



## Ethereal Mechanics: Constructs



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### ABSTRACT

Scientific progress is hindered by obsolete constructs that have been around since the era of the horse and buggy. These obsolete constructs obscure the simple underlying structures of nature. Nature is easy to discern when represented in natural constructs. For example, the construct of mass (the Kilogram) is ambiguously used for both the quantity of stuff and the inertia of stuff. This ambiguity obscures the fact that the quantity of stuff and the inertia of stuff are actually two very different phenomena. The disambiguation of mass and inertia results in cascade changes in our perception of nature.

The resulting change allows all natural phenomena to be described in terms of time distance and charge. This applies to all fundamental constructs to include mass, force, energy, and inertia. It is shown that electromagnetic induction, inertia, and the force of gravity (not the field – to be explained) are all the same thing. All the properties of matter can be described as states of a system of charges.

Another construct that obscures the simple underlying structures of nature are arbitrary constants of relation (ACOR) such as  $G$ ,  $\epsilon$ ,  $\mu$ , etc. These constants “relate” the left hand side (LHS) of an equation to the right hand side (RHS). The existence of an ACOR indicates that we humans do not know how the mechanism that governs the relationship. This paper lays the ground work for unpacking ACORs by unpacking the electromagnetic constants. Following papers in the Ethereal Mechanics series unpack the remaining constants. It was predicted in the 24<sup>th</sup> Rule of Acquisition [ROA24] that the final theory of everything would be free of arbitrary constants of relation.

Another obscuration of nature is caused by scientific models that combine both force and field in the same expression. By splitting the phenomena, into separate emission (field) and coupling (force) expressions, disambiguates cause and effect exposing long hidden secrets. An example of a model where field and force are separate is the legacy magnetic field modeling where the Biot-Savart model is the expression of the B-field (the field) and the Lorentz force model ( $F=QV \times B$ ) is an expression of a force or coupling model. Now is the time to expand this concept to everything.

### Revision History

- 1) Version 2.0:08 Sept 2018 Changed to the “Pre” units to make this material easy to those with classical training
- 2) Version 2.1: 18 Apr 2021: Got rid of “Pre”, used same names for both. Just distinguish between Natural and Legacy
- 3) Version 3.0: 24 Apr 2021: Expanded the scope to include constructs needed for both the Electrogravity paper and the NE V5 paper.
- 4) Version 3.1: 21 May 2021: The Obscuration through Correlation break through (to be a ROA when it matures)

### Previous Ethereal Mechanics papers:

- 1) See Reference section at end

Ethereal Mechanics



Ethereal Mechanics

<b>1</b>	<b>DISAMBIGUATION .....</b>	<b>3</b>
1.1	MASS / INERTIA .....	3
1.2	USAGE OF NATURAL AND LEGACY UNITS .....	6
1.3	ENERGY .....	6
1.4	FIELD AND FORCE DUALITY .....	9
1.5	CONSTANTS OF RELATION .....	10
<b>2</b>	<b>FUNDAMENTAL CONSTRUCTS .....</b>	<b>11</b>
2.1	TIME .....	12
2.2	DISTANCE .....	12
2.3	CHARGE .....	12
2.4	ETHER .....	12
<b>3</b>	<b>DERIVATIVE CONSTRUCTS .....</b>	<b>14</b>
3.1	INERTIA .....	14
3.2	FORCE .....	14
3.3	ACTION (A) OR A-FIELD .....	14
3.4	ENERGY .....	15
3.5	POWER .....	15
3.6	ELECTRICAL PRESSURE/ VOLTAGE .....	15
3.7	H-FIELD .....	16
<b>4</b>	<b>CONCLUSION .....</b>	<b>17</b>
<b>5</b>	<b>THE TABLES OF UNITS .....</b>	<b>18</b>
5.1	ETHEREAL MECHANICS .....	18
5.2	LEGACY UNITS .....	18
5.3	CONVERSION BETWEEN THE SYSTEMS .....	19
<b>6</b>	<b>CONSTANTS .....</b>	<b>20</b>
<b>7</b>	<b>REFERENCES .....</b>	<b>21</b>



# 1 Disambiguation

In this section, the logic of each disambiguation is presented. In the next section (Section 2) the results are propagated through the constructs of science to provide an improved foundation.

## 1.1 Mass / Inertia

Chemists use the term mass (the gram) as a measure of the quantity of stuff while physicists use mass interchangeably as the quantity of stuff and the inertia of stuff. Inertia represents the ability of an object to oppose acceleration with an opposing force (or inertial force) whose magnitude is the inertia multiplied by the acceleration. This can be written as follows.

1)  $\mathbf{F} = -M\mathbf{a}$  (The color blue represents legacy constructs that will be revised)

Where bold face 'F' represents vector force in legacy SI units (Kg\*m/s), capitol 'M' represents mass in Kg and bold 'a' represents vector acceleration in meters per second per second.

The reason for the negative sign is that the inertial force opposes the applied force.

Writing down the New Induction model [ROA24,NG,FOUND],

2) 
$$\mathbf{F}_T = -K_M \frac{Q_S Q_T}{|r|} \mathbf{a}_S$$
  
3) 
$$K_M = \frac{\mu}{4\pi} = 1 \times 10^{-7} \frac{K_g m}{Q^2}$$

(The purpose of symbols highlighted in red is discussed below)

From observation of the two, it can be concluded that

4) 
$$M = K_M \frac{Q_S Q_T}{|r|}$$
 (This is more rigorously treated in other papers but the outcome is the same)

From the above, it would seem that 'mass' is fundamentally two charges separated by a distance. One may argue that each charge that comprises this system may have its own intrinsic 'mass' as in the case of an electron. Does this mean then that 'mass' has two separate sources? The first source being an 'intrinsic mass' caused by something more fundamental and the other being an 'induction mass' resulting from electromagnetic induction. The induction model shows the synthesis of kilograms from a system of charges. There is nothing else that shows a means to synthesis kilograms from something else. In fact all other models including Relativity and the Standard Model treat mass as an intrinsic amorphous property of matter and have no explanation of its origin, synthesis, or structure.

Furthermore, the 'mass' in the above expression is a function of the distance between the charges which means that 'mass' is mutable. Scientists see this mass mutation when the 'mass' of an object increases as it approaches relativistic speeds. But do scientists actually believe that new matter pops into existence and attaches itself to the speeding object? What happens when the object slows down? Does matter simply pop out of existence? This concept of matter creation and destruction is patently ridiculous. The induction model shows that mass is mutable by the simple change in state between the charges that comprise matter (future papers demonstrate how this occurs). Legacy models only apply a correction factor to their



amorphous model of mass to account for velocity induced mass changes; whereas Ethereal Mechanics will show the actual mechanism.

Also, the induction model provides a simple field explanation for the phenomenon of inertia. Legacy models provide no mechanism of inertia – it is just a given property of the amorphous thing called mass.

Finally, Scientists are fond of using the term ‘mass-less’ to describe certain particles; however, a ‘mass-less’ particle is an oxymoron because mass is defined as the measure of the quantity of stuff. Therefore, the term ‘mass-less’ implies zero-quantity or non-existent and the term ‘mass-less particle’ would mean non-existent particle. Thus, the term ‘mass-less’ particle really means non-existent particle which is just as ridiculous as the concept of dehydrated water.

The above discussion shows that the induction model provides mechanisms that are consistent with the behavior of ‘mass’ while the legacy model is more of an empirical representations that mimics what is observed, but does not provide a single underlying mechanism and/or structure. The logical conclusion is that the induction model is the sole construct of this phenomenon to include the intrinsic ‘mass’ of particles, such as the electron. The intrinsic ‘mass’ is the result of these particles being systems of inertia less charged particles that Ethereal Mechanics calls Pretons. The Ethereal Mechanics model of the electron is released in a future paper or for those who can’t see the New Gravity Paper [NG] which is obsolete but generally accurate.

This leads to an ambiguity in language that needs to be resolved. We can no longer use the word ‘mass’ to represent both the inertia of stuff and the quantity of stuff. The word ‘mass’ now refers to the quantity of stuff that comprises an object; while the word ‘inertia’ represents the ability for an object to oppose acceleration.

To restate: Physicists have been using the term ‘mass’ to represent an amorphous blob of matter that intrinsically expresses the property of inertia. Because the natural units of inertia involve two charges separated by a distance; then inertia is a field interaction between charges. Because inertia requires a field as an intermediary, then inertia cannot be an intrinsic property of matter. This means that the fundamental components of matter are systems of inertialess charges (Pretons). Electrons and quarks have inertia because they are systems of pretons.

At this point all matter is reduced to systems of Pretons. Pretons have properties such as charge, position velocity, volume, etc. Charge is the only property remaining that is represented by an abstraction for which we presently have no underlying structure or mechanism for. Ethereal Mechanics will employ this abstraction as long as it is useful; until such time as our understanding of nature expands and we can see deeper down the rabbit hole (what are Pretons made of?). For the immediate future, it is sufficient to assume that the construct of Coulomb charge is the same construct for Pretonic Charge.

This ambiguity between ‘mass’ and ‘inertia’ represents a failure in science. Employing some failure analysis (forensics) may enable us to develop habits or techniques to reduce such impediments to scientific progress in the future. The failure analysis begins by focusing on the magnetic field constant ( $K_M$ ), which is an arbitrary constant of relation (ACOR).

$$5) \quad K_M = 1 \times 10^{-7} \frac{K_g m}{Q^2}$$

Next by substituting the elements of expression 4 with the corresponding units we arrive at expression 6.

$$6) \quad K_g = \left( \frac{K_g m}{Q^2} \right) \frac{Q^2}{m}$$



It should be totally obvious from expression 6 that the constant  $K_M$  (shown in red) is just a ratio of ‘mass’ to ‘inertia’. Therefore, this constant is just a simple conversion from the “Natural units of inertia” (square coulombs per meter) to Kilograms. So for all of these centuries, scientists have unknowing (and inappropriately) been converting the inertia of stuff to the quantity of stuff.

The takeaway from this is that the inertia of stuff (at rest) and the quantity of stuff are so perfectly correlated that they obscured each other. In other words, two separate constructs were so tightly correlated that they were treated as the same construct. This phenomenon of “obscuration through correlation” has other examples in history. In the past, weight was used as a measured of the quantity of stuff because the weight of stuff (at sea level) and the quantity of stuff are perfectly correlated. The tell that exposed the de-correlation of the weight-quantity duality was that the correlation did not hold at different altitudes. Likewise, the observation that the inertia of stuff changes with speed should have been the tell to expose the de-correlation of the inertia-quantity duality. But I suppose it brings higher ratings and funding for scientists to mystify the rubes with the fantasticism that matter magically pops in and out of existence based on speed. A documentary based on Ethereal Mechanics would be very mundane because it shows that both weight and inertia are just state changes of a two body system.

This notion of “obscuration through correlation” is important and will be encoded into a Rule of Acquisition; however, it is required by the 29<sup>th</sup> Rule of Acquisition that reciprocal thinking be applied. So if two separate constructs could improperly be treated as the same construct; then reciprocally, there could exist a construct that correlates to multiple other constructs. Therefore, it is possible to have more than one construct represent an underlying natural system. An example of this would be how the energy in an automobile fuel tank correlates to gallons of gas, which correlates to the deflection of the needle on a fuel gauge. In a strange universe, where humans had no knowledge of anything beyond the fuel gauge, gallons would become the representation of energy in lieu of the joule. It is feasible to represent joules in terms of gallons because of the correlation. There are historical examples where other correlations were used to represent something else, such as weight for quantity, candle power for luminous intensity and horse power for watts. Therefore, it follows that some of our present scientific constructs may only be correlations or representations of something more fundamental. This just opened another rabbit hole that we will come back to.

At this point, Ethereal Mechanics formally adopts square coulombs per meter as the natural units of Inertia. The adopted name for the natural units is the Burl, which is short for burliness which means heaviness. The default symbol for inertia is upper case B.

$$\text{natural units of inertia} = \left( \frac{Q^2}{m} \right) = B = \text{Burls}$$

This new concept for inertia affects the Newtonian equation as follows

$$\mathbf{F}_{inertial} = -B\mathbf{a}$$

$$\mathbf{F}_{applied} = B\mathbf{a}$$

$$\text{Newtons} = \left( B \frac{m}{S^2} \right) = \left( \frac{Q^2}{S^2} \right)$$

This paper demonstrates that all material properties can be expressed in terms consistent with those common to electrical engineering. This concept of explaining the universe in terms of electricity was theorized about all the way back to Faraday and Maxwell; however, without an electrical definition for inertia, no such progress could be made. The New Induction Model was developed by this author in the 1990s and can be found in [NG,FOUND].



In section 3.1 the electrification (or disambiguating) of basic scientific units is continued.

## 1.2 Usage of Natural and Legacy Units

In the previous section, color coding helped delineate Natural from Legacy units. The earlier forms of this document developed new names and symbols for the new units; however, it resulted in a confusing mess. So other than inertia, which requires a new name and symbol to distinguish it from mass, it was decided to keep the same names and symbols wherever possible. Therefore, all documents going forward must declare which set of units are in use (Natural, Legacy or Mixed). In the case of a 'Mixed' document, such as this, where new and old units are mixed for comparison, teaching or experimental purposes, it is standard to represent legacy symbols in blue. This is required for expression and should be followed in the text that described the equations; however, as long as there is no ambiguity in what is being described, the color coding is not required.

For situations where color coding is not available, it is required to prepend 'Natural' or 'Legacy' as appropriate. It is also permissible to used 'New' or 'Old'. Usage examples are shown below.

$$\text{Newtons} = \left( \frac{Q^2}{S^2} \right) = \text{New Newtons} = \text{Natural Newtons}$$

$$\text{Newtons} = \left( \frac{Kg\ m}{S^2} \right) = \text{Old Newtons} = \text{Legacy Newtons}$$

$$\text{Newtons} = K_M * \text{Newtons}$$

$$\text{Old Newtons} = K_M * \text{New Newtons}$$

$$\text{Burls} = \frac{\text{Kilograms}}{K_M} \text{ (when measured with gravity)}$$

Note 1: It has become a custom to color mass and its units (Kg) blue because mass is the main culprit in hiding natural units (more examples as the papers progress).

Note 2: Arbitrary Constants of Relation such as  $K_M$  are colored red because they are eliminated as Ethereal Mechanics progresses (in Accordance with ROA 24). In some cases, the constant  $K_M$  is needed to convert between theoretical and experimental values until such time that test equipments is developed that reads out in natural values.

## 1.3 Energy

The next important question involves Energy. Is energy defined in terms of mass or Inertia?

$$E = MC^2 \text{ or } BC^2$$

The fundamental definition of energy is essentially force multiplied by distance. Because the natural units of force are "burls meter per square second", then the natural units of energy are



$$\text{joule}(s) = \frac{Bm^2}{S^2} = \frac{Q^2}{m} V^2 = \frac{Q^2 m}{S^2}$$

This means that

$$E = BC^2$$

This has profound ramifications, because it can no longer be stated that matter is ‘lost’ when an excited atom gives off energy (physicists just love the notion of matter popping in and out of existence). The new reality explains that when an atom absorbs energy, it results in a change to the internal relationship between the Pretons, resulting in an increased state of inertia (again, just a mundane change in the state of a two body system—how boring). Correspondingly, when an excited atom gives up excess energy, the internal state returns to normal. The Energy and inertia of an object are just the internal states between the charged bodies that comprise matter. This is reflected in the units of the new joule shown above which expresses energy as a state relationship between two charges. Again, both inertia and energy are fundamentally synthesized by interactions between two Pretons. More appropriately, they are the states of a second order system of preton (SOSOP) where position and its two time derivatives (velocity and acceleration) comprise the states. Some may have problems with the construct of energy being nothing more than a two body phenomenon; however, this realization is consistent with other examples such as kinetic energy and potential energy. With kinetic energy, the velocity of matter is the quantifying value (or state); however, velocity is a relative measurement, so what is this velocity relative to? To an observer, the energy of a blob in motion depends on the relative motion between the blob and the observer; therefore, kinetic energy is a state of a two body system. This is also true for potential energy; the state that refers potential energy is the distance between two bodies, and it makes no difference what the force connecting the two bodies is. It could be a field of a mechanical contrivance such as a spring. So what we have been calling energy is only a representation of energy.

If you were paying attention and your reasoning isn’t impaired by having a degree in physics; then you may have noticed the tell from the “obscuration through correlation” discussion a few chapters back. Remember that both weight and inertial correlated to quantity; except, that there were conditions where the correlation decoupled. Weight is mutable as an objects distance changes relative to the Earth; therefore, it decouples from quantity. Inertia is mutable as the velocity of an object changes; therefore, it too decouples from quantity. The previous paragraph explained that potential energy is mutable as an objects distance changes from the Earth and consequently kinetic energy is mutable as a function of relative velocity; therefore, it must be concluded that the joule, is only a representation of a more fundamental expression of energy.

If you are not convinced by the above then READ THE FOLLOWING CAREFULLY WITHOUT SKIPPING PAST THE PARTS THAT SEEM REMEDIAL.

If energy is the state of a system, then there must be something more fundamental than energy (as conventionally defined). Let’s start from the beginning. If I lift a 1 Newton weight, to a new height that is 1 meter higher than it was before, then I have done 1 joule of work and have increased the energy state of that object by 1 joule. So the joule is only an indicator of work and energy, it only indicates how much work **was** done or **can** be done. Because it does not represent how much work is being done **now**, it is out of time with actual causality. Logically, one would conclude that perhaps the derivative of energy with respect to time (power) would remedy that problem. Unfortunately the derivative of the state of a system is a dead end. To help you understand this dilemma, an automobile fuel gauge is employed as an analogy. The gauge only represents the state (quantity) of fuel in the tank. It is a representation of how far you **can** drive (depending on load and driving condition) or how far you **have** driven (because it is lower than it was before taking a trip). Like the joule, the fuel gauge is only the state of a system. To take the derivative of the state of a system only gives the time rate of change of that state. It does not convey any information about the underlying system that the gauges represents such as what the fuel is, how it is combusted and what other dependencies (such as air) are required to extract the energy from the fuel.



Take two identical automobiles and face them toward each other and bolt them together. Then have the drivers step on the accelerators to the point where the tires are spinning and kicking up dirt but the vehicles do not move at all from their original positions. Fuel was consumed according to the fuel gauge however; the state of the odometer and speedometer did not change (assuming true odometers and speedometers). From experience, we know that fuel was consumed, but instead of work being done in terms of forward progress, the energy is dissipated into heat radiation, sound radiation, exhaust 'radiation', flying dirt 'radiation', etc. The automobile gauges (Fuel gauge, speedometer, odometer, etc) only represent the state of the automobile. The automobile does not have gauges that enable us to determine the lost energy to kicked-up dirt or other forms of radiation.

Likewise, the fundamental model of matter represents energy in terms of joules which is a state of matter; therefore it can be the mechanism for energy that exists external to matter in the form of emitted radiation or as incident radiation that is about to be absorbed. Therefore, a form of energy must exist that is more fundamental than the matter centric joule. Highlighting this with the automobile analogy, although it is possible to quantify the thermal radiation emitted from the car in terms of gallons, it is problematic to try to explain the mechanism of thermal radiation in terms of gasoline. A real world example of this problem is the particle wave duality nonsense where physicists imbue electromagnetic radiation with corpuscular properties because their measuring instruments are made of corpuscular matter. If all you have is a hammer, then every problem begins to look like nails.

Taking the auto analogy further, there could be many forms of energy (radiation) that matter emits and couples to, that we are as yet unaware of. This could mean that there is more than one form of fundamental energy OR we have to dive deeper to find a more fundamental form of energy that is common to all those forms of radiation; just as the joule is the underlying form of energy that is represent by gallons on our fuel gauge.

Continuing down the rabbit hole...

Take an automobile and park its front bumper up against a sturdy brick wall. Have the driver step on the accelerator. Again, we see the wheels spin and dirt is kicked up and the car goes nowhere.

The brick wall had exactly the same effect as the opposing automobile in the previous example. To oppose each other, the two automobiles had to expend equal amounts of fuel at equal rates to produce a null outcome. It is only reasonable to conclude that the matter comprising the brick wall, under the stress imposed by the automobile, must expend some sort of fuel to generate an opposing force; otherwise, the concept of conservation of energy is nonsense. Power out must equal power in.

Because the matter comprising the brick wall must consume some sort of fuel to oppose deformation caused by the automobile, then by extension, matter must consume tremendous amounts of some sort of fuel to maintain its structure at the atomic and subatomic levels where the forces are very strong. People with tiny physicist brains will balk at this for being too fantastical to even remotely be true. Their alternative requires you to believe that matter exists as a perpetual motion machine; except, when under stress, requiring matter to magically generate an opposing force from absolutely nothing. Producing a little bit more than parity (required for perpetual motion) puts the legacy understanding of matter clearly in the camp of over-unity. At least this is consistent with the over-unity theory known as the Big Bang. Ironically, physicists posit that both perpetual motion and over-unity are impossible. So the choice is between a fantasticism and an impossibility. What will you choose?

So where is this fuel you ask? It is all around us; it fills the void of space between Pretons. It is the medium onto which light propagates. All field phenomena are states of this medium to include gravity. Massive objects consume this fuel in extreme quantities in order to maintain stability and structure. The consumption of the fuel results in a depletion. And just like any normal fluid, the fuel flows from regions of higher density to those of lower density. The field of gravity is the acceleration of this medium toward massive bodies; the force of gravity is electromagnetic induction (this field/force duality is discussed in the next chapter.





The consumption of this fuel may have undetectable waste products just like the automobile example. In other words, presently we can only build measuring instruments from the matter that is available to us. This matter has certain gauges in the form of states (energy, inertia, velocity) that can be observed. This waste energy may not couple to these gauges in a manner that would allow detection. Consider the example of the Earth's magnetic field. This 'radiation' does not couple to our human senses nor to most objects or instruments. It is not detectible with a thermometer, tape measure or thermal imaging camera. It is only detectible with a limited range of instrument synthesized from normal matter which includes the compass, Hall Effect sensor and a few others. It follows that there may exist other manifestation that remain undetectable either because it does not couple in any detectable way to matter or because we have not developed the instruments that can detect it.

The name given to this fuel is Ether and it is the basis of Ethereal Mechanics. Because it is the medium for light propagation and because field phenomena are states of the Ether, it is sometimes just called the medium or the fuel.

The acceleration of Ether toward massive is a gravitational field. Acceleration of the fuel relative to matter is the inertial force which is electromagnetic induction (New Induction). The fundamental concepts discussed were originally published in the paper titled "New Gravity" [NG] nearly 20 years ago. Note: please read the comments in the reference section of this paper before attempting to read "New Gravity".

If the above was not clear, it is all covered again and derived mathematically (future releases).

There are more construct changes required before the new derivations will make sense, so let's continue on.

## 1.4 Field and Force Duality

In legacy science, it is common for field equations to be written such that the source of the field (source for brevity) and the object reacting to the field (target for brevity) are joined in the same equation. An example of this is Newton's gravity model.

$$\mathbf{F}_T = -G \frac{M_S M_T \hat{\mathbf{r}}}{|r|^2}$$

The above equation relates the force on a target mass, due to the field generated by a source mass. A field is a distortion of the medium and it is possible to have conditions where certain disturbances do not couple to a target. Therefore, it is problematic to combine field and coupling equations because it gives the false impression that there is no field if there is no coupling.

This is important because an emitted field is an emission of energy that must be accounted for even if nothing is able to couple to it. This is like the old philosophy question "If a tree falls in a forest and no one is around to hear it, did it make a sound?"

Because it is possible for objects not to be affected by a field; then, the field model and coupling models should necessarily exist as two (or more) separate expressions. This separation of field and coupling is demonstrated in the legacy magnetic field model where the Biot-Savart model describes the generation of a magnetic field (B) from a source current and the coupling of the field to a target charge is given by  $\mathbf{F} = Q\mathbf{V} \times \mathbf{B}$  (among others).

Limiting fields to only those that have detectable modes of coupling severely inhibits our ability to reconcile energy emissions from matter as well as search for other coupling modes (I'll explain how in the



next paragraph). An analogy of this is to search for extraterrestrial intelligence with a radio telescope and assume that because we cannot detect anything, that there is no one out there. Our technology is presently only able to couple to transverse waves because that is all we know about right now. So if Extraterrestrials are transmitting, but humans are not able to detect their transmissions, is there really anyone out there?

By removing the coupling constraint from field models enables us to use computer search algorithms that could find multiple possible field geometries that could satisfy the coupling requirements and possibly show us other coupling modes that were unknown. Of course, the new possibilities must be experimentally confirmed or denied.

Since all interactions of matter are conveyed by fields, the complete understanding of field geometries to including non-detectable waste energy is of great importance to reconciling a true theory of everything.

## 1.5 Constants of Relation

The 24<sup>th</sup> Rule of Acquisition teaches us that arbitrary constants of relation (ACOR) are indicators that we don't know what we are doing. An example of an ACOR is the constant G in the expression for Newton's Gravity below.

$$\mathbf{F}_T = -G \frac{M_S M_T \hat{\mathbf{r}}}{|r|^2}$$

What this ACOR (and most others) do is to “translate” (or relate) the measured quantities on the right hand side (RHS) of the expression to the measured quantity on the left hand side (LHS). The existence of the ACOR proves that this expression is developed from empirical data. This model does not explain how matter generates the gravitational field or how the target mass couples to the field. This model does not explain how fast a gravitational field propagates or even what it is. This model only adequately mimics the phenomenon based on regression of experimental data. But we retarded monkeys think we are smart because we can use this equation to accurately lob ordinance at each other.

By unpacking the constant G allows us to discern the field and coupling mechanisms of gravity in exactly the same way as demonstrated in Section 1.1 with the constant  $K_M$ . The unpacking is done in a future release and it dovetails perfectly with the induction model for inertia presented earlier.

The existence of an ACOR means we don't know what the natural mechanism is that couples the RHS to the LHS.

It should be pointed out that this same constant appears in the General Relativity expression for gravity which indicates that there has been no real progress made since Newton.



## 2 Fundamental Constructs

Fundamental constructs are arbitrary quantities from which everything else is built. These are not to be confused with arbitrary constants of relation (ACOR) which are a tangled mess of units that related the LHS of an equation to the RHS that act as the place holder to actual knowledge of the coherent natural coupling mechanism (Section 1.5).

An example of a fundamental construct is time. Time is represented by the fundamental quantity called the second. We don't really know what time is; however, that does not prevent us from using it. This is analogous to fire which was put to great use for over 100,000 years without any knowledge of what it was. The utility of fire is a function of what fire does; there is some benefit from knowing what fire is; however, this knowledge does not material change how fire is used. It is my belief that humans will have long traveled the universe before the last of the fundamental constructs are understood for what they are.

The important part is that Ethereal Mechanics reduces the number of Fundamental Constructs to 4. These are Time, Charge, Distance and Ether. These are represented by the fundamental units of the Second, Coulomb, Meter and Cubit (Tentative) respectively.

The fundamental units are the building blocks for all other units. The other units are called composite units because they are composed of two or more fundamental units. For example, velocity is represented as meters divided by seconds. Current is represented as coulombs divided by seconds. In certain cases, composite units are themselves given names for the purpose of brevity. For example, instead of saying that a current is 15 coulombs per second; we say, 15 amperes or 15 amps.

Some might argue that we should know what these fundamental constructs are before we develop theories around them. Ironically, if we knew what these things are, science would be done. We are stuck with a scientific paradigm were we assign arbitrary values to observables (Fundamental units) and then assign logical guesses to cause and effect (A.K.A Theories and models). Then we use these theories and fundamental units to develop machinery (technology) that enables us to expand our footprint in the universe. Our footprint includes our capabilities, knowledge and extent. By expanding our footprint (going where no one has gone before) we bump into counterexamples which show that our scientific models, theories or units need to be improved or replaced. I call this the Gateway-Feedback Paradigm of science.

The fundamental units listed in this chapter represent gateway models that will help expand our footprint into the unknown. As counterexamples are detected, these models will be revised and replaced as needed. These revisions will then be feedback to the rest of the body of work to see what other anomalies or inconsistencies shake out. This is the nature of the Gateway Feedback Paradigm of science – constant change (hopefully).

In mathematical derivations scientists A slight improvement over classical definition is the specification of default variables. A default variable is a symbol (alphabetic letter or combination thereof) which is set aside to represent a quantity of a given construct. For example, the symbol  $Q$  is set aside to represent a quantity of charge. This assignment of default variables enables the standardization of equations without the need to specify symbol meanings each and every time. Any symbol can be used for any purpose as long as its usage is specified in the given context; this applies to default symbols as well.

In order to expand the number of usable symbols, single letter symbols are treated as case sensitive allowing the upper and lower case symbols to have different meanings. An example is lower case  $v$  represents velocity, while upper case  $V$  represents voltage.



## 2.1 Time

The unit of time presently used in Ethereal Mechanics is inherited from classical mechanics without change.

Time	Value
Unit	Second(s)
Unit Symbol	s
Default Variables	t, s

## 2.2 Distance

The unit of distance presently used in Ethereal Mechanics is inherited from classical mechanics without change.

Distance	Value
Unit	Meter(s)
Unit Symbol	m
Default Variables	m, d, r, S, L

## 2.3 Charge

The unit of charge presently used in Ethereal Mechanics is inherited from classical mechanics; however, it will evolve as Ethereal Mechanics progresses.

Q = a quantity of charge  
e = charge of an electron  
p = charge of a preton

Charge	Value
Unit	Coulomb(s)
Unit Symbol	Q
Default Variables	Q

## 2.4 Ether

Ether is a fluid composed of particles called Ethons. Ethons may come in a variety of different forms with different proper; however, the present state of Ethereal Mechanics theorizes two. There is the Positive Ethon and the Negative Ethon.

Models involving Ethons as individual entities are in there infancy and no Symbols or Units have thus been assigned.



For present needs, it is sufficient to model Ether as a unary fluid where the unit quantity of ether is the amount that exists in a 1 meter cube at a distance sufficiently far from a massive body where the mean flow of Ether is essentially zero. Although a more practical definition will be introduced in the future; this is a sufficient starting point. For now the medium is discussed in terms of cubic meters of ether or the “cubiter” for short.

$u$  = a quantity of ether in a cubic meter (cubiter for short)

Default variable:  $u$

Unit: Cubiter (contraction of cubic meter)

Unit Abbreviation:  $u$

Ether	Value
Unit	Cubiter(s)
Unit Symbol	$u$
Default Variables	$u$





## 3 Derivative Constructs

Derivative Constructs are an amalgam of Fundamental constructs. An example is Force which has the units of Newtons which is defined (in legacy units) as Kilograms\* Meters/Second<sup>2</sup> (Kgm/S<sup>2</sup>). In Ethereal Mechanics, the natural units are square amperes or (Q<sup>2</sup>/S<sup>2</sup>).

The previous version of this document called the natural unit the PreNewton to distinguish it from the Legacy Newton. This was done for all the units, not just the Newton. Over time, it became clear that this practice was too awkward and would make it difficult to those who were not familiar with the new (or Natural) units to follow along. Finally, because the new units are superior in many regards, they should eventually become the standard.

Furthermore, the Natural Units will be used almost exclusively going forward. Future documents and videos will abide by the convention set forth in Section 1.2.

The most common derivative constructs are as follows.

### 3.1 Inertia

For the complete discussion of the disambiguation between mass and inertia, see Section 1.1.

The property of inertial is electromagnetic induction between two or more Pretons. The natural units of inertia follow the fundamental equation which is  $Q_1Q_2/r$  or Square Coulombs per meter. The name chosen for the unit of inertia is the Burl which is short for burliness which is synonymous with heaviness.

Inertia	Value
Unit	Burl(s)
Unit Symbol	B
Default Variables	B
Composition	Q <sup>2</sup> /m

### 3.2 Force

In Ethereal Mechanics, force is square amperes (Q<sup>2</sup>/s<sup>2</sup>).

Force	Value
Unit	Newton(s)
Unit Symbol	N
Default Variables	F
Composition	Q <sup>2</sup> /s <sup>2</sup>

### 3.3 Action (A) or A-Field

Action is Force per Coulomb. This construct is identical in units of the E-field; however, it is not necessarily a coulomb field and not necessarily conservative.



In past documents, the New Electromagnetism equations would be divided by the target charge to put them into their E-field forms. Then it would be necessary to write a sentence or two to tell the reader that the symbol E used does not necessarily indicate a conservative electric field. This was problematic, so in other incarnations, the symbol E was used for the coulomb field and M for the fields developed from the magnetic field.

Because the Electric and Magnetic fields are derivative of Pretonic fields, we should like an agnostic representation of force per coulomb.

It is interesting that the units of force per coulomb are the same as the time derivative of current.

Action	Value
Unit	Acton(s)
Unit Symbol	<b>A</b>
Default Variables	<b>A</b>
Composition	N/Q, Q/s <sup>2</sup>

Because an A-Field is a vector quantity which is represented in equations in **bold** face, it should be easily distinguishable from Area which is a scalar quantity written in normal type. This bold type face applies to the unit symbol for the same reason.

### 3.4 Energy

In Ethereal Mechanics the unit of energy is the Joule which is composed of square ampere meters (Q<sup>2</sup>/s<sup>2</sup>)m.

Energy	Value
Unit	Joule(s)
Unit Symbol	J
Default Variables	E, KE, PE
Composition	mQ <sup>2</sup> /s <sup>2</sup>

### 3.5 Power

In Ethereal Mechanics the unit of power is the Watt which is composed of square ampere meters per second (Q<sup>2</sup>/s<sup>3</sup>)m.

Power is the rate at which energy is transformed from one type to another (potential to kinetic, etc)

Power	Value
Unit	Watt(s)
Unit Symbol	W
Default Variables	P
Composition	mQ <sup>2</sup> /s <sup>3</sup>

### 3.6 Electrical Pressure/ Voltage

In Ethereal Mechanics the units of electrical pressure are joules per coulomb (mQ/s<sup>2</sup>) or Acton meters.



The term electrical potential is applicable but its usage implies the coulomb field as the source of action.

Electric Potential	Value
Unit	Volt(s)
Unit Symbol	V
Default Variables	V, KV, PV
Composition	J/Q, Am, mQ/s <sup>2</sup>

### 3.7 H-Field

Ethereal Mechanics prefers the legacy H field units (Ampere Meters) to describe the units of magnetic field intensity. Although the units are consistent with the legacy magnetic field definition, the shape and behavior of the H field is different from the legacy H field.

Legacy theory defines an alternative magnetic field definition known as the B-Field which has the units of Webbers per square meter. This B-field is discarded in Ethereal Mechanics and the letter B is repurposed for Inertia which is a magnetic field phenomenon (induction).

H	Value
Unit	I m (Ampere Meters)
Unit Symbol	--NA--
Default Variables	H
Composition	mQ/s





## 4 Conclusion

This document is an inflection point in Ethereal Mechanics (EM) that marks the transition away from legacy constructs and practices. In previous releases, older constructs were employed to avoid alienating or confusing those who were new to EM. This practice is no longer possible as the older constructs are obscuring the path foreword.

The changes described in this document did not all occur at once. The new units were developed back in 2018 (released to Patreon subscribers only). The 24<sup>th</sup> Rule of Acquisition regarding the future of arbitrary constants of relation (ACORs) was released in 2016. The notion that there is a form of energy more fundamental than the Horse and buggy Joule was released, to Patreon Passengers and above, in the paper titled the New Energy Paradigm.

The reason why these new constructs and practices were not adopted earlier was due to the fact that they all lacked something until recently.

The New Energy Paradigm was blocked because I could not rationalize the joule to something more fundamental. The “obscuration through correlation” logic (which is only a few weeks old) releases EM from the joule as the more fundamental form of energy. In fact it has opened other Rabbit holes that require time to explore.

The adoption of Natural Units (new units) was blocked because the new names and symbols were just too much of a change. This was solved by adopting the new units but retaining the legacy names and symbols.

The full application of the 24<sup>th</sup> Rule of Acquisition (which is part of adopting Natural units) was on hold until the constant G could be unwrapped. This unwrapping of G occurred early in 2021 with the development of the improved model of the electron (which will be released after this paper).

The silver lining of these delays is that all of these changes are occurring at once instead of piecemeal.

It's time for a clean break.



## 5 The Tables of Units

### 5.1 Ethereal Mechanics

Ethereal Mechanics		Unit		Default		
Construct	Unit	Symbol	Composition	Symbol	Note1	Note2
Time	Second(s)	s		s, t		
Distance	Meter(s)	m		m, d,S, L, r		
Charge	Coulomb(s)	Q		Q		
Inertia	Burl(s)	B	$Q^2/m$	B		
current	Ampere(s)	I	$Q/s$	I		
Velocity	meters/second	m/s	$m/s$	v,V		
Acceleration	meters/second <sup>2</sup>	$m/s^2$	$m/s^2$	a		
Force	Newton(s)	N	$Q^2/s^2$	f	$I^2$	$Q(di/dt)$
Energy	Joule(s)	J	$Q^2m/s^2 = Nm$	E,KE,PE	$I^2m$	$Qm(di/dt)$
Power	Watt(s)	W	$Q^2m/s^3 = j/s$	P	$I^2m/s$	$Qm(d^2I/dt^2)$
Electric Pressure	Volt(s)	V	$Qm/s^2 = Nm/Q$ $=j/Q=Am$	v	$I^2v$	$m(di/dt)$
A-Field	N/Coulomb	A	$Q/s^2 = v/m = N/Q$	A	$I^2/Q$	$(di/dt)$
H-Field	Ampere Meters	Im	$Qm/s=Im$	H	Im	$Q(dm/dt)$

### 5.2 Legacy Units

Legacy Units		unit		Default
Construct	Unit	Symbol	Composition	Symbol
Time	Second(s)	s		s, t
Distance	Meter(s)	m		m, d,S, L, r
Charge	Coulomb(s)	Q		Q
Inertia	Kilogram(s)	Kg		M (mass)
current	Ampere(s)	I	$Q/s$	I
Velocity	meters/second	m/s	$m/s$	v,V
Acceleration	meters/second <sup>2</sup>	$m/s^2$	$m/s^2$	a
Force	Newton(s)	N	$Kgm/s^2$	F
Energy	Joule(s)	J	$Kgm^2/s^2=Nm$	KE,PE
Power	Watt(s)	W	$Kgm^2/s^3=J/s$	P
Electric Potential	Volt(s)	V	$Kgm^2/s^2/Q=J/Q$	V



Force per Coulomb	Newtons/coulomb	N/Q	Kgm/s <sup>2</sup> /Q=N/Q	E
B Field	Webbers/m <sup>2</sup>	Web/m <sup>2</sup>	Kgm <sup>2</sup> /s/Q	B

### 5.3 Conversion between the Systems

Conversions	Legacy	Km= 1e-7 Kg/B	Natural
Force	Newton	=Km*	Newton
Energy	Joule	=Km*	Joule
Power	Watt	=Km*	Watt
Electric Pressure	Volt	=Km*	Volt
Electric Field	Newtons/coulomb	=Km*	Newton/ coulomb
B Field	Webbers/m <sup>2</sup>	=Km*	H-Field
Inertia	Kg	=Km*	Burls



## 6 Constants

This section to be completed in a future revision.

Constant	Symbol	Value	Units
Speed of Light	C	299792458	m/s
Mass Conversion	$K_M$	1.00E-07	Kg/B



## 7 References

NG	New Gravity: <a href="http://www.distinti.com/docs/ng.pdf">www.distinti.com/docs/ng.pdf</a> . This is the founding paper for Ethereal Mechanics. Most of the concepts and models are still valid; however, much of the nomenclature is obsolete. The term mass-less charged particle is obsolete; replaced with the term inertia-less charge particle or Preton. The Binary Mass particle is now called the second order system of pretons (SOSOP) and is now governed by Pretonic fields (future release) instead of EM fields.
ROA24	Rule of Acquisition #24: The Arbitrary Constant Tell: <a href="https://www.youtube.com/watch?v=9pm3GVZTRNI">www.youtube.com/watch?v=9pm3GVZTRNI</a> The Arbitrary Constant Tell. Arbitrary constants (A.K.A Constants or Relation) Indicate a missing piece of the puzzle.
VA	Vortex Algebra <a href="http://www.distinti.com/docs/VortexAlgebra_V1p3.pdf">www.distinti.com/docs/VortexAlgebra_V1p3.pdf</a> Vortex Algebra Version 1.3 A more complete vector algebra with non ambiguous vector division and advanced constructs.
EM01	Ethereal Mechanics: Transvariance: <a href="http://www.distinti.com/docs/EM_01_Transvariance_ver1_2.pdf">www.distinti.com/docs/EM_01_Transvariance_ver1_2.pdf</a> Transvariance version 1.2. The opening paper of Ethereal Mechanics which shows that relativity is not complete because there behaviors of the Michelson Morley experiment that are not accounted for.
FOUND	The Foundation video series: <a href="https://www.youtube.com/playlist?list=PL2fbwSsQ2zIWjH464Utgyg5nvO5HFeId9">www.youtube.com/playlist?list=PL2fbwSsQ2zIWjH464Utgyg5nvO5HFeId9</a> This video series details how New Electromagnetism was developed and how that lead to Ethereal Mechanics

Ethereal Mechanics