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THE "BIG BANG" - DARK ENERGY - DARK MATTER

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Action is the product of the Qualities inherent in Nature.
Bhagavad Gita

Dynamic Ether (Nether)

Nether {pronounced to rhyme with "weather") is the name given to dynamic ether to distinguish it from ether, which was originally assigned qualities which have proven to be false. The name "nether" was used by the ancient Greeks for the underlying substance, portrayed in mythical form. In truth, nether is the underlying substance - the primal Mass - of the universe.

Everything in our universe is composed of nether. Matter is actually composed of vortices or combinations of vortices of nether which act in a manner leading us to believe that they are particles. See *Some Fundamentals of Dynamic Energy Theory* for facts leading to the following on Nether.

Nether has the following properties:
1. It is a perfect fluid in the sense that it is non-particulate.
2. It has no structural memory. Once changed, it has no tendency to go back to its former condition.
3. It has inertia. It will continue to behave in any particular way until acted upon by a force.
4. It is frictionless. There is no friction to prevent it from continuing to do whatever it is doing.
5. It is compressible. In fact, it can compress in one dimension while expanding in another.
6. It prefers to expand, and does so when possible - which is why the universe is expanding.
7. It is energy-conscious. It reacts to any change in a way that uses the least energy.

The following are consequences of the above:
1. It is in all of the space in our universe, so the space in our universe is not empty.
2. Its density varies from place to place.
3. It becomes more dense as it approaches a mass.
4. It is constantly in motion.
5. Once its velocity is set, it cannot be detected by normal means.

6. It can be detected by its acceleration or the acceleration of any vortices (matter) within it.
7. All energy is the consequence of motion within it.
8. All energy is transmitted by means of motion within it.

Mass, mass, and Inertia

In nether theory, nether has Mass, but it is primal Mass, the real Mass of the universe complete with inertia. The more dense the Mass, the greater the inertia. Since nether is being compressed as it approaches a subatomic entity's center, these entities have more inertia than does nether in deep space.

The term "mass" that we use is actually the amount of nether Mass that passes through the vortices (that are currently known by particle physicists as "particles") in one second. One second is used for the time interval because it is the usual measure we have for short periods of time. So mass equals Mass per second, or $m = M/t$.

Dark Energy

"Dark energy" is the name given to nether by mainstream theoretical physicists. Although the mainstream theoretical physicists have a name for what is - in actuality - nether, they do not believe in a substance that is the medium and conveyor of electromagnetic energy. So they believe that the universe is expanding due to energy that is more particulate than wavelike.

The ancients knew about nether, and gave it various names according to the language of the culture involved. There was a name for the virgin nether (perfectly calm without any motion whatsoever), there was a name for the motion provider which impregnated the virgin nether, and there was another name for the impregnated nether in which the motion that is energy is found everywhere.

The Big Bang

The big bang theory that composes a fundamental of contemporary theoretical physics is essentially correct in designating a central location for the start of the universe. However, it is incorrect in stipulating that energy (usually in particulate form without a fluid medium) resulted in what we see today.

In nether theory, the universe began as a point of concentrated nether which expanded into emptiness in a fashion similar to what happens in a manmade explosion. In the beginning, it expands very rapidly because it is at its maximum pressure in relation to its surroundings. The expansion of its outer portions is more rapid than that of its inner portions. The inner portions cannot expand so rapidly because the

inertia of the outer portions limits the inner from moving so rapidly outward. So the rate of expansion varies directly with the distance from from the center of the universe. The farther from the center, the greater the rate of expansion.

The acceleration of the expansion is greatest in the beginning and lessens as the size of the universe increases. Yet, there will always be accelerated expansion unless our universe were to collide with another universe of nether under at least the same pressure as our own. Any matter (compressed nether moving into vortices) has more inertia than nether in space, and will be carried along with the less dense accelerating expanding nether at a slightly less accelerated rate due to its inertia. This means that bodies such a planets or suns will lag behind slightly as the expansion accelerates.

To repeat while using slightly different words, in a nether (dynamic ether) universe, the expansion is accelerating at different rates relative to the "fixed-in-place" observer. This is typical of any explosion or phenomenon where relatively sudden high pressure is exerted within a volume of lesser pressure. The outer fringes will always accelerate more quickly than the inner parts. At the exact center, there is no acceleration at all - and there is inertia which causes celestial objects to have different accelerations within the same local volume of space. We move along with and within the expansion, and therefore do not see the greatest differences in acceleration and velocity. But we will see various rates of velocity and acceleration when we view distant galaxies and stars. We will eventually discover that we live in a universe with an overall accelerating expansion and that the apparent chaos within it has an order of its own.

This accelerated expansion is everywhere within the universe, and one of its recently discovered effects is the phenomenon that has been labeled "dark matter". In the past, the acceleration of the universe was not readily detected. Eventually it was detected - but only by indirect means. More recently, most of the solution to the "dark matter" phenomenon was discovered by Mordehai Milgrom.

Dark Matter

Dark matter was hypothesized from observations made by astronomers which indicated a small but constant acceleration from gravity at extreme distances from various masses. Mordehai Milgrom, after extensive research, arrived at the equations which describe this phenomenon. Subsequently, it was discovered that the expansion of the universe is accelerating. However, for a long time no one bothered to incorporate this new data into Mordehai Milgrom's research. Below, it is shown how Milgrom's data perfectly fits into the hypothesis that the accelerated expansion is masked by gravity only up to a point - at which this acceleration is detected and mistakenly explained as the reason for the supposed gravitational acceleration attributed to dark matter. Thus, it may be said that Mordehai Milgrom is the first person to detect the acceleration of the expansion of the universe. This is an oversimplified explanation - the details below provide a convincing argument when understood.

Before we knew that the expansion of the universe is accelerating, astronomers had discovered that

celestial objects at extreme distances from large masses such as galaxies, were orbiting at a single velocity. This is contrary to the fact that orbiting bodies usually have orbiting velocities that are reduced with distance from the bodies about which they orbit. The only supposed reasonable solution to this supposed departure from the usual laws of physics, was an invisible halo of matter between the orbiting bodies and the central masses about which they orbited. The invisible matter was called dark matter, and dark matter provided evidence of its existence **only** in the haloed regions.

Orbiting bodies remain in their orbits by means of what we call centrifugal force, F_c, which balances the force of gravity that is pulling them toward the massive body that they are orbiting. Actually, centrifugal force is simply inertia, the tendency for something to continue to do what is doing unless it is forced to change. The inertia of an orbiting body wants to make that body go in a straight-on direction with its velocity unchanged. However, the gravity of the object about which it is orbiting is a force that pulls it off course, so it maintains its velocity but continually alters direction in the curve that is the orbit. The equation for centrifugal force is

$$F_c = mv^2/r$$

in which m is the mass of the orbiting body, v is the orbital velocity and r is the distance from center of the body about which it orbits.

If an orbiting object's velocity increases, its centrifugal force increases and the object moves outward. If its velocity decreases, its centrifugal force decreases and the object falls inward. If r is increased without an increase in velocity, centrifugal force lessens and the object falls inward. If r decreases without a decrease in velocity, centrifugal force increases and the object moves outward.

But the much larger gravity of the central object lessens as an orbiting object moves outward. The inverse square law describes this. It states that the force of gravity, g, varies with $1/r^2$. This means that an increase in r will reduce the force of gravity more than it will decrease the centrifugal force. If g decreases more than F_c, the object will move outward unless v is decreased. A decrease in r will increase the force of gravity more than it will increase the centrifugal force. If g increases more than F_c, the object will move inward unless v is increased.

Long ago, the planets were established in their orbits. If a planet had insufficient velocity to remain in orbit at its initial distance from the sun, it would increase its velocity by falling a bit toward the sun until it was at a distance that its new velocity would maintain. This caused it to have an eccentric orbit that would gradually become more circular. If a planet had a velocity that was more than that needed for its initial orbital distance, it reduced its velocity by moving a bit farther from the sun until it found a place where its new velocity was correct for it to remain. Eventually, its orbit would become more circular.

The result of all this is that planets at greater distances from the sun will be moving at lesser orbital

velocities to avoid leaving the solar system.

At the extreme distance beyond a supposed halo of dark matter, gravity holding the orbiting bodies in their orbits at their orbital velocities should have been too insignificant to do so. But the bodies beyond the halo were moving at the same orbital velocity regardless of their distances from the central bodies about which they orbited. This implied the existence of an acceleration inward that held them in orbit and mimicked gravity where there should not have been enough gravity to be detected.

Modified Newtonian Dynamics

The August 2002 issue of Scientific American featured an article by Professor Mordehai Milgrom of the Weizmann Institute in Rehovot, Israel. According to the article, *Does Dark Matter Really Exist?*, the Professor is the "Father of MOND". MOND means "Modified Newtonian Dynamics", and is a theory which began when Professor Milgrom "proposed a modification of Newton's second law that changed the relation between force and acceleration".

This article conflicted with my views, but showed me the key to the dark matter controversy. Almost any alternative to "dark matter" was a refreshing change. The phenomenon which has led to the inference of dark matter has effects too precise to be thus attributed. These effects would require a certain distribution of dark matter that is anything but random. So it is appropriate, instead, to examine the possibility of a natural law at work - and I have always had confidence in Isaac Newton's second law.

Dark matter was proposed to explain the fact that stars and bodies of gas far from their galactic centers (and also galaxies within galaxy clusters), move in a manner which, according to the known amount of matter present, should cause them to escape. In a stable orbit, the velocity of an orbiting body creates centrifugal force which is balanced by the force of gravity at the orbital radius. If the velocity of the orbiting body is great enough to create sufficient centrifugal force to exceed the gravitational force, the orbiting body flies away from the attracting body. Observed mass usually creates enough gravitational force to prevent the orbiting body from flying away. However, the observed mass in the cases mentioned above is not sufficient to keep the orbiting bodies from flying away. It appeared that more mass was needed, so the concept of dark matter was provided as a solution.

Ordinarily, in a solar system such as our own, the orbital velocity of an inner planet will be greater than the orbital velocity of an outer planet. So the orbital velocity of Mercury is the highest, and the orbital velocities of the other planets decrease as we move outward. Venus has a lower orbital velocity than Mercury, Earth has a lower orbital velocity than Venus, Mars has a lower orbital velocity than Earth, Jupiter has a lower orbital velocity than Mars, and so on.

Distances within our solar system are small compared to distances within and between galaxies. According to the article, MOND would not begin to apply to our solar system until a body is 10,000

times more distant from our sun than the distance between Earth and the sun. Our sun is a very small one. For very large attracting masses, such as whole galaxies, the distance before MOND becomes effective is much greater.

When MOND applies, the velocities of orbiting bodies no longer decrease with distance but maintain a constant value. According to MOND, this is possible because a constant, with the dimensions of acceleration, manifests. This constant, called a_o, acts in the same direction as gravity (toward the attracting body) and has the gravitational effect attributed by most physicists to dark matter. According to MOND, the existence of a_o may be proof that gravity changes at extreme distances from its source.

This is why the phenomenon is called "Modified Newtonian Dynamics" (MOND).

I could not believe that Newton's laws were repealed, so I chose to call any distant point at which this strange effect occurs, the constant-velocity-point (CVP). The CVP occurs at different radii from different attracting bodies according to the mass of each attracting body. But Mordehai Milgrom found that in every case, the constant orbital velocity is proportional to the fourth root of the mass of the attracting body.

Professor Milgrom spent many years developing MOND and had the intestinal fortitude to introduce it to a the scientific community where, very likely, it was first regarded as too revolutionary. In my opinion, he is a genius in his field. His originality and persistence have resulted in what I believe is basically a valid theory. When he did his research, he did not know that the expansion of the universe was accelerating. Nor did he know the true nature of gravity. So I decided to see what would happen when the nether (dynamic ether) theory of gravity was used along with his math. The results follow.

Letters, Symbols, & Subscripts

$\wedge$ = symbol used for delta or a part of something
~ = symbol used in place of "is proportional to"
a = acceleration
a_c = acceleration from centrifugal force

a_e = accelerating expansion of the universe

a_o = acceleration that Mordehai Milgrom theorized

a_r = acceleration used by resisting inertia

A = area of a theoretical sphere with radius r about a galaxy with the galaxy at its center.
d = distance
D = nether density at the CVP
F_c = centrifugal force

g = gravity

m = mass

M = primal Mass, that of nether

r = the radius from the center of mass of a galaxy

r_o = the radius from the center of mass of a galaxy to the CVP

v = velocity of an object moving away from us when showing the Hubble constant

v = orbital velocity except for equations 19, 20, 21 and 22

v = incoming velocity of nether at the CVP but only for equations 19, 20, 21 and 22

x = a subscript for galaxy "x"

y = a subscript for a second galaxy "y"

Constant Velocity Point (CVP)

According to nether theory, matter is composed of vortices. The nether flowing into each vortex and into large concentrations of vortices (such as our planet) would be an accelerating force, moving objects toward each vortex or concentration of vortices. In the case of many vortices together, the inflow of ether would be extreme, and we would call it "gravity". At subatomic levels, the inflow into a single vortex is micro-gravity, and is very different from what we experience as gravity.

A funnel works by means of a large cross-sectional area at its top and a small cross-sectional area at its bottom. Between these areas are cross-sectional areas that decrease gradually from the top of the funnel to the bottom. A celestial body with its gravity is like a different kind of funnel. At the moon's distance from Earth, for instance, Earth's gravity is much less than it is at Earth's surface. At an infinite distance from Earth, there is zero gravity. A sphere with a radius that equals this distance from Earth has the same zero gravity throughout its area. This can be likened to the top of a funnel. The gravity at Earth's surface is about 32 feet per second squared. The surface of Earth is like the bottom of a funnel. Incoming nether begins at the top of the gravity funnel and increases in velocity (accelerates) as it moves through the smaller intermediate spherical areas before arriving at the bottom of the funnel. In this process, it is like pushing marshmallows through a greased kitchen funnel. The nether accelerates and compresses.

So in nether theory, gravity is the accelerated flow of nether into a body such as a planet or sun - any body that is massive enough to have more than a few subatomic entities to pull in the nether. It is this inflow of nether through theoretical spheres about the center of mass that causes gravity. A sphere with a larger radius will have nether passing through it at a lower velocity, and sphere with a smaller radius will have nether passing through it at a higher velocity. It is a funnel-like effect with the bottom of the funnel at the center of the mass, and theoretical spheres like funnel cross-sections farther from the center of the mass. See **Some Fundamentals of Dynamic Ether Theory** for more detail on gravity.

The nether distends and compresses as it moves through the funnel, which causes it have a greater acceleration (gravity) as it moves toward the center of the attracting mass. As the nether moves through the area "A" of a theoretical sphere, it distends, its velocity "v" increases, and its density "D" increases.

The same amount of nether must move through each theoretical sphere. The amount moving through must equal DvA.

The mass creating the funnel is pulling on the nether, or the pressure of the nether is pushing it toward that mass - either way the nether is distended as it moves through smaller and smaller theoretical spheres. The distension reduces what would otherwise be its increase in radial density, "D_r". D_r is proportional to $r^{1/2}$, in which r is the radius of a theoretical sphere. If the symbol "~" is used to show "in proportion to", we can say in equation form:

1. $D_r \sim r^{1/2}$

This distension of the nether may be called S_r. It is proportional to $1/r^{1/2}$.

2. $S_r \sim r^{-1/2}$

This distension is also the incoming nether velocity, v.

3. $v_i \sim r^{-1/2}$

Note that D_r must always be proportional to the reciprocal of S_r and of v_i, and S_r must always be the same as v_i in proportion to r. One proportion cannot happen without the other because they are all part of the same phenomenon.

D_t, the tangential compression of nether is caused by the reduction of the funnel cross-sections as nether moves inward, and must be proportional to $1/r^2$ due to the solid geometry involved (area is proportional to r^2. S:

4. $D_t \sim r^{-2}$

$(D_r)(D_t) = D$ where D is the actual nether density. It is shown here as: $(D_r)(D_t) \sim r^{1/2}r^{-2}$ or:

5. $D \sim r^{-3/2}$

The area of a sphere is proportional to r^2.

6. $A \sim r^2$

At all levels of the gravity funnel, the product of DvA must be the same because the same amount of nether must pass through each level. If the product of DvA is proportional to one, then the the proportions given above must be correct.

7. **$DvA \sim r^{-3/2}r^{-1/2}r^2$**

$r^{-3/2}r^{-1/2}r^2 = r^0$ r^0 is one. So:

8. **$DvA \sim 1$**

According to MOND, at the CVP the constant orbital velocity is proportional to the fourth root of the attracting mass. So, for comparing two different galaxies in equation form we have:

9. **$m_x/m_y = v_x^4/v_y^4$**

This equation may be rewritten as:

10. **$m_x/m_y = (v_x^2/v_y^2)^2$**

The equation for centrifugal force is:

11. **$F_c = mv^2/r$**

We will use the center of each galaxy because it is very close to its center of mass, and the CVP is a long way from that center - otherwise, the equation would not be so simple.

12. **$F = ma$** is the usual equation for force, so we may substitute ma_c for F_c:

13. **$ma_c = mv^2/r$**   Removing m from both sides:

14. **$a_c = v^2/r.$**

Because a_o is a constant that opposes centrifugal force and is thus equal to it, we now can say:

15. **$a_o = v_x^2/r_x = v_y^2/r_y$**

where again the subscripts are for two different galaxies, each v is the constant orbital velocity for its galaxy, and each r is the radius to the CVP for its galaxy.

So:

$$v_x^2/r_x = v_y^2/r_y$$

Or:

$$v_x^2/v_y^2 = r_x/r_y$$

Equation #2 above,

$m_x/m_y = (v_x^2/v_y^2)^2$ becomes by substitution:

$m_x/m_y = (r_x/r_y)^2$ which is:

16. $\mathbf{m_x/m_y = r_x^2/r_y^2}$

$r_x^2/r_y^2 = A_x/A_y$ because the area of a sphere is proportional to r^2. So:

17. $\mathbf{m_x/m_y = A_x/A_y}$

At any theoretical sphere with a mass at its center, the "Mass" of nether passing through in any given time period is the same as the "mass" of the attracting body because $M = m/t$. So

18. $\mathbf{M_x/M_y = A_x/A_y}$

The actual Mass flow of nether through any theoretical sphere about a particular mass (such as a galaxy), is equal to the product of the area of the sphere A, nether density D, and the velocity v of the nether passing through A.

19. $\mathbf{M_x/M_y = A_x D_x v_x / A_y D_y v_y}$

A_x/A_x already is the correct proportion, so:

20. $\mathbf{D_x v_x / D_y v_y = 1}$

Therefore:

21. $\mathbf{D_x v_x = D_y v_y}$

The Mass passing through a theoretical sphere in a gravity funnel is the same for such spheres at any given radii from the center of the attracting mass.

Equation 5 above is D ~ r$^{-3/2}$, and equation 3 above is v$_i$ ~ r$^{-1/2}$. So

22. $Dv \sim r^{-2}$

This is means that Dv subscribes to the inverse square law as does gravity. This is logical because at the CVP, gravity must be reduced to almost zero and so must nether density and nether inward velocity.

The CVP is always at a volume of nether where the product of density and inward velocity are the same. This means that as the universe expands outward, and density and inward velocity decrease, the CVP moves inward to keep the density and inward velocity constant. This interplay of actions causes the CVP to remain at essentially the same radius from the attracting mass.

The accelerating expansion of nether moves orbiting bodies outward even though their inertia slows their outward movement. As the universe expands, those inside the radius of the CVP pass through and outside the radius of the CVP. So any orbiting bodies that were inside many eons ago will be outside of the CVP by now. Those inside now will outside in the distant future.

Orbiting bodies adjust their velocities to match the gravity at their orbital radius (see the explanation above). The accelerating expansion, a$_e$, acts along with the centrifugal force, a$_c$, of an orbiting body. These oppose the gravity g of the attracting mass.

23. $a_e + a_c = g$

As the orbit of a body that is inward from the CVP approaches the CVP, the value of gravity and the opposing a$_c$ of the orbiting body approach zero, and the curvature of the orbit is reduced until it is almost a straight line. This effect is similar to the surface of the earth appearing to be flat to those of us living on it.

Gravity is caused by accelerating nether. This acceleration continues to increase as the radius from the attracting mass decreases. The accelerating expansion of nether is like gravity in the opposite direction but decreases slowly as the radius increases. As the orbit of the body crosses the CVP, g becomes zero and a$_c$ begins to act like g but in the opposite direction. The inertia of the body causes its orbital velocity to continue, and it opposes and is greater than a$_e$. So a$_c$ pulls inward and overcomes a$_e$ that is pulling outward. The result is a$_o$.

24. $a_c - a_e = a_o$

Outward of the CVP, the accelerating expansion opposing an orbiting body's inertia continues

indefinitely. So a_o continues indefinitely, and from the CVP outward, as Professor Milgrom discovered, a_o remains constant, and is the only acceleration inward mimicking gravity even though it is actually the result of inertia.

The universe continues to have accelerating expansion and the inertias of the orbiting bodies outside the CVP, along with the accelerating expansion, continue to create a_o which we see as an acceleration from our viewpoint because velocity, momentum, kinetic energy, and acceleration (to mention a few things) are all relative.

The changes mentioned above take a long time - a very long time - to happen.

The Constant a_o

The universe is expanding. The expansion is the about the same throughout the parts that we can see. But from our viewpoint, we do not see it happening because it is expanding like a loaf of raisin bread that is rising (not my analogy, but a very good one). The raisins are all moving apart from one another. As we look from our far point, we see celestial objects moving relative to one another due to other reasons, but the expansion is not so visible because it is essentially uniform. We can use other means to tell that the universe is expanding, and can have a constant for the expansion called the Hubble constant - which is the velocity of an object relative to us, divided by its distance from us - v/d where v is velocity and d is distance.

At about the year 2000, it was becoming increasingly apparent that the unthinkable was occurring - the expansion of the universe seemed to be accelerating according to a few reliable scientists. As time passed, the acceleration became an accepted fact by most scientists. This meant that the Hubble constant was no longer to be considered a constant, but it changes slowly enough that it is still used most of the time. Perhaps it should be given a different name such as the "unit velocity of expansion". The "unit acceleration" is a/d where a is the acceleration of a celestial object relative to us and d is its distance from us.

Both v/d and a/d use humanly created incremental units. This means that multiplying both the former and the latter by ^d - where ^d is the distance needed to make cosmic sense of humanly measured phenomena - might be helpful in our thinking. This would cause v/d and a/d to become simply v and a. The a might become a_e, a constant for the accelerating expansion of the universe as it applies to the next equation. Celestial objects have inertia. When the accelerated expansion attempts to move them, they resist. We can label the acceleration from the accelerated expansion a_e and the acceleration used by inertia in resisting the acceleration from expansion a_r. Then we can postulate the equation

25. $a_r - a_e = a_o$

The accelerations used in the above are all considered to be constants for the part of the universe in which we reside. Here we see that the resisting inertia is greater than the accelerating expansion, leaving a_o as an apparent acceleration inward.

This indicates that a_o is a constant throughout part of the universe that we can see and that it is detected only when other accelerations intervene. Gravity is an acceleration that masks a_o until far enough away from the source (at the constant velocity point).

The orbiting bodies have been orbiting with a particular velocity at a particular orbital radius. They want to continue to do so. When expansion causes their outward moving orbits pass a CVP, they maintain their prior behavior. So we see an apparent inward acceleration that is a_o, and a velocity that is the same for all of them since it was last established as they passed by the CVP.

The accelerating expansion is everywhere, so even when the orbiting bodies move outward they find more accelerating expansion. The continued accelerating expansion causes continued opposition by inertia. The continued opposition of inertia results in what we think of as a_o.

Conclusions

Going back to equation 23:

$a_e + a_c = g$

A. **Well inside the CVP**, the foregoing equation is usable, and is mostly gravity.

B. **Near the CVP**, g decreases in value below that of a_o, and we see a_o becoming the only inward acceleration. Certainly g is there, but it is becoming too small to use in a practical sense.

C. **At the CVP**, the acceleration inward becomes essentially a_o.

D. **Outside of the CVP**, a_o and any orbital velocity are constant, unchanging from that point outward.

E. Dv and g are always the same (nearly zero) at the CVP for any gravitational source, regardless of the distance where the CVP occurs from the center of that source.

F.   The universe's expansion is always causing D and v to be reduced.

G.   The CVP is always moving inward toward the gravitational source to compensate.

H.   Professor Mordehai Milgrom is the first person to discover the accelerated expansion of the universe even though he did not realize it at the time.

I.   There is no such thing as dark matter and there never was any such thing.

A Simplified Explanation

In nether theory, there is a nothingness within which our universe exists. This fundamental nothingness which predates our universe, contains our universe within it, and may contain many universes or none at all should anything happen to erase our own. The big bang occurred because nether came into being in a concentrated form within which was pressure, and this pressure caused the universe to expand rapidly at an accelerated rate. It is the pressure within our nether universe, versus the lack of pressure in the nothingness outside, which creates the accelerated expansion of our universe - not dark energy - although our nether universe is the container of our electromagnetic energy.

The expansion of the universe is given in incremental form by the Hubble constant which is the velocity of a distant object as it moves away from us divided by the distance to it. It may be called the "unit expansion" and is expressed as v/d, in which v is velocity and d is distance. The acceleration of the expansion can be found in the same manner by dividing the acceleration of a distant object as it moves away from us by the distance to it. I call this the unit acceleration and it is a/d in which a is acceleration and d is distance.

Let us postulate a center of mass in which the mass is a galaxy or a group of galaxies about which an object is orbiting at the CVP of this center at distance r_o. If we multiply a/d by r_o, we have the acceleration of the nether at the CVP relative to the center of the attracting mass.

The Hubble constant was the name given to the unit expansion of the universe when it was believed that the universe was expanding at a constant velocity per unit distance. Now that we know the universe has accelerating expansion, we also know that the Hubble constant is no longer a constant. It increases with time due to the acceleration of the universe's expansion. However, the Hubble "constant" increases very gradually, so it is still used as a measure in astronomy.

At the CVP, Dv is almost zero. So it appears that the CVP is so distant from the attracting mass that nether inflow is insufficient for the gravity of the attracting mass to be masking the accelerating expansion of the universe. It is also so distant that the orbit of a body is so large that any small fraction of its curvature appears to be almost a straight line.

MOND's a_o is defined as the constant gravity outward of the CVP, defying Newton's second law.

Actually, gravity at the CVP is not a constant. It still conforms to the inverse square law which makes it very small indeed. The outward acceleration is composed of a_c and a_e, the inward acceleration is composed of the gravity g of the attracting mass. See equation 23.

23. $$a_e + a_c = g$$

Well inside the CVP, the foregoing equation is usable, and is mostly gravity versus centrifugal force. Near the CVP, g decreases in value below that of the remaining inertia of an orbiting body, a_o, and we see a_o becoming the only inward acceleration. Certainly g is there, but it is becoming too small to count. At the CVP, inward acceleration is essentially a_o. Outside of the CVP, a_o is a constant. It remains constant from that point outward, being. the result of the acceleration of the universe interacting with inertia.

The CVP moves inward as the orbiting bodies move outward, causing the bodies at or near the CVP to eventually become outward of the CVP. Once outside the CVP, the orbiting bodies continue to move at the same velocity because there is nothing there to make them change their behavior.

As of April 2013

Viewing the theories on the web today one can see that since I placed my views on the my website in 2002, many people woke up and realized that the accelerating expansion of the universe might be the key to the dark matter controversy. At the time, Professor Milgrom did not seem to be aware of the consequences of his research (or so it appeared when he emailed me after I told him). Bear in mind that at that time, the accelerating expansion of the universe was still a controversial theory.

The current theories involve a lot of fancy work with Einstein's relativity involved. The jury of mainstream physicists is still out because no one seems to have the precise answers to safeguard their pet theories, and more careful observations must be made. Of course, no mainstream physicist is mentioning dynamic ether as a theory.

In my opinion, gravity at the CVP is essentially zero, a_o exists because it is a consequence of the accelerated expansion of the universe, orbital velocities outside the CVP are constant, there is no dark matter, and Newton's second law is still intact as he presented it.

Everything is energy in motion.

Pir Vilayat Inayat Khan

The CVP explanation is also essentially valid if one does not consider nether, but simply employs the idea of dark energy pushing the acceleration of the expansion of the universe.

There is more about dynamic ether (nether) theory in the series of little books called <u>Behind Light's Illusion</u> and the author's website. The *General Science Journal* is a great platform for showing things in a slightly different light that might well be more easily understood than the original presentations of the material. Perhaps, time permitting, more of the material from those books will be placed in the *General Science Journal*.