

80 Year Periodicity of Scientific Revolutions and a Current Scientific Revolution

Edward Lewis, March 17, 2009

Scientific revolutions in physics have happened at about 80 year intervals since 1506 when Copernicus introduced a heliocentric physics, explaining the fall of objects as the impetus of objects. Since then, in response to the experimental anomalies of their times, an individual has more or less independently of other people introduced new basic physics postulates—new concepts of the fall of objects, the nature of energy, and the causes of motion, and of matter and atoms. Thomas Kuhn called these episodes of theoretical change “Scientific Revolutions,”[1] and there have been six such episodes of reformulation during the period from 1506 to 1905 when Einstein introduced the basic ideas of quantum theory and relativity theory. In this article, the past history of scientific revolutions in physics is reviewed, as is the evidence that there are major anomalies now that may be the ground for a new revolution in physics; also the tie between the past revolutions in physics and long economic cycles is touched on.

Review of Scientific Revolutions in Physics

Copernicus formulated a paradigm for physics and astronomy in 1506 that involved impetus as the cause for fall. After Copernicus, Gilbert, Galileo and Kepler (in 1582, 1593, and 1595 respectively), coincidentally but more or less independently of each other thought that fall was a magnetic effect. That is, they believed that gravity is magnetism. They also believed that bodies had a tendency to rest. Then Newton defined gravity in 1664. He thought that atoms have the invisible force of gravity. In 1745, Franklin introduced rational fluid theories for heat and for electricity, and he may have introduced the hypothesis of the magnetic fluid. Aepinus helped to develop the magnetic and electrical theories of the Fluid paradigm in the 1850s. It was believed that electricity and magnetism were distinct fluids. In 1820, following the discovery of an experimental tie between electricity and magnetism and other highly anomalous effects, Faraday introduced the basic ideas of field theory incorporating a point-atom idea like that of Boscovich. He taught that atoms had a line of force. He provided the experimental, and much of the theoretical, foundation upon which James Clerk Maxwell developed classical electromagnetic field theory during the 1860s. He taught that heat was due to the motion of atoms. He introduced the hypotheses that matter and energy are equivalent and may interconvert and that matter is quantized, laying the basis for quantum mechanics and the quantum mechanics based electronic, photonic, and genetics industries.

In 1905, Einstein formulated the basic concepts of both Quantum Mechanics and Relativity theory. At that time, particles that were previously unknown were discovered. These particles were the gist of nuclear theory. The existence of particles and the particle nature of atomic components contradicted the Classical Field idea of point atoms of forces. As you can see, these revolutions in the field of physics happen at about 80 intervals.

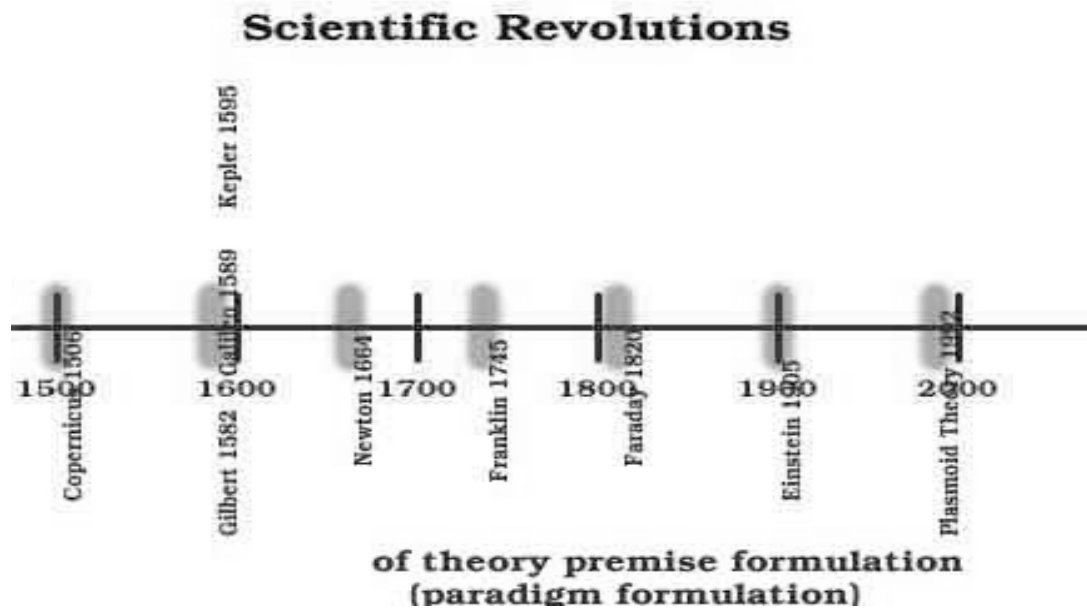


Chart 1. The scientific revolutions in physics fell approximately 80 years apart. In 1992, I believe there was enough evidence for hypotheses for a new theory.

A Current Scientific Revolution?

It is known among the people who believe in “cold fusion” and modern physics anomalies that during the 1970s, 1980s, and 1990s, a number of important physical anomalies were discovered involving high temperature superconductivity, transmutation and energy phenomena, and the association of high temperature superconductivity and low temperature atomic transmutation processes. Other important anomalous phenomena include the EVs of Ken Shoulders and anomalous plasmoid behaviors, the generation of strange new microscopic objects during transmutation experiments, and the processes involving continued material transformation by transmutation and atomic motion after an

experiment is long over as various kinds of structures such as dendrites form and the previously unknown microscopic objects and particles are emitted.

Was the last period of experimental discovery during the 1970s, 1980s, and early 1990s a “crisis period” as defined by Kuhn? If so, has a new physical paradigm been introduced? Has there been a physical scientific revolution? The gist of the new physical paradigm is the newly discovered objects and anomalous material/energy activity, and the anomalous natural and astrophysical phenomena. Anomalous microscopic objects that are emitted during transmutation experiments have been called “strange radiation” by Russian researchers such as Urutskoev, micro ball lightning by Matsumoto, EVs by Ken Shoulders, and Lochak monopoles by Lochak, Urutskoev, Adamenko and other researchers. The behavior and structure of these objects are not well understood, but they have been studied since at least the 1980s by Ken Shoulders. They were experimentally studied during the period from the 1950s to the 1980s by Winston Bostick and other researchers who called them plasmoids. Bostick[2] may have been the first to hypothesize about the plasmoid nature of galaxies. Other astrophysicists and scientists such as Alfvén who won a Nobel prize for his work and A. Peratt studied plasmoids theoretically, and applied their knowledge of plasmoids to astrophysical modeling.

In 1992, after studying ball lightning and cold fusion literature, I realized that the two phenomena were very similar. I hypothesized that microscopic ball lightning is produced in transmutation experiments. Matsumoto accepted this idea when I corresponded with him. His several articles that were published in the early and middle 1990s in the *Journal of Fusion Technology* clearly evidence microscopic ball lightning marks. Savvatimova and Urutskoev acknowledge that they have found tracks similar to those in the photographs published by Matsumoto during this decade[3],[4]. Their transmutation results are similar to his also. During this decade, several groups investigated these objects that evidence the characteristics and behavior of ball lightning. During the 1990s, Matsumoto reported their presence in his transmutation experiments and also during an earthquake and a volcanic eruption. He published articles on microscopic ball lightning in the International Symposium on Ball Lightning conferences.

As the experimental results show, these objects are outside the scope of quantum mechanics or relativity theory to explain. Urutskoev and other Russian researchers had no name for these objects, so they called them “strange radiation.” A previously unknown new type of microscopic object with strange energy behavior and strange effects on materials has been discovered to be emitted during the transmutation experiments of the experimental leaders of our field. Their behavior is similar to the behavior of ball lightning which is a macroscopic natural phenomenon. Like ball lightning, microscopic ball lightning

pass through glass or other materials in strange ways, and exhibit similar strange motions and behaviors. They may both pass through glass without leaving behind a tunnel and move through materials and glass by boring a tunnel through them. Like macroscopic ball lightning, these objects may leave behind tunnels, pits and grooves when they contact materials. Like these objects, natural ball lightning is associated with transmuted and anomalously structured materials, and leave interesting markings. Their traces and the photographs of Ken Shoulders clearly show that they somehow make sharp angle turns similar to reported ball lightning behavior. In the past, no object has been known to physicists that make such sharp angled turns. The motion of theoretically understood objects in the past evidence acceleration during turns. For this reason, theorists and some experimenters such as Lochak, Urutskoev, and Adamenko and his associates declare that these objects are massless. Large natural ball lightings with anomalous behaviors or remains like that of mbl are often classified as UFOs.

Their existence may be ground for a new scientific revolution in physics. Just as the discovery of the electromagnetic effect and the discovery of electrons, particles, and other anomalous phenomena were the grounds of a scientific revolution in the past, the discovery of these previously unknown microscopic objects emitted from transmutation experiments may also be the ground for a paradigm change. As far as I can tell, the lead researchers on these objects (Shoulders, Matsumoto, Savvatimova, Urutskoev et al., and Adamenko) did not collaborate. They more or less independently discovered the presence of these objects by the microscopic examination of their devices or of nuclear emulsions or other detectors that were placed around their devices. However, these lead investigators declared that these objects are profusely emitted. Savvatimova reported that her successful transmutation experiments are always associated with them. They each have detected hundreds if not thousands of the traces of such objects. During the mid 1990s, I found markings like mbl markings on the Lexan casing and electrodes of a very productive cell in Miley's lab. It had produced an array of chemical species. Shoulders later examined the components of this cell with Miley and I and declared that they were plasmoid markings as well.

It is not yet possible to define the structure and characteristics of these objects. More experimentation is required. Until then, it is not possible to develop a comprehensive theory of the newly discovered phenomena. There is as yet no theory that is generally accepted by transmutation/excess energy experiment researchers. But some basic ideas are that microscopic ball lightning and macroscopic ball lightning are both associated with transmutation and anomalous energy radiation in excess of conventional chemical processes and that microscopic ball lightning plays a role in many types of transmutation experiments. Also, these ball lightnings may be involved in time change. Atoms may themselves be structured like ball lightning, and atoms and ball lightning may interconvert.

Atoms may enter a state I call the ball lightning state. In this state, atoms behave very anomalously such as transmuting and forming anomalous structures and exhibiting superconductivity. This state of matter was also previously unknown. Various researchers including Dash, Mizuno and Savvatimova have reported the continued transmutation and material transformation of unused parts of their experimental equipment after the experiments are long over. Urutskoev showed evidence that the strange mbl phenomena were emitted from electrodes placed in a Petri dish. In the past, electrodes that have been used have also been known to evidence heat and x-ray emission. How do dendrites and strange structures form and move around after an experiment is over? Research on this highly anomalous atomic activity would be part of a scientific revolution also.

In this short review article, I can't write a detailed history of either the history of scientific revolutions or the history of plasmoid/bl/EV research. But more information is available on-line in a book I wrote in the 1990s and in my online articles. [Cust 38.metawerx.com.au](http://Cust38.metawerx.com.au). Also, *Infinite Energy* published three[5] articles and one Letter to the Editor[6] in the 1990s and in the last year. In those articles, both theoretical and experimental evidence is explained. One of the articles[7] dealt mainly on evidence that tornadoes and ball lightning are similar. It discussed the research of Vonnegut, Ryan and Jones on anomalous tornado behavior and energy radiation, and described traces found by Matsumoto. In the article that was published in January[8], I describe in detail some mbl tracks that were discovered in this decade and the research that has been performed. The researchers, Miley, Matsumoto, Savvatimova, Dash, and Urutskoev permitted me to publish photographs of mbl tracks, EV flight behavior, and anomalously self-transforming formations. The reader is directed to that article or to my online articles for information on current research in this area.

Scientific Revolutions May Lead to Industrial Revolutions

Each scientific revolution in physics enabled the advancement of technology. Starting from Franklin's novel conceptions about the conservation of the distinct fluids of heat and electricity, the scientific revolutions enabled the major industrial revolutions. The First Industrial Revolution started about 50 years after Franklin's introduction of the paradigm, the Second Industrial Revolution started about 75 years after Faraday had his basic Field theory ideas, and the Third Industrial Revolution started about 70 years after Einstein's first work. The industrial revolutions began about two generations after the initial basic theory and were preceded first by a generation of development of the paradigm's theory, and then by a generation of experimentation. This is why the invention and major industry foundation of the industrial revolutions coincided with the "crisis periods" in physics.

The physical principles of a paradigm involve conceptions about the experimental manipulation of phenomena. Physics is our understanding of the environment, so changes

in physics allow us to manipulate the environment in new ways, making new technology and inventions. For example, by teaching that heat and electricity were distinct fluids that were conserved in systems, Franklin laid the basis for the Fluid paradigm, and those who believed these ideas made rapid progress in the theory and utilization of heat, electricity and magnetism during the middle and late 1700s and early 1800s. This conservation of the fluid of heat hypothesis enabled Watt to understand and develop better steam engines, since he could distinguish between latent and specific heat. Better steam engines and furnaces allowed rapid industrialization during the early 1800s. The battery was developed, Coulomb and Aepinus mathematically described the behavior of magnetic and electric objects, and Lavoisier led in the development of “caloric” based chemistry. The French term for the fluid of heat was caloric.

After believing in the existence of a “line of force” between Boschovichian forces point atoms, Faraday made rapid technical progress developing the electric motor and electrical generator, developing better metallurgical techniques and electrochemistry, electrochemical products, organic chemical products and laid the theoretical basis for Classical Field theory. Maxwell acknowledged his theoretical contribution. Once the theory was developed, people believing in these Field paradigm conceptions made rapid progress in the development of electrical devices during the late 1800s.

In 1905, Einstein laid the basis for both the theories of Quantum Mechanics (QM) and Relativity. His basic framework of hypotheses included the concept of quanta of energy; mass-energy equivalence; his concepts on time, space, gravity, mass, and inertia; and other basic concepts of early 20th century physics. Einstein is recognized as being the first to think of quanta of radiation as something real, not just a mathematically useful construct as did Planck. A second generation of theorists that included Schwinger helped to develop Quantum Mechanics. Research on atomic processes enabled the invention of atomic power stations, and quantum mechanics enabled the development of the transistor, laser, and electron microscopes. These inventions enabled the Third Industrial Revolution.

In papers that were published online and in the ICCF10 and ICCF11 Proceedings, it is explained how the industrial revolutions have resulted in a series of economic depressionary periods. The economic rhythm is called the “long-wave” or “Kondratiev wave.” The Industrial Revolutions caused a periodic trend of labor productivity growth, and the life cycles of the industries of the three paradigms caused economic depressionary periods both during the industrial revolution themselves and when the productivity growth acceleration was the fastest (the points of highest slope in Chart 2). In those articles, and in a book that I wrote in the 1990s, people may learn about the reason for the economic depressionary period that started last year.

Chart 2

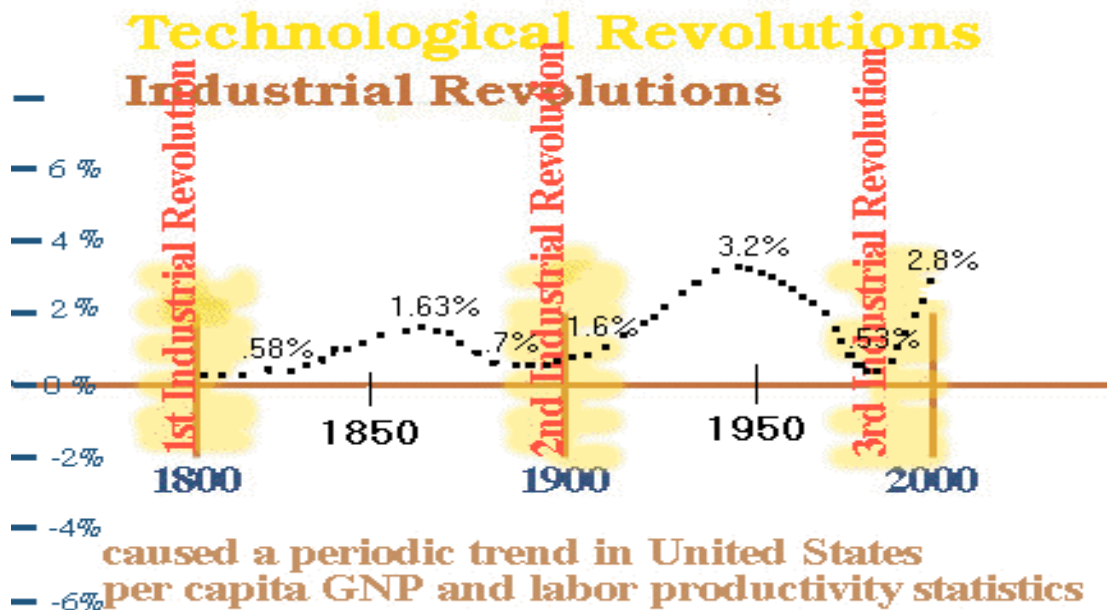


Chart 2. The economic depressionary periods fall on the points of productivity growth dips during the industrial revolutions and the points of productivity growth acceleration during the stage of technological acceleration (points of highest slope in the labor productivity growth curve). The next depressionary period may therefore last from now (end of 2008) until about 2018. During this time, perhaps paradoxically to some people, there will be increasing productivity growth, perhaps around 3.8 percent per year by the end, and I am predicting that it will continue to grow after that unless there is some sort of devastating war or disaster.

Conclusion

Is there a way to check whether this idea of an 80 year pattern in physics is correct? There is. This is because the last three industrial revolutions (and the associated productivity growth trend) clearly fall on an 80 year pattern also – arising from the revolutionary work in science of Franklin, Faraday, and Einstein. The productivity growth dips clearly happen during the industrial revolutions. More evidence that these scientific revolutions happened on the eighty year periodicity and at the times I’ve described, 1745, 1820, and 1905, is that the industrial revolutions begin when we would expect – during the time just before a scientific revolution called “crisis periods” when experimentalists, experimenters and inventors, gain

the technical expertise in their paradigms to both discern anomalies and invent powerful technology. I've described that this happens when the third generation of experimenter and inventors mature – that is, when they reach about the age of forty. This is why the scientific and industrial revolutions more or less coincide.

In this article, evidence is shown that there is indeed ground for a scientific revolution in physics now, since so many previously unknown phenomena have been predicted that can not be explained by QM mechanics or relativity theory. Researchers more or less independently have discovered similar microscopic phenomena involved in transmutation reactions. The evidence for these new objects is incontrovertible. There is too many thousand such markings that were discovered by various researchers around the world. Also, there is evidence for anomalous behaviors of transformation, transmutation, and superconductivity when atoms are in a previously unknown state. There are many other anomalies that I can't describe here. Also it was described that there is clear evidence that scientific revolutions have happened at an 80 year periodicity since 1506. Since this is so, why should we assume that the pattern is discontinued? A third point that was made is that there is a clear economic depressionary and long-cycle effect of scientific revolutions. The past pattern may help us to understand how our field will develop in the future.

Perhaps research on the microscopic objects and the anomalous state of matter and energy will ensue. Perhaps, people will detect time change phenomena around materials in the state. If so, and if younger people accept the ideas already inherent in the phenomena, then they may develop the theory of this paradigm in twenty years time. Then 20 years afterwards, an industrial revolution may begin. Perhaps in the next few years there will be inventions utilizing these newly discovered phenomena. Perhaps the lead inventors during the next decade will espouse a newly modified Quantum Mechanics based theory as happened during the 1800s when the Fluid paradigm was the dominant paradigm in Europe for most of the century. If younger people do develop the theory of the new paradigm, there may be an associated economic depression as the new industries emerge. On the other hand, perhaps the young generation will not accept the reality of the existance of these phenomena. Perhaps the "baby boom" generation of experimenters who lead investigation in this field will die off without having trained enough younger people, and the development of physics will come to a standstill.

[1] Thomas Kuhn, *The Structure of Scientific Revolutions*, U. of Chicago Press, 1970

[2] W. Bostick, "Plasmoids," *Scientific American*, 197, 87 (October 1957).

[3] L. I. Urutskoev, V.I. Liksonov, and V.G. Tsinoev, "Observation of Transformation of Chemical Elements During Electric Discharge," manuscript.

[4] I. Savvatimova, "Reproducibility of Experiments in Glow Discharge and Processes Accompanying Deuterium Ions Bombardment," *Proceedings of the ICCF-8*, Lerici, Italy, 2000.

[5] E. Lewis, "Concerning Production of Elements and Plasmoids," *Infinite Energy*, 2. no. 12, 1997.

[6] E. Lewis, letter to the editor, "Economic Depression or Deep Recession Likely Soon," 79, 8, 2008.

[7] E. Lewis, "Tornadoes and Ball Lightning," *Infinite Energy*, 5, no. 30, 2000.

[8] E. Lewis, "please add this,..."