

ENGINEERING, COSMOGONY, AND BIOLOGY NATURAL LAW PHILOSOPHY

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Abstract – What are the components of energy? What are the components of matter? What are the components of space? What are the components of time? Are these components physical, esoteric, or transcendental?

How do engineering, cosmogony, and biology fit together? The laws of physics provide the connection between the science and art of engineering, the philosophy of cosmogony, and the life science of biology. The laws of both physics and metaphysics are elements of the natural law.

Natural law has been discussed in philosophy, theology, and science for years as a method to describe the operation of the universe. The Founding Fathers appealed to natural law in declaring the fledgling nation had a reason to exist. Natural law applies to social, economic, legal, biological, scientific, philosophical, theological, or any other perspective.

Natural law has three fundamental categories of energy laws, control laws, and biological laws. Energy has three areas consisting of thermodynamic laws, dynamic energy laws, and system energy laws. Likewise, each of the areas has three laws, resulting in the foundational energy of nine laws. Unsurprisingly, control also has three laws. Following the law of conservation, summing the nine energy laws with three control laws and the biological law yields thirteen principles.

Time is a crucial dimension of scientific and philosophical discussion. Time is the determining dimension between the physical and transcendental state.

The paper is a continuation of the questions raised after the paper on dynamic energy and Higgs field at the last Frontiers Conference.

INTRODUCTION

How do engineering, cosmogony, and biology fit together? The laws of physics provide the connection between the science and art of engineering, the philosophy of cosmogony, and the life science of biology. The laws of both physics and metaphysics are elements of the natural law.

Natural law is precepts which can be logically, rationally observed because of a universal nature. Natural law applies to social, economic, legal, biological, scientific, philosophical, theological, or any other perspective. [1]

Natural law implies (1) consistent laws exist, (2) the laws do not change, and (3) order or reason can explain the law. The laws of nature are observable and inviolable, even if the principles are not fully understood.

Natural law has three fundamental categories of energy laws, control laws, and biological laws. One of the control laws is the Triad principle which predicts three components for any uniquely defined item. As would be expected, energy has three areas consisting of thermodynamic laws, dynamic energy laws, and system energy laws. Likewise, each of the areas has three laws, resulting in the foundational energy of nine laws.

Unsurprisingly, control also has three laws. Following the law of conservation, summing the nine energy laws with three control laws and the biological law yields thirteen fundamentals.

Although the identified natural laws are encompassing, engineers operate with the physics aspect of the few fundamental principles, often ignoring or unaware of the science connection to relationships.

DYNAMIC ENERGY

Dynamic energy defines the relationship of space, time, and matter. [2,3,4]

The *first* of the energy components, space, has three measures – motion, ray, and volume. Motion ‘ d_t ’ is a vector which tells the distance and direction an item is moving and becomes the wavelength in cyclic motion. Ray ‘ b_{rs} ’ is the length of the arm acting on the force. Volume ‘ s_r ’ is the physical dimension measure.

The *second* energy component is time. Philosophically, time is one of the most intriguing components of energy and existence, while still being a crucial component of physics. The space-time relationship

obviously has a way to measure events and the duration between the events.

The *third* component of energy is matter. Matter is the fabric of which physical items are made. Matter is three regents – mass ‘m’, charge ‘q’, and magnetism ‘ ϕ ’. Each regent has its own energy domain.

Mass is the tangible measure which can be perceived with the five senses of see, hear, touch, taste, and smell. Mass is uniquely coupled to the space-time concept. Charge is the measure of electrical activity. Charge, as electrons and protons, is a key ingredient of chemical and nuclear phenomenon. However, charge is not restricted to these particles.

Magnetism is the measure of magnetic attraction. Magnetism is observed from a pair of poles. Magnetism is inextricably coupled to charge when either is in motion. Together charge and magnetism make the electromagnetic spectrum.

Matter, space, time moves in waves ‘w’, oscillations, or vibration motion. Energy results from oscillation when coupled to a constant of the universe ‘ h_p ’, Planck’s constant.

With these definitions, the concepts are combined to form a basis of physics and philosophy.

TIME COMPONENTS

Time has three manifestations. In static situations, there is no movement, so time has no variation as perceived by someone within the system, but may well vary when perceived by someone outside the frame of reference. The time, which measures most activity, is cyclic. Cyclic or motion time is represented by ‘ t_c ’. The third time manifestation is directly related to how mass reacts to space. Space time is reference or seasonal and is represented by ‘ t_r ’. Significantly, time is now defined as vectors which vary from parallel to orthogonal.

Seasonal time has a beginning, a duration, and an end. At the initial condition, information is known about the beginning of the season. However, by definition nothing is known about the system before the initial instant.

The duration is often called the steady state condition, even though circumstances may vary during the interval. The final condition identifies the system energy at the end of the period. The energy runs down, if there is no external positive input.

Three different types of time have been illustrated. [2,3,4] Aeon is the time which appears constant when

viewed from within the system. Chronos is the cyclic time. Kairos is the seasonal time. Aeon and cyclic persist while seasonal runs its course.

SPACE TIME

The product of the three measures of space called motion, ray, and volume divided by space direction and the reference, seasonal time is defined as *diffusion*. Diffusion is simply the explanation of the space-time interaction. Diffusion is the time varying volume gradient in the reference direction. Space and seasonal time are inseparable. Together the two form a continuum in the diffusion.

TIME IN COSMOGONY

The generally accepted hypothesis is the universe started with a bang. [5,6] What does the Big Bang imply? NASA maintains an extensive data information presence reflecting the contemporary state of science for the universe initial conditions. One of the projects is called the Genesis Mission, which in turn relies on numerous other missions including Hubble. [5,6] From the Big Bang hypothesis, several things can be discerned.

All space, time, and matter were initiated in a fraction of an instant. From that point on, the first thermodynamic law, conservation of energy, assures nothing is created or destroyed, but may only change form. Nevertheless, the universe continues to expand. [6]

The energy for expansion cannot come from within the system, since conservation of energy would be violated. Therefore, the expansion energy necessarily is derived from the source which fomented the Big Bang.

All space, time, matter, and the resulting energy emanates from one instantaneous event and point. The point of emanation is eternity, since all time is contained in the point. Eternity is defined in the past.

On the converse is the future. Discussions of the future refer to the concept of seasonal or kairos time. Aeon time does not change and cyclic is repetitive oscillations.

The physics and philosophical discussion of future is very intense. The deterministic approach agrees all information was contained at the Big Bang. Therefore, all history and the future were embedded. So the future has been decided. Free will does not exist since all is determined.

The alternate limit of the future is libertarian. The future is something which has not happened, so the future cannot be known. Libertarian does not imply randomness

or probability. Libertarian implies a control model which makes choices between positive and negative feedback. [1]

A variety of mathematical and philosophical positions are posited in the range between the boundaries.

The second control law about feedback and the third control law about polarity choice tend to side with the undetermined future.

PRIME DIRECTIVES

Aristotle contended energy and intellect converge. [7,8] If Aristotle is correct, then everything is energy. *Energy is*. Therefore, the natural laws can be reasonably stated as laws of energy.

*Energy and intellect converge, so
Science and philosophy converge.*

The ingredients of the laws are the foundations of energy including the components of space, time, and matter as noted above.

1. Space has three measures – motion, ray, and volume.
2. Time has three manifestations – static, cyclic, and seasonal.
3. Matter has three regents – mass, charge, and magnetism.

Some of the alternative definitions of the natural laws are provided followed by a description. Although the laws are stated as science, a philosophical application is also noted. Unlimited variations and applications exist. The universal natural laws are posited. [1]

THERMO LAWS

1. Conservation: Thermodynamics first law
Alternative terminology includes transmutation, origins, closed system, or symmetry.

Energy is neither created nor destroyed, but may only change form.

A closed system has no outside energy. The sum of the energy is zero.

Philosophically, the thoughts, concepts, and ideas become energy and change form to realization as the thought process focuses on an idea.

As a man thinks, so he becomes.

2. Entropy: Thermodynamics second law

Alternative terminology includes disorganization, payback, interest, giving, tithe, or rest.

During every energy conversion or changing of form, part of the energy is returned to the universe in the form of increasing entropy multiplied by absolute temperature.

Increasing entropy is the measure of increasing disorganization or sometimes inappropriately called loss. Each energy conversion creates less organization or structure of the previous state. Energy conversion illustrates that increasing the temperature of the universe from within the universe is impossible. Therefore, spontaneous-genesis is not feasible. Moreover, a process can have a local effect but cannot have global effect.

Entropy implies any improvement in any system requires adding outside energy. The entropy law demands the giving of a small amount to receive any increase. Nature determines the preferred energy path by establishing entropy as payment.

One must give to receive.

3. Positive: Thermodynamics third law
Alternative terminology includes relativity, measurement, comparison, numbers, mathematics, logic, or direction.

Positive is the measure of greater intensity and good.

In thermodynamics, entropy approaches zero as temperature approaches absolute zero. Energy flow is from positive to negative. Therefore, absolute zero is never achievable. Measurement is relative or compared to some other value. Measurement gives rise to numbers to explain relative relationships. Digressing or negative is moving in the opposite direction from positive.

Being both positive and negative is not possible relative to the same item. The ultimate positive is good. In an emotional context, the ultimate positive is love. Conversely, negative results in destruction or contempt.

Only positive is good, negative is decay.

DYNAMIC ENERGY LAWS

4. Frequency: Dynamic energy law 1
Alternative terminology includes vibration, oscillation, resonance, or synchronization.

Every thing vibrates at a frequency or frequencies.

Frequency with Planck's constant produces energy. Frequency is the number of waves over cyclic time. Resonance or synchronization is the condition of two things vibrating at the same frequency, resulting in a dramatically increased performance.

Personal resonance with concepts yields synergistic results. Prayer and meditation are forms of becoming in synchronization.

Resonance gives increased energy to life.

5. Mass-space/time: Dynamic energy law 2
Alternative terminology includes physical realm, tangible, rhythm, or seasons.

Mass is inextricably linked to diffusion of space over seasonal time.

Mass-space/time with frequency yields energy. Space is a swirling variation of a spheroid. The time has a seasonal rhythm. The mass-space/time energy describes the physical, tangible existence. The physical is perceptible with the five senses.

Philosophically, many esoteric mystics attempt to dilute the reality of the physical realm. At death of the entity, space/time no longer exists for the mass. In concert with conservation, the energy must be transmuted to another state.

Tangible gives way to intangible.

6. Electric-magnetic: Dynamic energy law 3
Alternative terminology includes non-tangible realm, electricity, magnetism, charge, or chemistry.

Electrical charge and magnetism with frequency form the non-tangible energy realm.

Electric-magnetic energy moves in a closed or circuit path of interlocking rings. Charge correlates to the mental, spirit perspective while magnetism correlates to the emotional, soul perspective.

Philosophically, a non-tangible realm is often regarded as superior. Seasonal time does not exist in relation to the electric-magnetic energy; therefore, death of the intangible form is not possible. The spirit-soul energy lives.

Feelings create conflict; rationality resolves all issues.

SYSTEM ENERGY LAWS

7. Attraction: System energy law 1
Alternative terminology includes static, potential, gravity, Newton's law, or Coulomb's law.

The energy of attraction between two regents of the same kind is proportional to their size, the distance between them, the force arm, and a constant and is inversely proportional to the spheroidal volume which contains the regents.

The attraction is not dependent on time duration, so the energy is static. When the regents are mass, then the energy is gravity.

When the regents are emotions, the energy is appreciation. Attraction requires like kind with the resulting energy being kindred. Closeness and increased emotion creates love.

Good attracts good.

8. Compensation: System energy law 2
Alternative terminology includes power, work, conversion, or opposition.

Energy is converted to useful power and work with opposition or resistance to energy flow.

The very definition of power comes from work and opposition to flow.

Philosophically, without work and opposition, no progress, no success, no power, and no compensation is available. Our work defines who we are and how we are perceived.

There is no free lunch.

9. Action: System energy law 3
Alternative terminology includes perseverance or persistence.

The number of interactions and absolute temperature with Boltzmann's constant gives energy.

More interactions result in more energy. Other than light, temperature is one of the most notable manifestations of energy and action.

Philosophically, perseverance is patient persistence.

Never give up.

CONTROL LAWS

10. Triad: Control law 1

Alternative terminology includes unity or prime.

Any item which can be uniquely identified can be further explained with three components.

Two of the items will appear similar and the third will appear orthogonal. All three exist simultaneously, but one may dominate.

Illustrations of the triad are myriad. The most philosophically significant triad is a person consisting of physical, spiritual (mental), and soul (emotional) components.

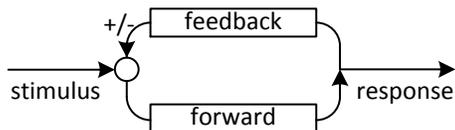
What the mind can conceive, and the emotions believe, man can achieve.

---Napoleon Hill [9]

11. Feedback: Control law 2

Alternative terminology includes cause & effect, control, morality, goes-around-comes-around, or reciprocity.

An outside stimulus provokes a system (1) feed-forward to cause a (2) response or effect. The (3) feed-back compensates with an adjustment to the stimulus effect.



Feedback provides control. Every stimulus or cause has an effect. Feedback can modify the consequences of the cause. Positive feedback promotes growth and expansion to infinite limits. Negative feedback holds down action until the system reaches a stable point of inaction. Negative causes decay.

Philosophically, feedback can be described by the personal triad. A stimulus happens provoked or unprovoked. The emotion reacts and causes a physical response. Then the mental analyzes and causes a positive or negative feedback.

Do to other people what you want them to do to you.

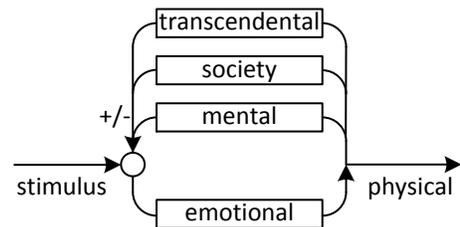
12. Freedom: Control law 3

Alternative terminology includes polarity, choice, rights, decision, ethics, unintended consequences, binary, digital, or deterministic.

Freedom is the ability to make choices.

Inherent in freedom is the unalienable rights of life, liberty, and pursuit of happiness. Choice is necessary to determine the positive or negative feedback of the control system. The decision determines the polarity. Choice is a binary decision between true and false.

Transcendental resonance causes positive feedback. Government and society exercises control by negative feedback. Interjection of control in the feedback loop creates unintended consequences, since the feed-forward can still make other actions.



Freedom is often stated with negation of an undesirable situation. Freedom means *unconstrained*, *unlimited*, *independent*, and *uncontrolled* by external influence. In contrast, control is the consequence of negative feedback. Therefore, freedom is reward of positive feedback.

People are where they are because of choices they make.

BIOLOGICAL LAW

13. Procreation: Biological law

Alternative terminology includes productivity, gestation, future, or survival.

Reproduction is propagation of offspring by parents.

For organisms which have sexes, a new organism begins with the joining of chromosome information from a male and female. Gestation is the portion of seasonal time from fertilization to the new birth. Unlike creation, fertilization is built from prior existing matter.

Philosophically, fertilization begins with the spark when a new idea is proposed from the conscious conjoining of previous experiences. Gestation is the

time for the idea to develop to fruition. Philosophically, a new birth results from a mentor father introducing a philosophy mother. Gestation of the notion takes time.

Productivity is natural.

NATURAL

The Natural Laws interact in a precisely prescribed relationship following conservation of energy.

vibration energy + tangible energy + intangible energy = attraction energy + (converted energy + entropy gift) + action energy

The natural laws are appropriate for physics, philosophy, and psychology. The precepts simply define how the universe is wired.

Often scientists and engineers focus on the physics and physical laws not realizing the same precepts apply in relationships. Often philosophers and psychologists focus on the more esoteric aspects not realizing the same precepts govern real aspects.

The concepts challenge conventional understanding of scientists and philosophers. Therefore, the ideas may be considered heretical.

In the pursuit of wisdom, no separation can exist between the hard and soft sciences. Both have the terminal university degree of Doctor of Philosophy.

SUMMARY

The laws of physics provide the connection between engineering, cosmogony, and biology. The laws of physics are elements of the natural law.

Three types of time are in operation. Aeon is the time which appears constant when viewed from within the system. Chronos is the cyclic time. Kairos is the seasonal time. Aeon and cyclic persist while seasonal runs its course.

All space, time, matter, and the resulting energy emanates from one instantaneous event and point, based on the Big Bang hypothesis.

The future is viewed in a range from deterministic to libertarian.

Energy and intellect converge. Therefore, the natural laws can be reasonably stated as laws of energy.

Natural law has three categories of energy laws, control laws, and biological laws, which can be expanded into 13 precepts.

1. Thermodynamic: Conservation, Entropy, Positive
2. Dynamic energy: Frequency, Mass-space/time, Electric-magnetic
3. System energy: Attraction, Compensation, Action
4. Control: Triad, Feedback, Freedom
5. Biological

In the pursuit of wisdom, no separation can exist between the hard and soft sciences.

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APPENDIX

Intellect and energy converge. The natural law relationships have an energy form. The energy has a scientific mathematical equation. The natural law scientific terms follow the definition of Diffusion.

- Diffusion – Space/Time

$$D = \frac{b_{rs} \times d_t \cdot s_r}{t_r s_r}$$

1. Conservation

$$\Sigma E = 0$$

2. Entropy

$$E_{gift} = S_{gift} T_a$$

3. Positive

$$E_{high} \rightarrow E_{low}$$

4. Frequency

$$E = \frac{h_p w}{t_t}$$

5. Mass-space/time

$$E = \frac{m D}{t_t}$$

6. Electric-Magnetic

$$E = \frac{\phi q}{t_t}$$

7. Attraction

$$E = \frac{b_{rs} k_n n_0 n_r s_r}{V_r}$$

8. Compensation

$$W = E_{available} - S_{gift} T_a$$

$$W = Q^2 R t_d$$

9. Activity

$$E_{activity} = N h_B T_a$$

10. Triad

$$E_{system} = E_{attract} + E_{compensation} + E_{activity}$$

11. Feedback

$$\frac{Response}{Simulus} = \frac{Forward}{1 + Forward * (\pm) Feedback}$$

12. Freedom

$$Choice = \pm$$

13. Biology

$$Reproduction = (Male + Female) * t_d$$

Mathematics is philosophy. Therefore, each relationship also has a philosophical interpretation.

VITAE

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He has been awarded the IEEE Richard Harold Kaufmann Medal “for development of theory and practice in the application of power systems in hostile environments.” He was recognized with 6 IEEE Awards for his Standards development work. He has been awarded numerous times for the over 140 technical papers he has authored. He has published fourteen books used in university level classes. Honorary recognition includes Phi Kappa Phi, Tau Beta Pi, and Eta Kappa Nu.

