness of what resonance could do. I was simply too far ahead in my thinking and was shown once again that the people get what the people deserve, even when I try to give them a view to a future of power attainable at any point in the universe.”

“Are you going to tell me about your time in Colorado Springs? This seems the most interesting time of your life, yet one cloaked in secrecy,” I asked.

“Quite so, my friend”, Tesla replied.

I blushed at Tesla calling me his friend and used the opportunity to ask, “How does resonance relate to standing waves, or scalar waves, as they are sometimes called?”

Dr. Tesla stared intently into my face for a long moment, seemingly collecting his thoughts, but more likely trying to decide how to best explain this to a neophyte such as I.

He finally spoke, “There are waves that heal and waves that kill, whether waves of water, or air or energy, and resonance is essential to both actions.

“Might I bother you to reheat this cup of tea? It’s grown cold as we’ve visited.”

I took his cup and set it in the microwave oven and Tesla stopped me and said, “Actually, let’s heat it in a pan and I’ll demonstrate these principles so that you can explain this to others as well. The time is growing late and there is still much to teach to ensure this message isn’t lost again. The world has come a long way and its time to lift everyone to a higher level of awareness, a higher level of consciousness; you might even say a higher level of vibration.”

I poured his tea into a metal sauce pan and placed it on a hot plate. When I reached to turn on the electric heating element, Tesla stopped me and said, “Before heating the tea, allow me to show you a little standing wave magic.”

I stepped back and stared with wide-eyed amazement as Tesla grabbed the handle of the sauce pan and ...

This is the end of Part 2 of [Nikola Tesla Visits the 21st Century](#).