
From the Leyden Jar to the Radio

Prologue

The invention of the Leyden jar in the mid-18th century initiated a chain of discoveries in electromagnetic induction, the confirmation of electromagnetic waves, and the harnessing of resonance. These developments culminated in the creation of practical radio communication systems, primarily through the efforts of innovators like Guglielmo Marconi. The Fifth Epochal Revelation via the Urantia Book teaches the Master Seraphim are celestial ministers that provide guidance to individuals and groups, in twelve diversified corps, inspiring actions that promote the greater good by intensifying some higher ideal which has already appeared within a human intellect. They help people make decisions that align with spiritual principles and higher truths by laboring totally in the background. In order to respect fully man's sovereign free will, they can merely manipulate planetary conditions and associate circumstances to influence the spheres of human activity to which they support. They attempt to constrain range of choice externally to man's mind, not choice itself.

This essay underscores how specific technological advances in electricity and processes related to its use transformed global communication and human connectivity, fundamentally altering the fabric of society. This essay traces the historical journey from the invention of the Leyden jar to the development of the radio. It highlights the significant milestones, key figures, and sometimes serendipitous situations in the evolution of electrical science and technology over nearly two centuries.

The monograph explores the theoretical underpinnings of cultural and scientific progress, drawing on concepts such as the superorganic nature of culture and the collaborative influence of human and celestial agents as described in The Urantia Book. It discusses the interplay between intellectual, spiritual, and cultural factors that fostered innovation and societal development. By examining historical examples and theoretical frameworks, the essay offers insights into how cultural and scientific advancements are interlinked. It speculates on how the role of serendipity and potentially intentional guidance in human progress produces strange attractors that function much like magnetic or gravitational fields.

The conclusion suggests that humans and celestial beings can collaborate. It conjectures how influencing specific aspects of societal institutions, plays crucial roles in achieving significant technological milestones. The development of the radio is presented as a case study of how various factors—scientific, cultural, and spiritual—converge to drive forward human achievement.

I encourage you if you are not a student of the revelation to suspend disbelief of what may appear to be paranormal, but is a sneak-peak into what is truly happening under God's perfection plans.

- Bob Debold, Fairfax, VA June 2024

From the Leyden Jar to the Radio

Step 1 – Establishing Capacity



Figure 1: *The Leyden jar was instrumental in discovering how to store electricity.*

The invention of the Leyden jar in the mid-18th century marked the beginning of a transformative journey in the understanding and application of electricity, culminating in the development of the civilization-altering radio. One can trace a straight line from the Leyden jar to the radio. This journey, spanning just short of two centuries, involved a series of incremental discoveries and innovations that built upon each other, leading to one of the most significant technological advancements in human history. If you picture yourself standing outside of time and looking at this history, the entire evolution might seem like it has had unseen special help along the way.

In 1745, Ewald Georg von Kleist and Pieter van Musschenbroek *independently invented* the Leyden Jar¹ electricity experiment. It introduced the concept of storing electrical energy. The contrivance consists of a glass jar with metal foil cemented to the inside and the outside surfaces, and a metal terminal projecting vertically through the jar lid to make contact with the inner foil. This early post-medieval capacitor² accumulated and discharged static electricity.

It might seem odd that these early natural scientists weren't attempting to solve a practical human problem like the intention behind the invention of the stirrup, the windmill, or the printing press. The drive to develop a method for storing static electricity, such as the Leyden jar, was primarily fueled by academic and scientific curiosity rather than a direct practical problem faced by society at the time. The primary motivation was to deepen the understanding of electrical phenomena. The 18th century was a period of intense scientific exploration, and electricity was a fascinating and mysterious area of study. Scientists and experimenters were eager to explore its properties, behaviors, and potential uses. Let's look at why this was so.

Western society in Europe, as the 18th century opened, had just experienced five major innovations that changed the way mankind looked at the world and the universe: 1) Universities began their march toward this desire to learn by the late 12th century as an outgrowth of the Catholic monasteries; 2) Gutenberg's printing press established in 1439 that machine printing was possible; 3) Newton and

¹ I point this phenomenon out regarding the independence and unknowingness of each of two individuals exploring and discovering a similar phenomenon that is society-changing. See: Ogburn, William F., and Dorothy Thomas. "Are Inventions Inevitable?" *Political Science Quarterly*, vol. 37, no. 1, Mar. 1922, pp. 83-98. Oxford University Press.

² An electrical capacitor is a passive electronic component that stores and releases electrical energy in a circuit. It consists of two conductive plates separated by an insulating material called a dielectric. In the 18th century, this was called a "condenser."

From the Leyden Jar to the Radio

Leibnitz developed the Calculus by the latter part of the 18th century; 4) the Reformation gathering steam in the beginning of the 16th century, further reduced the power of the Catholic clerics; and 5) the rise of philosophers in the 17th century vociferously addressing theological problems attempted to integrate sacred doctrine with secular learning.³

Rene Descartes and Francis Bacon are two prominent philosopher-scientists that I will highlight to make the point that the desire to figure out God's universe and how it worked was top of mind of those who had the resources, intellectual capacity, and time to devote to philosophy-science, sometimes referred to as "natural philosophy." A study of the 17th and 18th centuries clearly shows mankind was on an intellectual trajectory that featured almost an overabundance of philosophers and natural scientists as well as social and political thinkers that one could spend a lifetime of research just reviewing who they were and what they contributed to the human condition. We look at a few of the salient ones; ones that sat at the prominent precipices of the next forward leap.

Edmund Taylor Whittaker writes that the epoch which preceded Descartes, was marked by events which greatly altered the prevalent conceptions of the world. The discovery of America, the circumnavigation of the globe by Drake, the overthrow of the Ptolemaic system of astronomy, and the invention of the telescope, all helped to loosen the old foundations and to make plain the need for a new structure.⁴ This new structure took hold fast. It is referred to as the Age of Enlightenment or the Age of Reason. The central doctrines of the Enlightenment were individual liberty and religious tolerance both an outgrowth of the opposition to an absolute monarchy and the power of religious authorities. And the chief pursuit of many of the elite was philosophy and science. If one looks back at this time period, the master seraphim⁵ must have been overjoyed at the progress society was taking on all fronts. Nevertheless, I suppose they also had to hold their spiritual noses at the equally horrific devastations that colonialism was about to wreak on the planet.

Getting back to our look at the Leyden jar, during the mid-18th century (~1745), the generation of electric current was primarily achieved through the use of static electricity devices. It took nearly 80 years before electric current could be successfully generated (inducted) with Michael Faraday's discovery of electromagnetic induction in 1831. The most common way to generate an electric charge during this period before Faraday was through friction. Early scientists used mechanical devices along with glass

³ Wikipedia (https://en.wikipedia.org/wiki/Medieval_philosophy).

⁴ Wikisource. (https://en.wikisource.org/wiki/A_History_of_the_Theories_of_Aether_and_Electricity/Chapter_1#1)

⁵ Obviously, if the reader is not conversant with the Urantia Book, this term will seem it comes out of nowhere. Students of the revelation will not take any issue with making reference without reference. Briefly The Master Seraphim are celestial ministers that provide guidance to individuals and groups, in twelve diversified corps, inspiring actions that promote the greater good by intensifying some higher ideal which has already appeared within a human intellect. They help people make decisions that align with spiritual principles and higher truths by working totally in the background sometimes manipulating planetary conditions and associating circumstances favorably to influence the spheres of human activity to which they are attached. They are involved in influencing various aspects of human society, including education, industry, governance, religion, and science. Their goal is to steer these areas towards harmonious progress that benefits humanity as a whole.

From the Leyden Jar to the Radio

cylinders or glass plates in what was called electrostatic machines. These mechanisms rubbed a glass component with a material (such as wool or silk) to generate static electricity. It was through these methods that electricity could be delivered to the Leyden jar.

This innovation demonstrated that experimenters like Benjamin Franklin could capture and manipulate electrical energy. Its discovery was crucial in understanding the nuances of electricity. It set the stage for further exploration into the nature of electricity and its potential uses. However, between 1745 and 1830, the Leyden jar was primarily used for scientific experiments and demonstrations rather than practical applications that society could capitalize upon in a broad sense. There were some early and rudimentary uses of the Leyden jar in medicine, particularly in electrotherapy. And physicians experimented with electrical shocks to treat various ailments, though the effectiveness and safety of these treatments were dubious. But overall, it was eighty years until the next significant discovery catapulted the emerging science of electricity forward with a giant leap.

Step 2 – Generating Electricity Hastened the Telegraph⁶

In 1831, Michael Faraday discovered how electricity could be generated without friction; it was, and still is called *electromagnetic induction*. Faraday demonstrated that a changing magnetic field could induce an electric current in a conductor. This discovery was a knowledge step jump in the understanding of electricity. Faraday's discovery laid the groundwork for generating and transforming electrical energy, making it possible to produce continuous electrical currents. This principle is fundamental to the operation of electrical generators and transformers, which are essential components in the development of all technologies, even today in the 21st century.

But, not to get ahead of ourselves, let's look at the first concept and experimentation of how electricity might communicate. Philosophically speaking, it is the electricity that is doing the communicating! Reflecting upon the primitive state of knowledge of electricity in the mid-18th century, one might wonder how anyone might have the almost peculiar audacity to think humans could transfer information using static electricity. Many elements of mystery surrounded this reality during the latter part of the 18th century. Amazingly, a near Rube Goldberg concept of using electricity for long-distance communication from all known viable sources originated from an anonymous letter to the Scots Magazine published in 1753!⁷

⁶ The word "telegraph" was first coined in the late 18th century. It derives from the Greek words "tele," meaning "distant," and "graphō," meaning "to write." The term was first used by the French inventor Claude Chappe in 1792 to describe his semaphore line system, which used visual signals transmitted between towers to convey messages over long distances. This early form of telegraphy relied on a system of mechanical arms positioned on towers, which could be seen from one station to the next, allowing information to be relayed across large distances. The original meaning, therefore, referred to a system for transmitting written information over a distance using visual signals.

⁷ *Scots Magazine*, vol. 15, 1753, p. 73.

From the Leyden Jar to the Radio

In less than a decade after the Leyden jar became capable of storing and moving static electricity, what remains to this day an unknown individual, foresaw how electricity could be a platform for: “An Expeditious Method of Conveying Intelligence.”⁸ The system this individual (signed C. M.) describes running wires between the two points; initially the “wires” were packthread,⁹ not metal. There were twenty-six wires. Each wire mapped to a letter of the alphabet. The sending end of the line connected to a frictional electric machine and each wire terminated in a pith ball, which lifts a piece of paper. The operation is simple. A corresponding piece of paper lifts (think of rubbing one’s hair with balloon) at the receiving end as each character is transmitted. If you reflect upon this, it is the stuff of genius. But what is more extraordinary, is according to Marland, “throughout the history of the early telegraph one cannot fail to notice how many of the contributors were medical men; the interest of the medical profession in the chemical phenomena connected with electrical experiments must have been intense. Several comments can be made upon this. The “climate of knowledge” was favorable to the growth of interest in the telegraph among medical men. Knowledge of the animal nervous system was growing rapidly in the early nineteenth century, the existence of the reflex arc was realized, and the electrical telegraph provided some exciting analogies to the emerging neurological discoveries.”

Marland goes on to philosophize that even the secular scientist was driven by his religious ruminations.

“On a lower intellectual plane philosophers had for centuries sought the “elixir of life”. Since this elixir, if found, could be recognized only by experiment, was not this new “fluid”, electricity, worthy of investigation? Weightless, invisible except when sparking with (divine?) fire, instantaneous and mysterious - here were all the traditional insignia of the life-giving elixir. Thales had regarded the effects as due to a spirit, Franklin demonstrated the identity of electricity and lightning, John Wesley thought of it as a universal healer, and Galvani had seemingly identified it with life.”¹⁰

The intervening time between the article in Scots magazine letter and Faraday witnesses no less that twenty individuals who made either direct or indirect contributions to the progress of the telegraph. It is beyond the scope of this essay to go any deeper than to point out that before electromagnetic induction and alternating current (AC) generation two forms of electrical production were available to the

⁸ Marland, E. A. *Early Electrical Communications*. Agelard-Schuman, 1964.

⁹ Packthread" was a type of strong, coarse twine or string that was commonly used in the 17th and 18th centuries. It was typically made from materials such as hemp or flax, which were durable and readily available. Packthread was used for various practical purposes, including tying parcels and packages, hence its name.

When used in early experiments with electrical communication, packthread would have been coated or soaked in a conductive substance, such as a solution of salt or a metallic powder, to allow it to carry an electrical current. This improvised conductor was part of the rudimentary attempts to transmit electrical signals over distances before the development of more efficient and reliable metal wires.

¹⁰ Marland. Pg 14

From the Leyden Jar to the Radio

innovators: static and galvanic.¹¹ The constraints to getting to a true practical invention that Samuel Morse produced in 1837, were many, most related to the lack of creating a reliable and strong enough source of electricity. (This also includes the fact that the resistance in wires was just beginning to be understood.)

The discovery of electromagnetic induction by Faraday moved the innovating needle quickly for several practical applications of electricity. Faraday's experiments provided a deeper understanding of how electric currents flow in circuits. His work showed that electrical signals could be transmitted through wires, which is the basic principle behind telegraphy. This specific knowledge was crucial for designing reliable telegraph circuits that could maintain consistent communication over long distances without significant loss of signal. The concept of induced currents within months helped inventors like Cooke and Wheatstone in England develop methods for transmitting signals using electrical pulses for the railways.

The telegraph was waiting in the box ready for the rabbit to come streaming past. Faraday opened the metaphorical door and a host of innovators came streaming out. The decade after Faraday's discovery is one of collaboration, disputes, and litigation. It was surely a time of societal foment and churn; many facets of society were banging against one another like a bunch of spinning dreidels flying about on a table top. Some fell off and some kept spinning. They all have been important for the progression to the radio to continuously move forward. This history is pock-marked with a number of scientists and entrepreneurs who sometimes shared knowledge or sometimes sued for claim to an invention.

For example, Joseph Henry (the first secretary of the Smithsonian Institution) pretty much gave away his knowledge and discoveries.¹² Maybe it started with the fact that Faraday published his self-inductance first that got him the recognition, nevertheless Henry seems to have consistently worked in the background. Although his work was successful and of great value, profoundly influencing many later workers, historians of science neglect even mention of Henry - even in the US. He patented none of the apparatus he developed, and seems to have been reluctant to publish the results of his experiments; the delay in the publication of his work on electromagnetic induction led to his being forestalled by Faraday, and the loss to American science of the honor of this fundamental discovery.

Morse seems to have been more of an entrepreneur and big practical thinker than an altruistically dedicated scientist like Henry. His ingenuity seems to have far exceeded his inventing. According to Marland, Alfred Vail, of Morristown, New Jersey, the son of a successful manufacturer, became a partner of Morse, a formal contract being signed in March, 1838. Vail agreed to supply funds for apparatus and publicity, and "to devote his time and personal services faithfully to this object without charge." In

¹¹ Galvanic electricity refers to the electricity produced by chemical reactions, specifically from the contact of different metals with an electrolyte. It was named after Luigi Galvani, who discovered that electrical currents could be generated by the chemical reaction between two different metals connected by a moist conductor. The discovery of galvanic electricity led to the development of the voltaic pile by Alessandro Volta, which was the first true battery and a significant advancement in the study and application of electricity.

¹² Joseph Henry." *Wikipedia*, 24 June 2024, en.wikipedia.org/wiki/Joseph_Henry. Accessed 26 June 2024.

From the Leyden Jar to the Radio

return, Vail was to receive a proportion of the profits. Vail was experienced in the construction of metal industrial equipment, and was of enormous help to Morse in the design and preparation of his desire to be the first to produce a practical telegraph.

Interestingly, there is some written evidence that claims Vail was the originator of the Morse code. Morse is well-known he had a taste for litigation, and his fanatical desire to be regarded as the original inventor of everything connected with the telegraph. By all accounts, Morse code was ahead of its time. Morse code remains in use today. Its longevity and persistence of use demonstrates the code's amazing completeness and elegance. The International Telecommunication Union (ITU) has modified it only slightly to accommodate additional languages. The difference between the Morse code, and earlier bi-signal codes is that symbols represent letters determined by statistical considerations. This was the first step in the science now known as "information theory." Morse Code was the first to employ "binary coding" which remains the basis for computer CPU's today.

As an aside, some of Faraday's subsequent less significant discoveries led to the development of practical electric motors. Thomas Davenport, believe it or not, an American blacksmith, built the first commercially successful electric motor in 1837. Werner von Siemens invented the first practical dynamo in the 1850s. It allowed for the generation of electricity on a larger scale. And the process of electroplating, where a metal object is coated with a thin layer of another metal using electric current, was developed. John Wright of Birmingham discovered the use of potassium cyanide as an electrolyte for gold and silver plating in the 1840s, leading to the commercial use of electroplating.

Step 3 – Calculus as a Predictor

As these practical innovations were progressing quite rapidly, the theoretical understanding of electromagnetic phenomena took a giant leap forward in the 1860s and 1870s with James Clerk Maxwell's formulation of Maxwell's Equations. These equations described the behavior of electric and magnetic fields and predicted the existence of electromagnetic waves. Maxwell's work provided the theoretical foundation necessary to understand how electromagnetic waves could propagate through space, an essential concept for wireless communication.

Without the development of calculus, Maxwell would not have been able to describe the characteristics of the electromagnetic field with the precision and comprehensiveness that his four equations provided. Calculus was essential for formulating the dynamic and interdependent nature of electric and magnetic fields, as it allowed Maxwell to express how these fields change in space and time. The mathematical rigor provided by calculus was crucial for deriving relationships and predicting behaviors that static algebraic methods could not capture. Maxwell's equations, made possible by the application of calculus, unified the understanding of electricity and magnetism into a single coherent theory of electromagnetism. These equations not only explained existing experimental observations but also predicted new phenomena, such as electromagnetic waves, which were later confirmed experimentally by Heinrich Hertz 20 years later.

From the Leyden Jar to the Radio

Maxwell's groundbreaking work in electromagnetism *required* a mathematics that extends the capabilities of algebra to analyze and understand continuous change, accumulation, and non-linear relationships. Calculus, specifically differential equations, allows for the modeling and solving of complex problems describing how quantities change over time and/or space, illustrating and predicting the motion of objects under various forces, and analyzing and solving problems involving non-linear relationships. Proving invisible waves that act at a distance in space would not have been achievable since waves exhibit all three of these characteristics. Was this mere coincidence or is there possibly something else going on here?

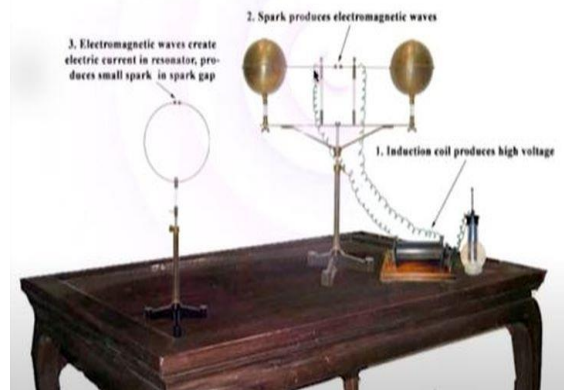


Figure 2: Hertz's experiment provided the experimental confirmation of electromagnetic waves.

Step 4 – Proving a Hidden Domain Exists

Hertz's experiments in the late 1880s provided the experimental confirmation of Maxwell's theories. Hertz demonstrated that scientists (by the turn of the century called engineers) could both generate and detect electromagnetic waves. He empirically proved that these waves could travel through space unseen. This was a significant breakthrough in understanding how another hidden domain within the universe works and demonstrated that it was possible to transmit signals wireless - a critical step toward the development of radio. In fact, Julian Blanchard wrote in the *Bell Technical Journal* in 1941 that Hertz's experiment "was the forerunner of the resonance type of wave-meter to be used later in the unborn art of radio."¹³

Professor Oliver Lodge is our next beacon in this journey to radio. There is some contemporary overlap with Lodge and Hertz. But essentially Lodge built his advancements on Hertz's findings. Lodge explored the phenomenon of resonance in the 1890s. He demonstrated that electrical circuits could be tuned to resonate at specific frequencies, allowing for the selective transmission and reception of signals. Lodge's work on resonance introduced the concept of tuning, making wireless communication more practical and efficient by enabling devices to filter and amplify specific signals. Without detection of waves, radio could never have developed.

It should be noted that Édouard Branly accomplished filtering and amplifying specific frequencies. Branley knew of experiments with tubes of metal filings, which led to the development of the first radio wave detector he called the coherer. It consisted of tubes of metal filings that was able to detect and alert of incoming radio waves. Oliver Lodge converted the coherer into a practical receiver by adding a

¹³ Blanchard, Julian. "The History of Electrical Resonance." *Bell System Technical Journal*, vol. 20, no. 4, 1941, pp. 415-433.

From the Leyden Jar to the Radio

"decoherer" which tapped the coherer after each reception to dislodge clumped filings, thus restoring the device's sensitivity. It was further developed by Guglielmo Marconi, then replaced about 1907 by crystal detectors.

Step 5 – Resonance Provides a “Killer App”

The culmination of these discoveries came with Guglielmo Marconi's innovations in the late 1890s and early 1900s. Marconi developed the first practical radio communication systems, demonstrating long-distance wireless communication. He introduced key components such as the transmitter and the receiver, which could send and receive signals over vast distances. Marconi's use of resonance allowed for the transmission of human voices from a particular source to a wide geographical range of receivers, transforming the radio into a powerful tool for communication. A true “killer app.”¹⁴

I point the reader to the Wikipedia article “Guglielmo Marconi” for a well written historical account of how Marconi was able to be credited as the “inventor of radio.” He shared the 1909 Nobel Prize in Physics with Karl Ferdinand Braun “in recognition of their contributions to the development of wireless telegraphy.” Braun has three “father of” designations. He is referred to as the “father of television” (shared with inventors like Paul Gottlieb Nipkow), the “great grandfather of every semiconductor ever manufactured” and the co-father of the radio telegraphy, together with Marconi.”

The radio emerged as a “killer app” that changed the course of global history. It revolutionized the way people communicated, providing real-time access to news, entertainment, and information. The ability to transmit voices and music across great distances brought people closer together, fostering a sense of global community. The radio played a pivotal role in shaping public opinion, disseminating culture, and even influencing political events.

Epilogue - Culture is Universal

This essay briefly tracked some significant breakthroughs of innovations starting with the Leyden jar culminating in the radio. I have highlighted but a few individuals and innovations/inventions whom history identifies as significant contributors. There are many others. The integrated stories of Marconi and Braun are a piece that another essay should tackle for it highlights the unseen contributions lesser-known individuals and social institutions have contributed to the progressive growth and development of human society. For example, the growth of the patent system, at least as it occurred in Western society during the 18th century, is a contributory sub-text that in my opinion, plays a significant catalyst and sometimes substantial constraint on the development of ideas that can improve the human condition materially.

¹⁴ The idea of the “killer app” was introduced in the book “Accidental Empires: How the Boys of Silicon Valley Make Their Millions, Battle Foreign Competition, and Still Can't Get a Date” by Robert X. Cringely. The term “killer app” refers to an application that is so compelling that it drives widespread adoption of a platform or technology. The book, first published in 1992, explores the rise of the personal computer industry and the key players involved. The stirrup is a primary example of a killer app.

From the Leyden Jar to the Radio

I have previously highlighted the university system as affording post-medieval society the capabilities to use the time and intellectual resources that elites were able to take advantage of. Clearly this emerging system played a significant contributory role in the advancement of innovations for human society during the 17th and 18th centuries. In addition, the Gutenberg printing press was most likely the most significant “killer app” that the 16th century contributed to the ensuing history of mankind. And also, as mentioned previously, philosophy plays a huge catalyst in thinking that unfortunately has waned noticeably since the first century after the Reformation.¹⁵

It is realistic to conjecture that the 17th century was a period of such intense philosophical activity, particularly in the integration of sacred doctrine with secular learning, that has not had parallel since then. In numbers and depth, it rivals sixth century BC Greece. This era, often referred to as the Age of Reason or the Enlightenment, saw an unprecedented number of philosophers addressing theological, metaphysical, and scientific questions. Several catalysts contributed to this phenomenon:

1. The Protestant Reformation in the 16th century and the subsequent Catholic Counter-Reformation in the 17th century created a context of intense theological debate and conflict.
2. The invention of the printing press in the late 15th century and its widespread use by the 17th century facilitated the dissemination of new ideas. Philosophical and theological works could reach a broader audience, stimulating public debate and intellectual exchange.
3. The 17th century witnessed significant political upheaval, including the English Civil War and the Glorious Revolution. These events prompted philosophical discussions about governance, natural rights, and the social contract (e.g., Thomas Hobbes and John Locke).

The revelation extols the development of the printing press:

81:6.44 (912.1) ... Before the discovery of printing, progress was relatively slow since one generation could not so rapidly benefit from the achievements of its predecessors. But now human society is plunging forward under the force of the accumulated momentum of all the ages through which civilization has struggled.

The revelators of the fifth epochal revelation inform Urantia Book students that epochal revelations are accompanied by a restructuring of the human institutions into domains of support by celestial agents or ministers. Since Pentecost, a celestial resident governor general organized angels called master seraphim into twelve corps that provide non-will-invasive support to specific domains such as health, nation life,

¹⁵ Habermas, Jürgen. *The Theory of Communicative Action*. Translated by Thomas McCarthy, Beacon Press, 1984. (Habermas acknowledges that the differentiation of knowledge and specialization of disciplines in modern society have led to the waning of philosophy's traditional integrative role.)

From the Leyden Jar to the Radio

and industry to mention three.¹⁶ In paper 114, the Chief of Seraphim writes: “THE Most Highs rule in the kingdoms of men through many celestial forces and agencies but chiefly through the ministry of seraphim.” She informs the reader that the superhuman government, especially of worlds which have been isolated by rebellion, (as Urantia has been) function on Urantia in situ as supermaterial ministers. We are told very little of how they do their jobs save these two paragraphs:

114:6.18 (1256.8) None of these angelic groups exercise direct or arbitrary control over the domains of their assignment. They cannot fully control the affairs of their respective realms of action, but they can and do so manipulate planetary conditions and so associate circumstances as favorably to influence the spheres of human activity to which they are attached.

114:6.19 (1256.9) The master seraphim of planetary supervision utilize many agencies for the prosecution of their missions. They function as ideational clearinghouses, mind focalizers, and project promoters. While unable to inject new and higher conceptions into human minds, they often act to intensify some higher ideal which has already appeared within a human intellect.

This pattern of support into meta-level domains is established by a Planetary Prince as soon as he arrives. Adam and Eve attempted a similar structure, but their default disrupted their plans. Table 1 provides a side-by-side comparison of how Urantia’s first, second, and fifth epochal revelatory periods organized and compartmentalized support to humans. At first glance one realizes that when the Planetary Prince inaugurated his groupings the categories were specific to primitive humans. The “conquest of predatory animals” the Planetary Prince inaugurated is *not* one Adam and Eve established even though there were still Sabre Tooth Tigers and Woolly Mammoths abundant on the earth.

If one reflects upon the arc of just this one endpoint of human progress – the radio – and ponders about the often serendipitous events that transpired using a starting point of the Leyden jar, it doesn’t take too much speculation to consider how the master seraphim may be providing correlated support to enable increments of progress along the way. While the angels of industry may be taking the lead (if that is actually how they operate) then a number of the other corps have to support a “big picture” perspective. It may not be too obvious, but while clear intellectual achievements occurred in lockstep, one observes a wide range of social, political, and even religious supporting frameworks that provided

¹⁶ Urantia Book. (Cf. (114:6.5 (1255.4) - 114:6.16 (1256.6)).

From the Leyden Jar to the Radio

necessary lubrication to the wheels of this particular path of progress.

Let's look at just one of them: the religious guardians. We are informed that they "endeavor to maintain

Planetary Prince Groups (10) + Van Groupings 66:5.1-31 (745.7 – 749.2)	Adam & Eve (7) 74:7.12 (836.1)	Master Seraphim Structure (12) 114:6.1-20 (1254.7 – 1256.10)
The board of animal domestication and utilization (Bon).		The progress angels
The college of revealed religion. (Hap).	The seven commands of supreme moral rule.	the religious guardians.
The supreme court of tribal co-ordination and racial co-operation. (Van).	The social regulations of the Garden. The civil codes of the golden rule.	The angels of nation life
The governors of advanced tribal relations. (Tut).	The laws of fair play and competition.	The angels of the races
The council on food and material welfare. (Ang).	The laws of home life. Co-ordination of conflicting duties and emotions.	The angels of the future
The faculty on dissemination and conservation of knowledge. (Fad).	History and culture of the various earth races.	The angels of enlightenment.
The guardians of health and life. (Lut).	The laws of health and sanitation.	The angels of health.
The advisers regarding the conquest of predatory animals. (Dan).		The home seraphim
The commission on industry and trade. (Nod).	The code of trade and commerce.	The angels of industry
The planetary council on art and science. (Mek).		The angels of diversion
		The angels of superhuman ministry.
		The epochal angels

Table 1: Mappings of domain support categorizations of the first, second, and fifth epochal revelations.

the ideals of that which has survived for the sake of the safe transit of moral values from one epoch to another. They are the checkmates of the angels of progress, all the while seeking to translate from one generation to another the imperishable values of the old and passing forms into the new and therefore less stabilized patterns of thought and conduct.”¹⁷ Taking this function into account as the emerging secular culture was poised for much faster moving innovations by the 18th century,¹⁸ these guardian ministers look at and support the cultural values rooted in religious traditions that support the hard-earned societal ethical implications of then novel and maybe risky scientific work, to hopefully promote responsible dissemination and maintenance of innovative technology.

There are many instances to highlight this connection considering the status of European religious milieu as it relates to the transitional progress leading to the radio. There are three of note. The Jesuits, a Catholic religious order, were significant contributors to scientific knowledge, particularly in astronomy, mathematics, and physics. Their educational institutions and missionary work spread scientific ideas globally. The Protestant work ethic emphasized hard work, discipline, and frugality; it linked directly to scientific progress and technological innovation. This cultural value promoted diligent scientific research and practical application of discoveries. The Quakers, with their emphasis on equality and social reform, were early supporters of scientific advancements that could improve social conditions, such as

¹⁷ Urantia Book. (114:6.7 (1255.6)).

¹⁸ I have previously noted the university system and the Gutenberg printing press had lubricated the wheels of innovation that the idea that “inventions are inevitable” could easily, but erroneously, be THE theory as to why this took off so rapidly in that era.

From the Leyden Jar to the Radio

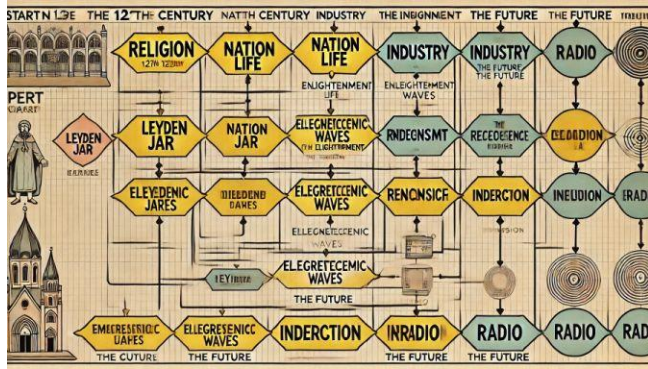


Figure 3: A simulated PERT chart of the associated master seraphim domains that might be necessary to ensure the Leyden jar evolves to the radio.

technologies related to health and agriculture.

These three religions promoted values that illustrate how religious traditions in the 18th century provided a supportive ethical framework for scientific work, promoting the responsible use of technology and encouraging advancements that clearly permeated secular ethical tendencies and social goals. I can easily see the resident governor general developing a pert chart in the 12th century with specific parallel and intersecting task lines depicting dependent efforts of the master seraphim. Figure 2 simulates how this might be developed as a celestial PERT chart.

In an article in *Political Science Quarterly* in 1922 *Are Inventions Inevitable?* William Ogburn and Dorothy Thomas list one hundred and forty-eight inventions that they tracked by then that had multiple inventors working on an innovation or invention *at the same time independently*. They say in the opening sentence: "an interesting phenomenon [is] that many inventions have been made two or more times by different inventors, each working without knowledge of the other's research."¹⁹ They cite numerous examples such as "There seem to have been at least six different inventors of the thermometer and no less than nine claimants of the invention of the telescope. Typewriting machines were invented simultaneously in England and in America by several individuals in these countries." If someone performed a similar study today, the number of occurrences of simultaneous inventions in the century after Ogburn and Thomas's study might prove to be quite significant in the overall long-term scheme of how inventions happen.

This phenomenon might be quite puzzling as to why it happens so frequently, if it were not for knowing that the master seraphim, or angelic forces in general, are hard at work behind the scenes fostering conditions such that inventions can occur purposely and systematically. Without a teleology in mind, inevitable is the only theory that makes rational sense. Ogburn and Thomas's hypothesis of inevitability rests on two points: 1) mental ability and 2) the existing status of culture. With respect to factor #1, the authors posit the idea that statistically the necessary mental ability will always be available in the population, such that, "if an inventor had died as an infant, there are chances that there are others with just as high native inventive ability." This seems to me to be a purely secular hypothesis much like the Big Bang that avoids a teleology, a purposeful end goal. Under this theory, concurrent inventor serendipity is based upon a purely stochastic context; stochastic probabilities are inevitable within a random control-

¹⁹ Ogburn, William F., and Dorothy Thomas. "Are Inventions Inevitable?" *Political Science Quarterly*, vol. 37, no. 1, Mar. 1922, pp. 83-98. Oxford University Press.

From the Leyden Jar to the Radio

limited range. The game of craps is a good example of this concept; the range of outcomes is limited, the probabilities are inevitable, while the choice player makes is freewilled.

Ogburn and Thomas didn't originate this idea. Alfred Kroeber did so in 1914.²⁰ Anthropology credits Kroeber with originating the term "superorganic." In his seminal 1917 paper "The Superorganic," Kroeber introduced the concept to describe aspects of culture and social life that transcend individual human experiences and biological factors. He argued that culture exists on a different level of organization compared to biological life. He emphasized that science cannot fully explain cultural phenomena by individual psychology or biology alone. This idea became influential in anthropology and the social sciences, highlighting the distinct nature of cultural processes.

I bring up the concept of superorganic for two reasons. First, Kroeber believed culture operates on a distinct level of organization that is separate from biological and individual psychological factors. He postulated that cultural phenomena emerge from the interactions of individuals *but are not reducible to individual behaviors or biological instincts*. What Kroeber was getting at was *emergence*.²¹ Culture emerges as a distinct entity with its own properties and dynamics. Kroeber taught that socialization and education together transmit cultural elements. He taught that each evolves over time as they adapt to changing environments and circumstances. Kroeber highlighted the role of social institutions and communication in his theory of the cultural transmission process.

The second reason is to highlight the fifth epochal revelation's framework that culture is something that *is* in fact superorganic. The revelation that the Life Carriers "must either leave the planet or take renunciation vows"²² is a clue that the planet, as a whole, is at that original moment (of first humans evolved) on a path *beyond* the organic. In making his case, Kroeber writes: "In short, organic evolution is essentially and inevitably connected with hereditary processes; the social evolution which characterizes the progress of civilization, on the other hand, is not, or not necessarily, tied up with hereditary agencies." Kroeber was writing when the Urantia Papers Contact Commission was assembling the Forum. How ironic?

The revelators might very well have used Kroeber as a human concept source to meet revelatory requirements. A Melchizedek tells us in writing about the dawn of civilization that: "The superior qualities of civilization—scientific, philosophic, and religious—are not transmitted from one generation to another by direct inheritance. These cultural achievements are preserved only by the enlightened

²⁰ Kroeber, A. L. "The Superorganic." *American Anthropologist*, vol. 19, no. 2, new series, Apr.-June 1917, pp. 163-213. JSTOR, <https://www.jstor.org/stable/660754>.

²¹ The concept of "emergence" first appeared in the literature in the early 20th century. One of the earliest and most influential mentions is found in the works of the British philosopher and biologist C. Lloyd Morgan. In his book "Emergent Evolution" (1923), Morgan introduced the idea that new properties and behaviors can arise in complex systems that are not predictable from the properties of their individual components. A Perfector of Wisdom in paper 12 supports this idea from a very simplistic view most everyone is familiar with – wetness (Cf. 12:9.3-4 (141.4-5)).

²² Urantia Book. (65:1.8 (731.3)).

From the Leyden Jar to the Radio

conservation of social inheritance.”²³ My previous discussion regarding the master seraphim corps of religious guardians pointed this out with respect to three religious traditions in Europe. Each contributed in various ways to preserve the hard-earned Western societal ethical implications. I reasoned that without their support for the necessity of safeguarding those essential imperishable values of the old as society moves into new and less stabilized patterns of culture, the invention of the radio may well have had to wait to appear on the human scene many decades into the future.

With respect to Ogburn and Thomas’s point #2, I believe they are spot-on that culture is a powerful principal vector that can move society forward or induce a retrogression. The revelation teaches that throughout the entire ascent to Paradise culture maintains a constant focus at every level of morontial and spiritual growth. The first four practical domains Adam and Eve set up before the default were focused on culture (see Table 1 above). And the long-term goals of a correlated Planetary Prince with the subsequent material Adams and Eves focus on improving a high global culture that is the foundation for the development and maintenance of civilization:

51:6.2 (586.6) On normal worlds the garden headquarters of the violet race becomes the second center of **world culture** and, jointly with the headquarters city of the Planetary Prince, sets the pace for the development of civilization. For centuries the city headquarters schools of the Planetary Prince and the garden schools of Adam and Eve are contemporary. They are usually not very far apart, and they work together in harmonious co-operation. (*emphasis mine*).

There are quite a few good definitions of culture. The first of three I like the best come from Fons Trompenaars and Charles Hampden-Turner.²⁴ They posit this: “The essence of culture is not what is visible on the surface. It is the shared ways groups of people understand and interpret the world. In every culture a limited number of general, universally shared human problems need to be solved. The problems are shared by mankind; their solutions are not and therefore allowing to distinguish one culture from another.”

The second is from Raymond Williams.²⁵ “Culture is one of the two or three most complicated words in the English language. It is used in different ways: to refer to a general process of intellectual, spiritual, and aesthetic development, to indicate a particular way of life, whether of a people, a period, or a group, and to refer to the works and practices of intellectual and especially artistic activity.”

And the third comes from Professor Edgar Schein²⁶ who writes from organizational perspectives: “Organizational culture is a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, which has worked well enough to be

²³ Urantia Book. (68:0.2 (763.2)).

²⁴ Trompenaars, Fons, and Charles Hampden-Turner. *Connecting Viewpoints*. THT Consulting, <https://www.thtconsulting.com/>. Accessed 20 June 2024.

²⁵ Williams, Raymond. *Keywords: A Vocabulary of Culture and Society*. Revised ed., Oxford University Press, 1983.

²⁶ Schein, Edgar H. *Organizational Culture and Leadership*. 2nd ed., Jossey-Bass, 1992.

From the Leyden Jar to the Radio

considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems."

My personal definition adds some revelational support. It is:

Culture is an established pattern of behavior by a host of people that creates a socio-morphological field consisting of shared basic assumptions, values, beliefs, symbols, and/or practices that cultivates inclusive methodologies to solve problems and reconcile dilemmas, giving them a distinct character and way of life. The culture field acts much like gravitational and magnetic fields; it configures behavior of the parts to function with novel characteristics. Culture functions like birds flying in formation; ideally the entire body adjusts seamlessly to respond to external changes. Intellectual, spiritual, and aesthetic developments of the individual entities of a society or group cohere under a culture. The culture operates at a level as a distinct entity with its own properties and dynamics. Leadership perpetuates a culture's existence through investing in, and supporting of, social practices, institutions, and the arts. An identifiable culture fashions a coherent whole that shapes how members perceive, think, and make decisions. A "high culture"²⁷ is the bedrock of an enduring civilization. Ideals of brotherhood and a sense of collective purpose to righteous goals dominate a perfecting God-seeking culture. A progressive culture requires Intelligence and wisdom respectively to control and direct the mechanisms and habits of civilization, but it is spiritual idealism that provides the energy to uplift and advance a specific human culture from one level of attainment to another.

It's hard to imagine that inventions are inevitable when reasoning from the persistent serendipitous occurrences of multiple Individuals working on the same innovation simultaneously and without knowledge of the others. True free will obviates the inevitable; true free will is free of antecedent causation and implies indeterminant outcomes. Inevitable implies determined, although relatively stochastically determined as in the game of dice. The probabilities of different outcomes are well-defined and predictable, a probability between 100% and >0% is always going to occur following a throw of the dice randomly. In this instance, I bring up Einstein's statement that "God doesn't play dice."²⁸ When Einstein said, "God does not play dice," he was expressing his discomfort with the interpretation

²⁷ A "high culture" is one that catalyzes the propagation of advanced truth and in the spread of higher standards of spiritual, intellectual, and physical living. In other words, a progressive growth and development of the society the culture overcontrols. A "low culture" is one that is spiritually dark. The record shows that the Neanderthals had a crude culture with little religion beyond superstition. When culture is low there is a steady retrogression of those societal components (arts, brotherhood, symbols, religions, knowledge) that combine to advance the peoples collectively.

²⁸ Einstein's Letter to Max Born (1926): This letter is one of the primary sources where Einstein explicitly expresses his views on quantum mechanics and his famous phrase. (I think he's wrong in this context however.)

From the Leyden Jar to the Radio

of quantum mechanics that involves inherent randomness and probability at the lowest level of the universe – the quantum level.²⁹ Einstein believed in a deterministic universe, where events are precisely determined by preceding causes.³⁰ He believed free will was an illusion.

The fifth epochal revelation is emphatically clear that humans - in fact most personalities in the universe of universes - have bounded (fettered) free will. In discussing universe mechanisms in time and space, a Mighty Messenger relates that as the lowest of all minds, “man does not have unfettered free will,” his will is free but bounded. Even in a game of dice man has free choices, but it is bounded by the rules of the game.

118:9.2 (1303.3) Mechanisms produced by higher minds function to liberate their creative sources but to some degree unvaryingly limit the action of all subordinate intelligences. To the creatures of the universes this limitation becomes apparent as the mechanism of the universes. Man does not have unfettered free will; there are limits to his range of choice, but within the radius of this choice his will is relatively sovereign.

Does man have any aspect of his will that is not bounded? It doesn't seem so. However, a Divine Counselor does tell us via the paragraph below that man's inner self becomes “liberated” from the fetters of absolute dependence on antecedent causation with respect to one's choice as it pertains to eternal destiny. The mortal will is absolutely sovereign upon arrival of the Thought Adjuster; prior to that event, a child's free will is relative to his/her moral growth and natural constraints of choice from the age she is.

5:6.8 (71.3) Having thus provided for the growth of the immortal soul and having liberated man's inner self from the fetters of absolute dependence on antecedent causation, the Father stands aside. Now, man having thus been liberated from the fetters of causation response, at least as pertains to eternal destiny, and provision having been made for the growth of the immortal self, the soul, it remains for man himself to will the creation or to inhibit the creation of this surviving and eternal self which is his for the choosing. No other being, force, creator, or agency in all the wide universe of universes can interfere to any degree with the absolute

²⁹ The quantum level is the realm of the incredibly small. At this scale, which is much smaller than what we can see with our eyes or even with most microscopes, particles like electrons and photons don't follow the usual laws of physics we experience in everyday life. Instead, they can behave in strange and surprising ways, such as being in multiple places at once or passing through barriers that would be impossible to cross in the normal world. The fact that particles can become “entangled” where one affects the other instantaneously is still being researched. Einstein called this “spooky action at a distance.”

³⁰ Cf. Einstein, Albert. *The Born-Einstein Letters: Friendship, Politics, and Physics in Uncertain Times*. Macmillan, 2005.; Einstein, Albert, Boris Podolsky, and Nathan Rosen. “Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?” *Physical Review*, vol. 47, no. 10, 1935, pp. 777-780; Einstein, Albert. *The World as I See It*. Philosophical Library, 1949.

From the Leyden Jar to the Radio

sovereignty of the mortal free will, as it operates within the realms of choice, regarding the eternal destiny of the personality of the choosing mortal. As pertains to eternal survival, God has decreed the sovereignty of the material and mortal will, and that decree is absolute.

Yet, it does seem reasonable to infer that the master seraphim do indeed play the metaphorical dice game. It seems they have to. To do so, they must create stochastic conditions in order to achieve a probability of steps toward the teleology (God's Will) of helping humans become perfect in the image of God. The way to achieve a high probability that an invention will be attempted, is to upgrade the "voltage" of a particular idea or ideal that has appeared in at least one human. What is done in effect is energizing an attractor for others who might be inclined to pursue an avenue leading to an idea/ideal. This phenomenon of simultaneous multiple inventors certainly happens with high frequency and continually over time. Either this is a law in the universe, or there is some environmental positioning occurring.

Sticking with Einstein's metaphor of a dice game (craps), casinos typically create games that are stochastic in nature, meaning they involve elements of randomness and probability, but with carefully designed constraints that provide the casino, or "house," a statistical advantage.

With an understanding from revelation that celestial help on all human inhabited planets is abundant, and required, it is abundantly clear that the Lucifer rebellion disrupted the fledgling culture of primitive Urantia. And because of the overarching connections every inhabited planet has with the entire universe, especially the local universe, it is understandable (somewhat) that all connections have to be severed. Solonia, the seraphic "voice in the Garden" tells us that any gains in culture among most primitive groupings were lost shortly after the rebellion:

73:1.2 (821.5) Ten thousand years after the rebellion practically all the gains of the Prince's administration had been effaced; the races of the world were little better off than if this misguided Son had never come to Urantia. Only among the Nodites and the Amadonites was there persistence of the traditions of Dalamatia and the culture of the Planetary Prince.

And in discussing the first few days after Adam and Eve arrived on the planet, she recounts what they had set out to do:

74:3.5 (831.2) On the fourth day Adam and Eve addressed the Garden assembly. From the inaugural mount they spoke to the people concerning their plans for the rehabilitation of the world and outlined the methods whereby **they would seek to redeem the social culture of Urantia** from the low levels to which it had fallen as a result of sin and rebellion. (my emphasis).

The master seraphim are concerned with uplifting culture *through* mind, but not *in* mind. I say that because we know they can only "manipulate planetary conditions and so associate circumstances as

From the Leyden Jar to the Radio

favorably to influence the spheres of human activity to which they are attached.” They are “unable to inject new and higher conceptions *into* human minds.” (my emphasis). In other words, they must respect the free will choices of each and every individual. Unfettered free will choices are indeterminant, not random; humans are not spiritual enough to be granted unfettered will. Sovereign, but not unfettered. Yet, if conditions can be gerrymandered to set stochastic conditions, and if a high righteous culture can be established that meets the definitions above, humans will make those random choices in a narrower band. If this can happen, society and civilization have a chance to progress forward with a good chance of achieving normalcy, progress, and stability.

But at the same time, they “function as ideational clearinghouses, mind focalizers, and project promoters.” They “often intensify some higher ideal which has already appeared within a human intellect.” I wrote a decade ago³¹ that the ways that the master seraphim influence society and global culture as a whole are mostly a mystery. I have since modified that thought. Tracing the origin and history of radio illuminates the fact of intensifying some higher ideal. Certainly, all of the individuals along the path from the Leyden jar to the radio exhibited a high ideal – some more obvious than others. You can reflect upon some yourself; I have global communication as one that I believe is foremost in this example. (I stopped at the radio, but if you consider globally positioned satellites, and solar system space probes there is obviously much more to this story).

My purpose in the Herald article was to triangulate three concepts: 1) supremacy, 2) master seraphim, and 3) humans collaborating with master seraphim. In the opening paragraph I wrote: “If it wasn't for The Urantia Book, I most certainly would not know about the master seraphim; I hardly could have spent the last twenty years attempting to fathom the ideas surrounding Supremacy, nor even breach the conceptually rich descriptions of the origin of the First Source and Center's seven absolutes of infinity—the more replete and rational story of Genesis—for all these concepts would have been totally out of my reach.”

I am still attempting to triangulate these three. Supremacy is a very difficult concept to get one's mind around. The revelation has abundant discussion of “The Supreme” and “Supremacy” (both capital and lower case) and appears in 127 paragraphs throughout the revelation, so not insignificant. I deem Supremacy (capital ‘S’) as a concept that implies everything, absolutely everything, is connected to everything else in the universe. And that means each and every individual, group, society, civilization, planet, and galaxy. As I postulated previously, the Lucifer rebellion had to be isolated because of this all-encompassing concept. To that end, the seraphim, now since the rebellion and default, are on a huge rehabilitation program to slowly build Urantia's culture to embrace the connective tissues that progress requires.

³¹ Debold, Bob. "Pursuing Supremacy: How Might the Master Seraphim and Human Beings Collaborate?" *The Herald*, 2014, <https://archive.urantiabook.org/archive/newsletters/herald/>. Accessed 16 June 2024.

From the Leyden Jar to the Radio

The third vector in my triangulation concerns humans. I asked the question as part of the title: *How Might the Master Seraphim and Human Beings Collaborate?* Originally, I proposed high-level principles. Two that stand out from the original list are:

- Inspires the imagination, initiative, and creativity of other human beings
- Appreciates the master seraphim and realizes that they work in mind space

Now that I've gone through the effort to take a high-level look at this progressive human journey from Leyden jar to radio, there are many aspects that stand out how normal everyday individuals may meet the above two principles.

If you have read this far, I encourage exploring the goals and objectives of *The Global Endeavor (GE)*. It is an independent project by URANTIA Book students and has been working to establish a program that others can participate in. It is modeled and structured complementary to the description of the master seraphim of planetary supervision the revelation outlines in paper 114. The twelve groups of these special angels function as the immediate superhuman directors of planetary progress and stability. The GE concept mirrors a human-organized regional global structure that will complement in many ways what is interpreted that the master seraphim do per the description of their functions in section 6 paragraph 19. I was a member of the committee for the Global Endeavor from 2007 to 2024. As of June 2024, I am currently facilitating a prototype working group to see how a small group of four might meet these objectives including the principles above.

In summary, the invention of the Leyden jar set off a chain reaction of discoveries that after nearly two centuries, culminated in the practical radio. Each step in this journey—from the understanding of electromagnetic induction to the confirmation of electromagnetic waves, and the harnessing of resonance—built upon the previous one. The radio's development and its capacity to transmit human voices over long distances transformed it into a pivotal technology, fundamentally altering the fabric of global communication and connectivity.

The fact that there are twelve Corps of master seraphim that are responsible to ensure not only stability of past won achievements, but ensuring human societies and civilizations can progressively develop, is clear proof that this is not inevitable. It takes hard work to ensure the various components are in lockstep to achieve positive forward progress- incrementally.

My essay of long ago ended with what I consider is still good advice. I repeat it here:

It will be through a progressive intellectual, morontial, and spiritual understanding of Supremacy, efforts whereby human beings will do their best to act as complements to the master seraphim, that we can most effectively engage in spiritual outreach. It is incumbent upon humanity to develop a model of ministry the purpose of which it is to support and reinforce the seraphic ministry already in place.

From the Leyden Jar to the Radio

None of humanity's past achievements were inevitable; it needed behind the scenes support to create the serendipities necessary to meet the cultural structures. Of that I am certain. What say you?