

## **Precursor Engineering: Directly Altering Physical Reality**

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### **Abstract and Summary.**

We discuss the abbreviated background of Maxwellian electrodynamics, including how the model's erroneous "force field in massfree space" construct came to be. The field in space is not a force field, as is well known, but is merely spatiotemporal energy structuring and patterning. It can be considered as a curvature of spacetime (general relativity view) or as a change in the virtual particle flux of the vacuum (particle physics view). It is a pure energy field. Spacetime is identically energy; virtual particle flux of vacuum is identically energy. A region of change is an energy field.

The energy field in space is only a precursor of the force field in matter; no force is present or involved until the precursor field interacts with charge and mass to produce a force field with mass as a component.

Technically, the change and structuring of massless spacetime/vacuum to produce a net precursor field is asymmetric regauging, and it requires no work because of the well known gauge freedom axiom. The form of the energy is not changed, and work is the change of form of energy. One is permitted to freely change the potential—and the potential energy—of the Maxwell-Heaviside equations (and thus of any physical Maxwell-Heaviside system) at will; e.g., as shown by Jackson [\[1\]](#) and many others.

Thus, changing the force-free “EM field”—as it exists in space in its precursor form (energy field form) prior to its interaction with charge and matter—is work-free.

Very large changes in the precursor field state of a Maxwell system can be done by paying only a bit of work for timing and switching the technological systems performing the regauging. Once formed “nearly for free”, the large precursors can then be interacted with charged mass to freely form very large force fields and their dynamics (i.e., precise sets of very large forces, including dynamics, in the interacting material system or medium as desired). We call such assemblies engines.

Spacetime is identically energy, and a curvature of spacetime is identically an energy field available to interact with mass to form force.

Vacuum is identically energy, and a change in the virtual particle flux density of vacuum is identically an energy field available to interact with mass to form force.

Let the term engine refer to either a set of forces or a set of precursors, with the dynamics of the set included. One can almost freely produce strong precursor “engines” and dynamics, and then interact these precursor engines with charged mass (the system medium) to produce very powerful force engines and dynamics in the material system. In this way, one can very powerfully (and almost freely) produce and engineer all fundamental forces of nature, by first engineering the precursors and their dynamics, then allowing free precursor interaction with charged matter so that the “primary forces” are produced as desired.

In this way, physical reality itself—on any and all levels—can be very powerfully engineered at will, without large exertion of operator-furnished power, once precursor engineering technology is developed. This is a negative entropy operation violating the present second law of thermodynamics (which artificially excludes such negative entropy processes). The second law is already totally refuted by gauge freedom itself, as well as by every charge, EM field, and EM potential in the universe.

The first law of thermodynamics also contains an error in its present form, when it assumes that a change of energy

magnitude (as in the change of a system parameter such as the potential) is work a priori. To the contrary, work is performed only if the form of the excess input (regauging) energy is changed. Mere transfer of additional energy in the same form is not work. The present first law must be slightly corrected, since as written it prohibits gauge freedom and thus prevents precursor energy field engineering.

We briefly discuss some relevant historical background and several small examples that demonstrate the overwhelming importance of this work and its future dramatic extensions of science and technology, hopefully for the great benefit of all humanity.

## **Development of Maxwell-Heaviside EM Theory.**

The Maxwell-Heaviside theory of electrodynamics is now well over a century old. It may be taken as dating from Maxwell's 1865 theory {[\[2\]](#)} of 20 quaternion and quaternion-like equations in 20 unknowns—although Maxwell had written earlier papers on Faraday's lines of force and on the characteristics of the medium. More than a decade earlier, quaternions had been founded by Hamilton {[\[3\]](#)}, but there were exceedingly few scientists who understood them or even liked them. Most could hardly tolerate Hamilton's quaternions!

Maxwell published his famous Treatise in 1873 {[\[4\]](#)}. Because it was "tainted" with a higher group symmetry algebra (quaternions), even Maxwell himself came under intense pressure from his publisher to simplify the material in his Treatise. Consequently, Maxwell began rewriting and greatly "watering down" his own theory, having finished rewriting and greatly reducing some 80% of it at the time of his death in 1879. The posthumous later editions published in 1881 and 1891 represent a very serious truncation of the original Maxwellian theory.

In the 1880s, a further great "simplification" was generated by several scientists after Maxwell's death—and notably by Heaviside, Hertz, and Gibbs, with

regauging by Lorentz. Vector algebra—whose group symmetry is much lower than that of quaternion algebra—was formed { [5] } and became the accepted algebra in which the reduced equations were recast. The lowered group symmetry of vector algebra further reduced the operationalism described by the theory in its quaternion-like form. Even the tensor algebra of today is still of lower group symmetry than quaternions.

The equations taught today at university as "Maxwell's theory" are thus pale shadows, and those equations themselves are actually the equations and notations of Heaviside, having been further "symmetrically regauged" by Lorentz { 1, [6] }. The symmetrical regauging imposed by Lorentz very neatly threw out all COP>1.0 Maxwellian systems taking their excess energy from the active vacuum in the form of free asymmetrical regauging { [7] }. It also discarded precursor engineering.

At the time these truncated (mutilated may be a better word!) Maxwell equations were adopted in general, it occurred in a short "debate" (mostly in the journal Nature) where the vectorists simply discarded the quaternionists' work, etc. { 5 } It was not done by "sweet science", but by dogma and individual preference for "greater simplicity". Its driving force was the near-universal dislike of quaternions and a strong drive to simplify things as much as possible.

### **Material Ether and “Force Fields in Space”.**

The "Maxwellians" as they are often referred to, all originally assumed the material ether filling all space (and so do electrical engineers today, unwittingly!). Thus they assumed there was not a single point in the entire universe that was devoid of mass. Consequently, the EM fields were—to them—obviously very material fields indeed; i.e., to the Maxwellians they always occurred in mass (e.g., in the material ether or in common matter). They were therefore erroneously assumed to be force fields, and in the view of the Maxwellians a “force-free field” was not possible.

By  $F \equiv \partial p / \partial t = \partial / \partial t (mv)$ , we know that mass is actually a component of force (though inexplicably that is still erroneously ignored in both classical mechanics and electrical engineering). There is no separate mass-free force acting upon a separate mass, because the phrase "mass-free force" itself is an oxymoron. Many foundations physicists such as Wheeler, Nobelist Feynman, etc. have thoroughly discussed this "material origin of force", so it is well known by leading scientists (though seldom known to electrical engineers whose flawed model still blithely assumes EM force fields in mass-free space).

Today, our Maxwell-Heaviside classical EM theory still implicitly retains the old material ether more than 100 years after that type of ether was specifically falsified by the Michelson-Morley experiments {[\[8\]](#)}. Not a single material-ether-assuming EM force field equation was changed after those experiments! By retaining the material ether, the theory has actually concealed the precursor mass-free fields and the astounding ramifications of developing precursor engineering technology {[\[9\]](#)}.

Oddly, we therefore we have a peculiar scientific situation and one of the great stalemates in human scientific history: The most primary kind of physics has been largely ignored in the West. It has not been ignored in some other places, but unfortunately there it has only been used for development of weapons in secret. We do not discuss the weaponry in this paper.

Nobelist Feynman certainly understood there were no force fields in space. He made the following observation {[\[10\]](#)}:

"...the existence of the positive charge, in some sense, distorts, or creates a "condition" in space, so that when we put the negative charge in, it feels a force. This potentiality for producing a force [i.e., this distortion of spacetime] is called an electric field."

Yet Feynman himself did not adequately define force, and in fact despaired of finding such a definition—apparently because he did not connect the change produced by observation. He stated [\[11\]](#):

"One of the most important characteristics of force is that it has a material origin, and this is not just a definition. ... If you insist upon a precise definition of force, you will never get it!"

In modern physics terms, a "force" is generated in, on, and of a mass (e.g., a charged mass). It is generated when the volumetric mass-free fields (as curvatures of spacetime relativistically, or as altered virtual particle flux of the vacuum region in particle physics) in mass-free space interact with and on a charged mass. That ongoing interaction of a 4-space massless entity (the precursor) with a previously observed 3-space mass is what a "force" identically is, prior to its observation by invoking a  $\partial/\partial t$  operator. Observation results in a frozen 3-space snapshot at that instant—as is well known, time is not an observable, even in principle.

### Precursor Engines and a Physical Mechanism of Regauging

We now have added a physical mechanism to the abstract notion of "asymmetrical regauging", where a potential (and the potential energy) of the system (i.e., the magnitude of the spacetime curvature/altered vacuum virtual particle flux interacting with the charged mass) is freely changed. Further, this physical mechanism can be engineered rather directly. Suddenly we are not trapped in "force field engineering" as the primary causative action, but in "spacetime/vacuum energy" engineering as the primary causative interaction.

In short, now we have moved from the hoary old entropic force field engineering to negentropic precursor engineering as our primary interest.

Let STC be “spacetime curvature(s)”. Let VPF be “virtual particle flux” of the vacuum.

Consider any physical system and its dynamics. There is a specific set of forces and their dynamics, involved in that system functioning. Call this set of forces and their dynamics a force engine. But we know that, for any force, there is a precise massless 4-spatial precursor interacting with the mass component of the force.

Prior to observing the system, consider the 4-spatial characteristics. At any instant, there is a set of mass-free 4-spatial STC/VPF dynamics interacting with the previously observed system masses at all levels, changing the observable system masses and their dynamics as time passes.

Now separate the masses from the STC/VPF dynamics—which separates force into its components of mass and precursor energy field. Call this set of STC/VPF dynamics a precursor engine. Rigorously this precursor engine and each part of its structure is what we refer to as energy. The precursor engine has the capacity (potential) to cause work, since it has the capacity to make a force engine by its interaction with mass, and  $W = \int \mathbf{F} \bullet d\mathbf{s}$  for any force  $\mathbf{F}$  in the force engine.

We have now solved one of the additional problems which gave despair to Feynman: the definition of energy. Feynman also said [\[12\]](#):

"It is important to realize that in physics today, we have no knowledge of what energy is."

Yet to change the precursor engine itself requires no work, since there is no mass and hence no  $\mathbf{F}$ , and thus  $\int \mathbf{F} \bullet d\mathbf{s} \equiv 0$  because  $\mathbf{F} = 0$ . Prior to its interaction with mass to form a force engine and generate work, the precursor engine is merely structured potential energy with dynamics.

Here is the great shocker: Merely changing the structured potential energy—i.e., changing the precursor

engine, in magnitude or function or whatever—is work-free a priori because of the total absence of force. Changing the precursor engine is changing some potential energy (magnitude, direction of flow, dynamics, etc.) and that is mere regauging. It is work-free by the well known gauge freedom axiom, widely used and accepted in physics.

By engineering the precursor engine itself, and then applying the altered precursor engine to an appropriate mass system, real work can freely be produced in the physical system. In the real world, the scientist may have to pay a little to do the switching and timing, but he need not pay to furnish the regauging potential energy required to change the precursor system and thereafter produce the force engine.

### **Thermodynamics and Entropy.**

We have all been taught that a dynamic system is like a leaky diode. I.e., one pays to input some energy to the system, it spills some of it in its internal operations, and one gets out (as energy or useful work) less than one put in. In short, we have erroneously been taught that all engineering is entropic. The second law of thermodynamics has stated that, in progressive operations, the system can either at best keep the entropy (energy of which control and use is lost) the same, or have the entropy increase with time. It is known, of course, that second law violation does occur for small systems and relatively small times, due simply to fluctuation of the statistics on which it is based.

With precursor engineering, however, we have totally violated the second law of thermodynamics, since we ourselves need input only a tiny bit of control and switching energy, to control and use a much larger amount of working energy. The environment freely inputs a great deal more regauging energy for usage, and we need only control it. In short, we have moved from the “leaky diode” type engineering to the “triode” type engineering. Now we have to pay a little for the “control” grid signal, but the cathode energy flow that is



controlled, gated, and shaped to provide the plate energy (plate force engine) is freely input by the environment (by regauging).

We have moved from “entropic engineering” to “negentropic engineering” because triode engineering is also a process for re-ordering disordered energy. It is a process for consuming entropy and producing negative entropy.

Precursor engineering focuses attention on a much more primary cause of forcible actions than the presently considered “fundamental forces of nature” approach. Instead, it focuses upon the fundamental precursor engines that, once formed by free regauging, then freely produce forces that perform work upon systems to alter them, do useful work, etc. That is a purely negative entropy function, totally engineerable. It alters and completes the presently crippled Second Law of thermodynamics (which presently only allows entropic processes, although inherently assuming that its own contradiction has first occurred). Specifically, it changes the Second Law to permit negative entropy processes and functions in addition to positive entropy processes and functions.

In the not too distant future, hopefully precursor engineering will completely revolutionize science and engineering in a myriad of areas, from physics to medicine. In theory, any operational functioning in material physical systems can be directly engineered by pure regauging, simply by freely changing the precursor engine involved in that system in a fashion that interacts to create the necessary force engine and dynamics.

This new and revolutionary negative entropy engineering, will eventually be developed to replace the present hoary old entropic engineering. It now lends real substance to the theoretical proof by D. Evans and Rondoni {[\[13\]](#)} that nonequilibrium steady state (NESS) systems can indeed—at least in theory—produce continuous negative entropy. Evans and Rondoni were so startled at their theoretical results that they felt no

real physical system could exhibit such a Gibbs entropy—i.e., starting negatively at the onset and thereafter continuously decreasing toward negative infinity as time passes. To the contrary, every source charge and dipole in the universe exhibits precisely that action {[14],[15],[16]}.

Unknown to Evans and Rondoni, Leyton {[17]} has also originated and published the higher group symmetry geometry necessary to replace the more limited old Klein geometry {[18]} of 1872. Now a hierarchy of symmetries results in Leyton object-oriented geometry. A broken symmetry at one level does not lose information at that level a la Klein. Instead, it retains the information and also automatically generates a new symmetry at the next higher level—a purely negative entropy operation from first principles! So the proper geometry necessary to allow revision of the old Second Law has been advanced by Leyton.

The dramatic extension of the Second Law of thermodynamics to add negentropic processes due to precursor gauge freedom also resolves the very vexing present major time asymmetry problem of thermodynamics itself: If in a given set of processes the entropy either remains the same or increases, then how was the entropy of the universe ever so low in the first place, and how is it so low now? This “greatest thermodynamics problem” {[19]} cannot be solved in Klein geometry, but it is solved when Leyton geometry and a unified field theory separating force field and precursor field are utilized.

### **What Gauge Freedom Has Been Trying to Tell Us.**

In short, the universality of gauge freedom has more to it than simply changing some equations so they are easier to solve, as Lorentz did to the Maxwell-Heaviside equations by symmetrically regauging them. In symmetrically regauging the equations, unwittingly Lorentz first evoked precursor engineering, but then

locked up the extra free energy by allowing it to produce only equal and opposite forces and stress in the system, never useful work. He did this by eliminating all asymmetrical regauging which would produce a net force field. In that astounding and crippling limitation, Lorentz chose only that subset of Maxwellian systems and precursor engineering that cannot and does not produce energy available to do useful work in the load. Instead, it bottles up all the energy freely received by regauging, as additional stress in the system. To say that this is short-sighted is the understatement of the century! It was done merely to make the equations “more tractable” and amenable to closed solution methods.

Asymmetrical regauging is the wave of the future, for it also is identically work-free precursor engine engineering. It does freely produce a net precursor field and a net force field, thus allowing useful work to be done “for free” or “nearly for free”.

Gauge freedom directly assures us that the potential energy of any EM system can be freely changed at will. If we put our minds to it, we can take in all the EM energy we wish, directly from the local vacuum VPF and curvature of local spacetime, anywhere in the universe by developing and utilizing asymmetrical regauging.

As a trivial example, merely changing the voltage of a system—while freezing the electrons so no current flows—changes the collected energy in the entire circuit; because it changes the potential intensity in which each Drude electron is embedded and with which it is interacting. The solution to the entire energy crisis, for all time, simply waits for scientists to discard symmetrical regauging (no net force fields produced, even though two new free force fields are produced but in equal and opposite fashion). In symmetrical regauging, all the excess free energy in the two new fields freely produced is locked up as stress energy, causing additional stress in the system. However, none of the excess free energy can be used to translate electrons as current, so the energy so freely received

cannot perform useful external work in the load, by deliberate design!

To borrow a phrase from Nikola Tesla, this will one day be recognized as “one of the most inexplicable aberrations of the scientific mind” in recorded history!

By going directly to asymmetrical regauging, which also is precursor engine engineering, one produces both excess free EM energy and a free net force field that can be then freely dissipated to perform free work in a load, paying only for switching and timing costs, etc. Of course one has to employ circuitry other than the closed current loop, common ground circuit! That circuit automatically self-enforces symmetrical regauging (and deliberate crippling of precursor engineering) regardless of how much extra free regauging field energy is added to the system.

### **The Precursor Is Nonobservable.**

As pointed out, the problem of the "force field" not existing as such in space is further complicated by the nature of observation itself. Observation is a  $\partial/\partial t$  operator imposed upon that ongoing interaction of the precursor and the charged mass in 4-space. The result is the stripping away of the time dimension momentarily, producing a frozen 3-spatial snapshot. A rapid series of such continual 3-snapshots, and their recall from memory and comparison, gives us the sensation and experience of "change" and "persistence in time" or "change in time".

We never observe the precursor causes, but only the effects of those precursor causes in mass. From observing the effects, we always have to extrapolate the unobservable precursors that are the unobserved causes. One cannot "see" the accelerated frame one may be in, but one can measure the effects of that nonobservable frame on one's physical system and surroundings.

### **Additional Shortcomings of Classical Maxwell-Heaviside Theory.**

The present Maxwell-Heaviside theory is completely unable to deal with the massless interactions and the force-free entities that interact with mass to produce force. The present EM does not even calculate "the" spatial fields or potentials themselves, but only their "point intensities" when interacting with static matter, as defined by the assumed interaction of the actual geometrical fields with a unit point static charge at every point. To see how this remains confused, we quote Jackson {[\[20\]](#)}:

"Most classical electrodynamicists continue to adhere to the notion that the EM force field exists as such in the vacuum, but do admit that physically measurable quantities such as force somehow involve the product of charge and field."

So the precursor spatial "field" is actually not defined in classical EM, but only its intensity as indicated by a unit point static charge's scattering of energy from the Whittaker flows comprising the spatial field itself. What is scattered from a river's flow by a fixed static rock is not the river! And what is scattered varies as the condition of the rock. The same rock, placed in violent churning motion to and fro, will scatter much more energy from the same river's flow.

As an example of violating that static indication of "field intensity", if the interacting charges of an absorbing medium are in particle resonance at the frequency of the input field energy bathing them, the very "definition" of the classical field intensity is thereby altered. Then one can extract more energy from the intensity than is theoretically predicted by the Poynting theory—i.e., by standard "static charge" definitions of field and potential intensities. It has been in the physics literature for some decades, without scientists realizing the true implications.

The same charge in particle resonance at UV or IR will absorb and re-radiate some 18 times as much energy as

we input to it (by standard calculations), from the same classical field, as it does when totally static and not in particle resonance {[\[21\]](#)}. That area of physics is of course well known as negative resonance absorption of the field. It is a noted example of the direct extraction of excess EM energy from the "vacuum" or from curved spacetime, long proven on the bench. Physicists in that field, however, carefully refrain from using the term "excess emission of energy from the resonant medium", or the thermodynamics term of coefficient of performance (COP). The COP = 18, of that EM system, but the scientists only carefully write and speak of the change in the reaction cross section of the resonant particle versus that of the static particle.

### **Importance of the Supersystem.**

In modern physics, we might add the term supersystem {[\[22\]](#)}. The supersystem consists of three components, which are (1) the physical system and its observed dynamics, (2) the unobserved but active local vacuum and its dynamics, and (3) the local curved spacetime and its dynamics. All three elements of the supersystem constantly interact with each other, in modern physics.

In the present classical Maxwell theory, both of the two unobserved supersystem components (the actual force-free precursors that act on the system to generate all its forces and dynamics) are arbitrarily assumed away. The crippled Maxwell theory assumes an inert vacuum (falsified since the 1930s) and a flat spacetime (falsified since 1916). By using force fields and potentials only defined in terms of intensity of the interactions in static charged matter, it only considers effects of the precursors after their interaction with static mass. These effects then further generate other forces in collisions and interactions.

The fact that force fields are still erroneously assumed in space, by standard classical EM and electrical engineering, retains the material ether in the model. Thus the standard model has already discarded (erroneously) the precursor engines and precursor

engineering (deliberate use of asymmetric regauging as a simple and universal means of taking and using enormous EM energy from the active vacuum/curved local spacetime).

Because of this continued assumption of the material ether by ordinary EM models, we have missed the ability to directly (and work-free) engineer the massfree precursor to force. We have therefore been unable to rigorously define force (as pointed out strongly by Nobelist Feynman {11}, by Wheeler, and many others) or energy {12}. Force is the interaction of precursor field with mass, and energy identically is the precursor field.

Classical electrodynamicists just continue to dispose of the “no force-in-space” problem, with a remark similar to that of Jackson previously quoted {20}.

Higher group symmetry EM theory, however, can get directly at all those long-ignored electrodynamic entities and mechanisms, including the precursors, precursor engines, and their free (regauging) generation of forces and force engines in matter. As an example, the Evans model {23} is a unified field theory, and quite capable of modeling the interactions between the three components of the supersystem. The present classical electrodynamics cannot and does not do that.

In short, precursor engineering can be developed whenever the scientific community will move off dead center, fund the sharp young graduate students and post doctoral scientists to do it, and allow them to do it.

### Example of Applying Precursor Engineering to Medical Therapy.

We now speak of a future medical capability that can benefit all humanity. It can follow directly from Evans' work {23}, and the effect has already been proven experimentally in France in the 1960s {24}. Until now, however, its free alteration of the cellular

regeneration system's precursor bioengine has remained a total scientific mystery because it lies outside the conventional classical EM model. That model, of course, erroneously excludes the precursor engine and gauge freedom.

Visualize a biological system and its dynamics, such as the human body in all its complexities. All the body dynamics may be visualized as a great special "bioengine", which consists of (1) the precursor engine—that set of precursor causes (the structured bioenergy we refer to as massfree biofields) interacting with the body charges and masses at every level, and (2) the bioforce engine produced as a result of those precursor interactions and dynamics.

The bioforce engine is secondary, and it consists of two interacting parts: (1) the precursor bioenergy engine—i. e., the virtual particle fluxes of the local vacuum/ST curvatures and their exact specific dynamics, interacting with the body charges and masses at every level, and (2) the resulting biosystem and its dynamics at every level. The massless precursor bioenergy engine continuously interacting with the physical system produces the force bioengine and its dynamics as the resulting effect of that interaction. Note that the primary (precursor) causal bioengine is not comprised of forces until it interacts with the physical matter of the body and generates the resulting bioforces as primary effects produced in the body. In that ongoing interaction, all bioforces everywhere in the body, at every level, are generated by the precursor bioenergy engine interactions.

It is strongly stressed that this makes a profound and fundamental change to biophysics: Instead of seeking fundamental bioforces (force bioengines) of nature as primary causes, one now seeks fundamental precursor bioenergy engines as primary causes. The great impact is that it requires little or no work to engineer the master precursor bioengines at will, in any fashion desired. In simple language one directly engineers and structures the primary bioenergy (the biofields) and its dynamics, then that structured bioenergy and dynamics interacts on



and with physical biosystems containing mass, to freely produce the desired bioforce engine and thus any conceivable kind of physical change of the biosystem. It can, e.g., induce stabilization and maintenance of the cellular system in any conceivable form desired.

Simply put, bioenergy fields interact with biomass of the biological system, producing all bioforce fields, physical biosystem dynamics, and physical functioning.

## **Structuring and Changing the Precursor Bioengine.**

We examine the structuring of the precursor bioenergy engine and how to freely change it at will.

It can be shown from Whittaker's work in 1903 and 1904 {[\[25\]](#)} that this precursor "bioengine" is naught but a complex set of longitudinal EM waves with added differential functions. Any scalar potential decomposes into a harmonic set of bidirectional phase conjugate longitudinal EM wave pairs (Whittaker 1903), and any field or wave pattern decomposes into two such scalar potentials with differential functions imposed. Hence all normal EM potentials, fields, waves, etc.—including those in biological systems—decompose into a far more primary electromagnetics comprised of longitudinal EM wavesets and their differential functions. Further, this more primary electromagnetics is directly engineerable.

As an example: For a given living body, there is a precise bioforce engine ongoing for that body in its intended healthy state. Hence there is a precise precursor bioenergy engine for that body also, in its intended healthy state.

For any disease or disorder change in that body whatsoever, there is an exactly specific delta precursor bioenergy engine for that disease change and all its actions and interactions, now present and also acting on the body to its detriment.

For any disease-specific delta precursor bioenergy

engine, there is a specific precursor bioenergy antiengine. The antiengine can be made and amplified by pumping. By introducing the amplified precursor bioenergy antiengine, a specific amplified bioforce antiengine is produced. This bioforce antiengine then acts upon the biosystem, specifically reversing the detrimental condition and healing the biosystem.

In other words, a damaged body has a damaged bioforce engine, consisting of the normal bioforce engine and a delta bioforce engine added to it. Hence the damaged body is being continuously interacted by a damaged precursor bioenergy engine, consisting of the normal precursor bioenergy engine and a delta precursor bioenergy engine added to it.

It follows that, if one were to time-reverse (phase conjugate) the total precursor bioenergy engine of the damaged body, the new precursor "bioenergy antiengine" would consist of two parts: (1) the amplified time reversal of the normal precursor bioenergy engine—which antiengine would just tend to make the body cells, etc. a bit younger, and (2) the amplified time reversal of the detrimental precursor delta bioenergy engine, which antiengine would gradually erase that detrimental precursor bioenergy engine and the disease itself!

Though simply put, that is in fact the mechanism used by the human cellular regenerative system (very poorly studied!) that generates the healing process in the body. It has long been obscured in biology by use of the terms "differentiation" and "dedifferentiation" of cells. Those terms refer to effects, not primal causes.

### **Becker's Important Work.**

Becker, e.g., clearly showed that potentials placed across intractable bone fractures directly generated such effects in red blood cells entering the injury site {[\[26\]](#)}. First the cells "dedifferentiated" back to an earlier form, growing a nucleus and shucking their hemoglobin. Then these new cells "differentiated" forward to form the type

of cells that make cartilage. Then those cells further differentiated forward to form the type of cells that make bone. The resulting bone cells were then deposited in the fracture site to heal the fracture.

Becker received multiple nominations for a Nobel Prize for this incredible work. He also attempted to model the cellular regenerative system itself [\[27\]](#), using the normal EM model—which failed him because it cannot model the precursor bioenergy engines at all. Had Becker had access to Evans' present work, he would have produced a gigantic revolution in medicine, and would have very probably been awarded a Nobel Prize. The bone healing work did survive quietly, and today it is used in a number of hospitals to continue to treat and cure otherwise intractable bone fractures.

We again stress that, using free asymmetrical regauging, the precursor engine and antiengine can be directly amplified, essentially work-free. One pays for a little switching and timing for control, but pays nothing at all for the excess energy utilized and structured and controlled, which is pure regauging. Regauging to increase the energy is pure negative entropy engineering, not previously recognized or utilized.

### **Precursor Bio-Engineering Was Demonstrated in France.**

The precursor engine, antiengine, and amplification approach was in fact demonstrated experimentally and rigorously in France by Antoine Prioré, although he was unaware of its nature. His work was personally presented to the assembled French Academy by its Secretaire Perpetuel, Dr. Robert Courier [\[28\]](#).

In the 1950s and 1960s, working with eminent French scientists, Antoine Prioré discovered how to directly amplify the "cellular regenerative" process in the laboratory, In short, he unwittingly discovered how to form antiengines for specific diseases and disorders, amplify the antiengines, apply them to the body, and directly heal the body via the resulting “amplified

cellular regeneration” process.

Prioré used a huge plasma tube fed with a mix of transverse EM waves, unwittingly using a characteristic of plasmas that can transduce transverse waves to longitudinal EM waves { [29] }. Hence he had introduced a longitudinal EM wave structure inside the plasma, adding to its field structures. With a large coil around the plasma tube, he produced a large rippling magnetic field whose inner “Whittaker structure” was deliberately modified (by controlling the frequency, and phasing of transverse waves induced in the plasma). The amplified bioenergy antiengine was embedded inside the longitudinal EM wave Whittaker structure of that rippling magnetic field.

Unknown to practical plasma technicians and to classical electrodynamicists, in quantum field theory the longitudinal photon and the time-polarized (scalar) photon exist and are individually nonobservable. However, their combination is observed as the instantaneous scalar potential—i.e., as common voltage. This tells us that, when we produce voltage, we produce not only Whittaker’s 3-spatial longitudinal waves, but also their time-polarized (scalar) counterparts also. In short, by subjecting an object to simple voltage, one subjects it to a special form of phase conjugation by optical-type pumping. The “input” to the pumping is the resident precursor bioenergy engine, and the output of the pumping (i.e., the “time reversed wave counterpart”) is an amplified precursor bioenergy antiengine. The interaction of the amplified precursor bioenergy antiengine and the living body’s mass produces the amplified bioforce antiengine that physically reverses the disease.

Suddenly Becker's work with voltage and its unexpected generation of radical change of red blood cells into new kinds of cells comes alive, because something magical was truly going on in the use of a simple potential across a fracture site (pulsing enhances the effect also). That potential was comprised of longitudinal EM waves and scalar EM waves (time-polarized EM waves) in

combined phase conjugate pairs, slightly altering Whittaker's 1903 and 1904 work. So in nonlinear optical terms, Becker was "pumping" those red cells (and the fracture vicinity) in both the time domain and the 3-space domain. He thus time-reversed both the 3-space longitudinal wave components and the time-polarized scalar wave components. The result was to produce an amplified time-reversed precursor "engine" (i.e., an antiengine) of the resident precursor bioengine actually present in, and acting on, that body to produce its resident force bioengine! This accounted directly for the much more rapid cellular dedifferentiation and redifferentiation effects, compared to the relatively slow and much weaker effects achievable by the feebly amplified cellular regenerative system.

Surrounding Prioré's plasma tube was a very large coil, which—stimulated by the plasma—then produced an oscillating magnetic field that further contained in its Whittaker longitudinal EM wave internal composition that "engine" that Prioré had caused to be introduced. The patient then laid on a table under the magnetic field beam, and the entire body was bathed in this emission. The rippling magnetic field insured that the internal "amplified precursor bioenergy antiengine" was carried down to even the bone marrow cells of the body, affecting everything. As proved for millennia in the living body, if the carried "engine" is the antiengine of the specific disease, then this produces an amplified bioforce antiengine that is directly an amplification of the body's own cellular regeneration mechanism for healing that disease.

The rippling magnetic field carried the "internal new precursor antiengine" to all parts of the body, even through the bone marrow to the primitive cells, etc. Thus the total force engine of the body was directly altered, leading to physical changes in the body that reversed the specific disease and healed the patient. Thousands of rigorous lab animal experiments were performed and are duly reported and documented in the French medical literature {[\[30\]](#)}. As many researchers have suspected, when the body is sick, it is "sick all

over", since the disease "precursor bioengine pattern" is in all the potentials and fields of the entire body, at every level.

Prioré's method added a new and amplified "antiengine" to the diseased body's own precursor engine, in turn directly altering the body's own force engine responsible for maintaining its present state and dynamics containing the physical disease. He simply reversed the body from a "diseased state" back to a "normal state". Hundreds of cases of terminal tumors, certain infectious diseases, clogging of the arteries, etc. were cured in laboratory animals, in some of the most sensational medical research of all time.

### **Results Obtained by Prioré's Method.**

When the added amplified bioengine was the reversal or near reversal of the detrimental bioengine portion already in the body, this process reduced and eliminated the detrimental delta bioengine, within the limits that the scientists had learned how to adjust the input signals for a given disease.

Consequently, unparalleled healing of disease occurred, in thousands of laboratory animal experiments rigorously performed at the University of Bordeaux by famous French scientists such as Raymond Pautrizel {[\[31\]](#),[\[32\]](#)}. Dr. Robert Courrier, Secrétaire Perpetuel of the French Academy and head of its biology section, personally presented the astounding results of the Prioré work to an assembled and stunned French Academy {28}. Terminal cancers, some specific infectious diseases, atherosclerosis, etc. were cured with alacrity and remarkable effectiveness. The results were so astounding that they caused a sensation in France and in some other scientific communities also. Sadly, there was not a single scientist available anywhere openly, who had developed or even knew of the science of engines and therefore might recognize and state the mechanism used in the Prioré work.

The Prioré team also experimentally showed that the

internal patterns or "internal precursor engines" inside a given EM field or potential (in its Whittaker decomposition) do diffuse from one potential or field into another that is superposed, and these internal precursor engine changes remain there and only gradually diffuse away over a period of time (such as a few weeks or months).

It was shown that a drop of blood—taken from a rat successfully healed of a terrible terminal cancer—could then be injected into another rat with the same disease, and that rat would also start to get well and get rid of the cancer. This "pass it along" precursor bio-antiengine diffusion effect lasted for some weeks. But the experiments clearly showed that the necessary "antiengine" had been created in the original treated rat, and that it was actually present everywhere in that rat, in its blood and elsewhere, and only gradually "dissipated" by diffusion reactions as time passes. It also showed that transferring some of the blood containing the new bio-antiengine spread the bio-antiengine into the receiving animal.

This work is all documented in the hard French scientific literature. It has required 30 years for the present author to even be able to explain the primary mechanism.

### **The End of the Prioré Work.**

The Prioré group itself (and the French scientific community as well) could not understand the mechanism because they only had the flawed old Maxwell-Heaviside theory to apply. That theory cannot model the elemental precursor engines, how they produce the force engines, and how such operations are the key to the healing process itself. Consequently, today we still have a medical science using the highly obsolescent electrodynamics of more than a century ago. Present medical therapeutics largely deals with killing and removal processes (such as the immune system's warlike work), while almost totally ignoring the actual healing mechanism and regenerative system of the body.

Medical science has thus produced a largely “intervene and destroy” therapeutics, with the real healing work then largely just “left to the body” in the hopes that it can somehow do the regenerative job required after the destruction and intervention.

The Prioré work showed that, not only can that fundamental cellular healing process be used in advanced new technology, but it can be highly amplified to allow very rapid healing of dread diseases. The Prioré work was ruthlessly suppressed in the mid-70s when the French government changed to a leftist government and quit funding the work. In 1984, not long after Prioré's death, the University of Bordeaux did accept a doctoral thesis on that work by one of its students (Perisse) {32b} —after having been forced to reject Prioré's own doctoral thesis {[33]} in the early 1970s.

So a great medical cure for cancer, hardening and clogging of the arteries, infectious diseases, etc. was brought to the very brink of being born and utilized, and by the proper scientific community. Then because of the lack of a proper physics and electrodynamics model, it could not be scientifically understood. So, sadly, it was strongly opposed and "parked on the shelf" primarily because there was no available electrodynamics known to the scientists that would allow modeling and development of a total technology including both theory and application. The French government and the French scientific community continue to strongly oppose the Prioré work to this day.

### **Electrodynamics Must be Modernized.**

The Prioré case is one dramatic example among many, of how the present terribly inadequate model of electrodynamics (used in electrical engineering) has long inhibited our scientific progress by blocking the development of precursor engineering and negative entropy engineering. That terribly flawed model and its continuing use are also directly responsible for the deaths of hundreds of millions of persons worldwide who did not have to die, had a better EM model been



available and used, and had the scientific community not continued to adamantly propagate and uphold such a seriously flawed EM model.

The source charge solution {14} also entails a coming great impact on thermodynamics. The charge continuously consumes positive entropy (disordered energy) in the active vacuum's virtual state, coherently integrates it, and produces negative entropy in the observable universe by continuously re-emitting the ordered energy (real observable photons), by a now-specified self-ordering criticality process specified by the present author. The resulting macroscopic EM fields and potentials produced and continuously maintained while spreading at light speed are ordered as a function of radial distance.

There are no "static" EM fields and potentials anywhere in nature! Instead, there are steady-state flows of EM energy that establish and continuously maintain steady state dynamic EM fields and potentials, in the sense explained by Van Flandern as follows {[\[34\]](#)}:

“To retain causality, we must distinguish two distinct meanings of the term ‘static’. One meaning is unchanging in the sense of no moving parts. The other meaning is sameness from moment to moment by continual replacement of all moving parts. We can visualize this difference by thinking of a waterfall. A frozen waterfall is static in the first sense, and a flowing waterfall is static in the second sense. Both are essentially the same at every moment, yet the latter has moving parts capable of transferring momentum, and is made of entities that propagate.

Hence every charge in the universe is a nonequilibrium steady state (NESS) system, continuously consuming positive entropy (disordered energy) of the virtual particle flux of the vacuum and producing negative entropy (ordered energy) of its macroscopic EM fields and potentials, along the lines theoretically shown by a

startled Evans and Rondoni {13}. The original charges have been producing negative entropy steadily for some 13.7 billion years, and they are still continuing.

The use of STC/VPF engines as precursors to forces and to material dynamics, thus opens an exciting and more fundamental vista for the environmentalists: The vision of a new kind of engineering in science and the electrical power industry. The breathtaking capability is to develop and use a negentropic engineering that will replace the old entropic engineering that has so sorely poisoned our planet and damaged our biosphere. The present entropic form of the Second Law is and always has been an oxymoron implicitly assuming that its own contradiction has first occurred. This total falsification of the present second law by the source charge completes the work of falsifying that law—work that is ongoing by D. Evans and his colleagues {[35]} and by many others. It also solves the century-old, vexing “time asymmetry” problem of thermodynamics, because negentropic processes are now permitted and experimentally validated.

### Conclusion

As one can see, there is a marvelous new science of the future already in sight, desperately trying to get born. To be born, however, there must exist a growing recognition and use of higher group symmetry electrodynamics and application of a unified field theory that is engineerable by these unusual electrodynamic means. There must accordingly be a growing recognition of the very few great pioneers in this field. Most of all, there must be funding of doctoral programs and post doctoral programs in the area of precursor engineering for negentropic processes and systems.

When this is accomplished, a revolutionary new science of precursor engineering will be born. The positive impact on humanity, the biosphere, and the progress of science will also benefit untold generations yet unborn, from now throughout all the foreseeable future of humankind.

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- [6]. In *symmetrically* regauging the Heaviside-Maxwell equations, electrodynamicists assume that the system potential (and thus the potential energy of the system) can be freely changed at will (i.e., they first assume that the system can be *asymmetrically* regauged). This is also assumed under one of the major principles of quantum field theory, known as gauge freedom. Electrodynamicists *arbitrarily* do two asymmetrical regaugings of the Maxwell-Heaviside equations in succession, but carefully selected just so that the *two new free EM fields that emerge* are equal and opposite. Thus they sum to a vector zero resultant. There is thus no *net* force field which can be used to push current against impedance, to dissipate the free excess system energy to perform work in a load. Instead, the excess free regauging energy is "locked up" as a change in the stress of

the system—as *stress energy*. So the electrodynamicists arbitrarily discard that entire class of Maxwellian systems which asymmetrically regauge by changing their own potential energy and also producing a net nonzero force field along with it. In short, the electrodynamicists deliberately assumed away all the Maxwellian systems which can freely produce coefficient of performance (COP) of  $COP > 1.0$ .

[7]. Ubiquitous use of the closed current loop circuit with the “external” power source in it, rigorously enforces symmetrical regauging, since the circuit equalizes forward emf in the external circuit and back emf inside the dipolarity of the generator. Hence half the energy collected in the external circuit is used to destroy the dipolarity of the generator, while the other half is dissipated in the external circuit’s losses and the load. To restore generator dipolarity, one must input to the shaft of the generator at least as much energy as was dissipated in destroying the dipolarity. And this input energy will thus be greater than the amount of energy dissipated to power the load. Such a circuit thus self-enforces  $COP < 1.0$ .

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