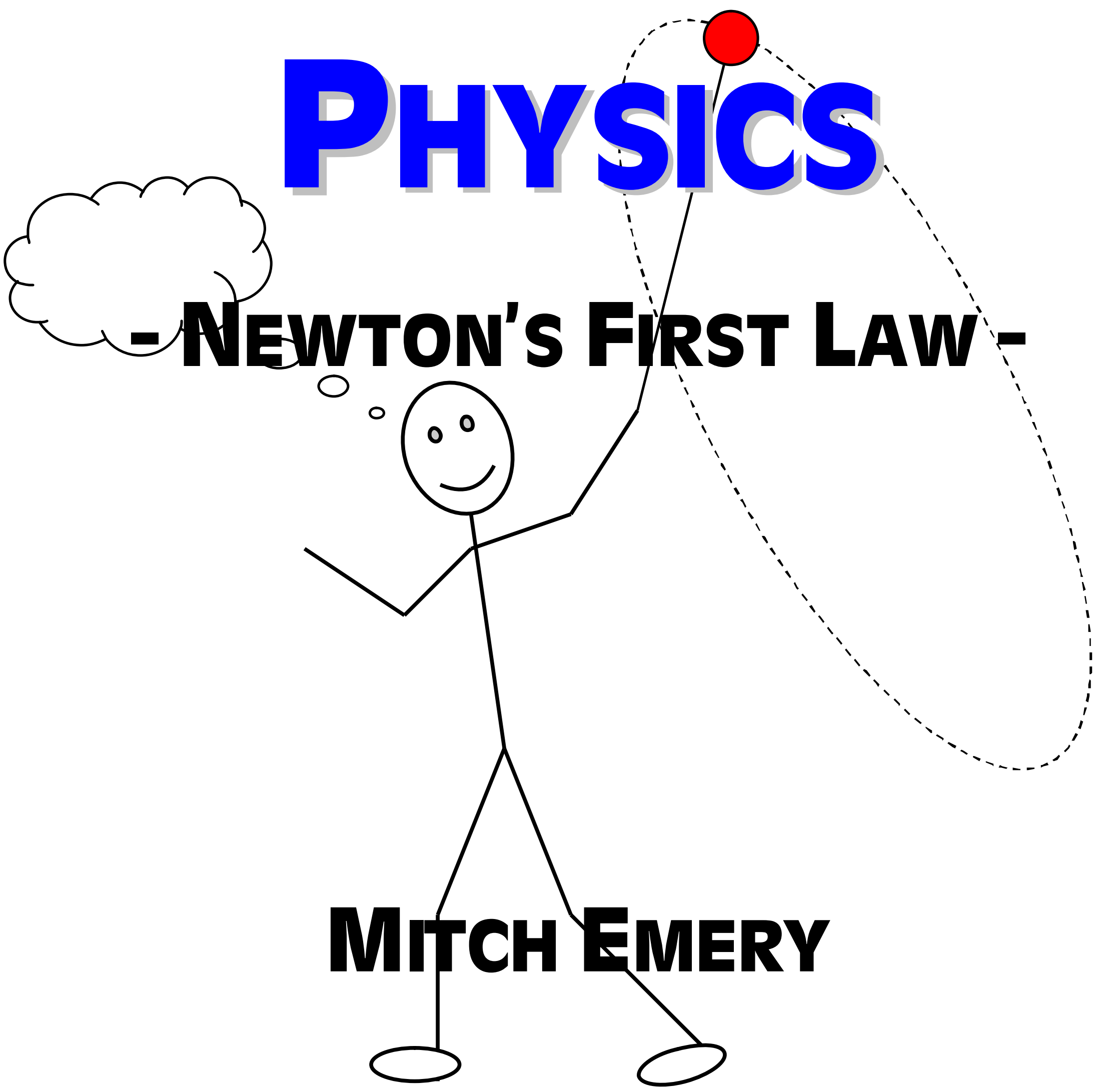
THE ROOT TROUBLE WITH PHYSICS

- NEWTON'S FIRST LAW -



MITCH EMERY

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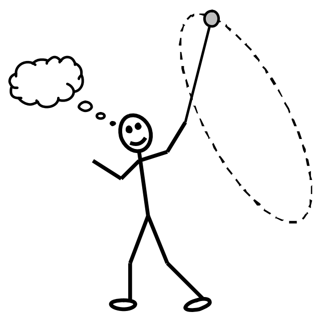

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***e-Published* 2008**
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Revised: 2009, 2010

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From the *Proceedings of the Natural Philosophy Alliance*, Vol. 3, No. 1: 24-36.
Mitch Emery, "New Physics Based on Force-Free Circular Motion"

(Content has been modified for the purpose of this publication.)

Preface

Present-day theories of the Universe call for all kinds strange things to exist in order to maintain their viability. In fact, it seems the more we know about the Universe the stranger it gets. Must all of this be so? Or could there just be a problem with our basic understanding of physics?

Questionable ideas go all the way back to Newton. His first law says that a body remains in its state of being at rest or of moving uniformly in a straight line, unless acted upon by an external force. Indeed the first law seems valid, but is it really so? In his second law, Newton said if a body is acted upon by force, then there will be a change in its velocity proportional to the magnitude of the force and in the same direction in which the force is applied. But there is more to consider. Newton's laws of motion describe relationships between external forces acting on a body and the motion of the body, but they do not consider effects of force from *within* a body. When a body is pulled into a circular path of travel, the pulling force creates tension throughout the body. Because of this, the body's momentum is held at a right angle to the force, *by the force*. Subsequently, the body works to break away from the force so as to move in a straight line, but the effect has nothing to do with Newton's first law. It is caused by force. Yet as formulated by Newton, the first law is more than a special case of the second law. The importance of the first law is to establish frames of reference for which the other laws are applicable, such frames being called 'inertial' frames. But to say the first law is verified by the second law is simply not true. Motion in a straight line could be a special case of the second law, while in general everything moves about inertial frames of natural and free *circular* motion.

The law of mass conservation says that matter cannot be created or destroyed. If that law holds true, then all physical substance of the universe has existed forever. And so by the same logic, the primary motion of the universe may exist with no beginning as well. Some sort of motion may exist simply because it has always existed—and with no cause by force involved. Certainly this pre-existing motion would be constant and uniform in the absence of force, but not necessarily in a straight line. Instead it could be circular, or a perfect spin with all matter as one. And because the spin is strictly an inertial effect, the spin would serve as a rotating inertial frame of reference. In such a case, Newton's second law still holds true, but any motion produced by force is carried by the original force-free spin of the Universe.

A new principle of inertia brings change to most everything in theoretical physics. In this reading you will find reinterpretations of relativity theory, quantum mechanics, big bang theory, and cosmology. But most importantly, a new principle of inertia brings common sense back to the world of physics.

The Root Trouble with Physics

- Newton's First Law -

Introduction

The ultimate goal in physics—to formulate a theory of everything—remains to be found despite all best efforts. String theory has so far been the best shot, but no part of it has been tested, and no one knows how to test it. So where do we go from here? According to Lee Smolin, author of *The Trouble with Physics* [1], "The one thing everyone who cares about fundamental physics seems to agree on is that new ideas are needed. From the most skeptical critics to the most strenuous advocates of string theory, you hear the same thing: We are missing something big." However, there is yet another problem, and Smolin goes on to explain: "Science requires a balance between rebellion and respect, so there will always be arguments between radicals and conservatives. But there is no balance in the current academic world. More than at any time in the history of science, the cards are stacked against the revolutionary. Such people are simply not tolerated in the research universities. Little wonder, then, that even when the science clearly calls for one, we can't seem to pull off a revolution."

The Natural Philosophy Alliance[1] (NPA) is an organization devoted mainly to broad-ranging, fully open-minded criticism, *at the most fundamental levels*, of the often irrational and unrealistic doctrines of modern physics and cosmology; and to the ultimate replacement of these doctrines by much sounder ideas developed with full respect for evidence, logic, and objectivity. Such reforms have long been urgently needed; and yet there is no area of scholarship more stubbornly censorial, and more reluctant to reform itself.

Reigning paradigms in physics and cosmology have for many decades been protected from open challenge by extreme intolerance, excluding debate about the most crucial problems from major journals and meetings. But the founding of the Natural Philosophy Alliance in 1994 provided those struggling against this irrationality and intolerance with the strength, visibility, and credibility that comes from numbers and from collaborative, purposeful effort. It has also enabled them to share, expand, and refine their individual knowledge through contact with many other critical scholars.

The Natural Philosophy Alliance is called an "alliance" because members hold a wide variety of different views, yet have joined forces in a common effort. They agree unanimously on little more than that something is drastically wrong in contemporary physics and cosmology, and that a new spirit of open-mindedness is desperately needed in order to correct this situation.

"Natural Philosophy" is the name by which "physics" was known in the time of Isaac Newton, and well into the 19th century. The NPA returns to it mainly in order to emphasize that the more profound and circumspect approach to nature during those years is needed once again. They seek renewed respect for philosophy, especially for *logic*; and also for the everyday application of reason and of respect for evidence known as *commonsense*--which should be considered a foundation for, rather than a contrast to, genuine science.

[1] Information about the Natural Philosophy Alliance has been copied from their website www.worldnpa.org.

So where does one search for new ideas, or to find a problem in physics? In a letter to members of the Natural Philosophy Alliance, ex-president Dr. Francisco Müller writes: "I see the catastrophe of Einstein's relativity so irreversible, that unless we go to a deep philosophical reconsideration of the WHOLE enterprise since Newton, Faraday, Maxwell, Ampere, etc, etc, we will be all going in a circle." And as a minimum consensus, Dr. Peter Marquardt recommends the following: "Let us try to focus on the essence of physics: What are the iron principles that never have been found to fail and still leave room for novel discoveries?"

In my opinion, Newton's First Law is one such principle. The principle has never been found to fail, and yet nothing truly moves in a straight line. Gravity is thought to be the reason why, but gravity is a mystery in itself. According to Newton, a body in motion tends to move in a straight line, and yet there is no causal explanation for the effect. And so does this principle leave room for new discoveries?

Dr. Peter Marquardt delivered the John E. Chappell Memorial Keynote Address at the 2007 yearly conference of the NPA. He discussed how over estimating a well established law, formula, or effect might give rise to superficiality. If we dig a little deeper, we might be surprised at an answer that others have overlooked. According to Marquardt, some prominent examples that require a fresh diligent look include kinematics versus dynamics.

On the surface, Newton's First Law seems valid. Just twirl a ball from a string and you can feel the effect. Then let go of the string. You can see the ball move into a straight line of travel. Indeed, straight-line motion seems to be the natural thing. And so Newton took this principle for granted, and then used the idea of gravity to explain planetary motion. But suppose we start over with a different approach. Instead of straight-line motion, we can postulate circular motion to be the natural thing. The first challenge then becomes to explain how this might be so, and to explain why a ball twirling from a string tends to move in a straight line.

Inertia *vs.* Force

The Moon appears to have much the same kind of motion as a ball twirling from a string. Both move about a circular path as one side of each remains facing the center of motion. Yet, the Moon has no strings attached. Is there truly an outside force that pulls the Moon into an orbit and keeps its face oriented toward the Earth? Or could there be some kind of *self-turning* action from within the Moon itself? In the latter case, the Moon could have an underlying straight-line motion, but its momentum would be carried by the turning action so as to produce force-free circular motion [2].

The causal principle says that every event has a cause and the same cause must have the same effect; *i.e.*, a cause has at least as much reality as its effect. The principle usually says that what causes something to be of a certain sort must itself be of that sort to at least the same degree. For example, whatever makes something hot must itself be hot. So how might a force-free orbit exist in something like the Moon? According to the causal principle, the cause would itself have to be a force-free turning action. Furthermore, if the laws of physics are consistent, then the same kind of force-free action would also exist in the workings of a tetherball. Thus, a twirling ball is to be examined.

Various things happen when a ball twirls from a string. The string is first pulled taut by the straight-line motion of the ball. The pulling effect is a fictitious force caused by inertia, while the string pulls back with a force. The ball then pulls at a right angle to the force of the string. Conceivably, the ball tries to twist itself (from the point of its connection to the string) because the pull is unbalanced. After all, a pull of this sort will cause most anything to twist. However, tension throughout the ball and the string (from the initial pulling effect) stops the twist from happening. The reason is because straight-line pulling effects are stronger than the angular pull of a twist. The force of the string is like a stiff rod, so the ball's linear momentum is held by the force at a right angle to that force, and is dragged about a circular path by the same. Nonetheless, the potential but unrealized twisting is just as real as the ball's obvious twirling.

So in principle, a ball creates a twisting effect when it pulls on a tether. The pull of the ball is an action caused by inertia, while the pull of a tether is a reaction caused by force. Because the pull of inertia is not a force, the likely twist of the ball has no force in itself. The opposite pull of the tether is the only force involved, but is a separate action by itself. Granted, a ball will never pull and twist itself without the pull of a tether, but each event is no less an event of its own. At any rate, a ball that actually twists or turns will have the same kind of pulling actions within the ball itself. Its linear momentum will have an unbalanced pull with the force of the ball. Thus, the mass of the ball tries to twist at each and every point along the radius of its turn, but is held at a right angle to the force, *by the force*, and dragged about a circular path. The pulling actions from within a ball are no different from those of a ball's twist at the end of a tether. The same force that pulls on the ball tends to keep the ball in a straight line of travel. The same thing happens to anything turned by force.

But suppose the twisting effect of inertia could exist independently and in total absence of force. It would then be just as effortless and force-free as straight-line motion. It is only the tension of a twirling ball and its string that tends to keep the ball in a straight line of travel. Without force, the twisting effect would go on to become a full spin, and a body's linear momentum would be carried and turned by the same. Hence, the body would turn about a perfect force-free circle with each of its 360° rotations. The roundabout motion would be somewhat like that of the Moon's orbit.

Assuming this to be true, force-free circular motion is the product of inertia. It is the effect of two ongoing separate motions where one motion carries the other. A body's straight-line motion is carried and turned effortlessly by the body's spin. Thus, the body's straight-line motion is sustained but not always seen. It can only be seen if viewed from a frame of reference that turns with the body's spin. However, from a fixed frame of reference the two motions appear as circular motion. Yet, things like this never happen by force because the force defeats the cause. Ironically, it is only force that upholds Newton's First Law of Motion.

In all practical experience, any object is formed and physically bonded together by force, and so Newton's First Law holds true. But in a much different way, celestial bodies are formed and physically bound together by gravity. Based on principles of force-free circular motion, gravity is not a true force—it is only a fictitious force. The same notion holds true with general relativity theory. And so because celestial bodies move about in the absence of force, they move about in violation to Newton's First Law. Whereas, a body moves in a straight line, but its momentum is carried and turned by a force-free spin from the body itself. The overall effect has the same geometry as that of spacetime. In general relativity, a body moves along a straight line (a geodesic) but through curved spacetime. Any object falling in a gravitational field—like around the Earth—is not being pulled, but is simply moving along a geodesic in the warped spacetime surrounding a heavy object. The Moon's orbit does not circle the Earth because of a pull, but because the straightest line through spacetime brings it back to the same point in space.

But suppose space and time are each separate and absolute entities, while celestial bodies move about with force-free circular motion. In this setting, the Earth's daily rotation is natural and force-free. Without question, a stone is formed and bonded together by force. But still an object can have more than just one motion. Suppose at some point in creation the Earth was nothing but a rotating ball of hot dust and gas. Things like stone were formed only after the Earth cooled down and was compressed by gravity. Nonetheless, a stone maintains its original force-free circular motion. This primary motion of the Universe is completely independent of any secondary motion produced by force. Pick up a stone and toss it. The stone is influenced by force, and so it tends to move in a straight line. But still, a stone moves about the Earth with its first and original force-free circular motion.

So, if force-free circular motion cannot be created by force, how might it exist? One can only speculate, but suppose it might exist, not by force, but because it has always existed. In other words, force was not the cause of the effect because the effect was already here. Force-free circular motion may have existed forever just as matter itself may exist. Indeed, this idea falls way outside the mainstream, but it seems to explain the Universe more easily and more consistently. It not only explains things like gravity, constant light speed, and the erratic motion of an atom, but also how the Universe could have no beginning, and just repeats itself with a never-ending cycle of events.

Gravity

For the purpose of discussion, force-free circular motion is presumed to exist. It is the inertial effect of two separate motions tied together as one. A body's straight-line motion is carried and turned by a force-free spin from the body itself.

Force-free circular motion cannot be produced by force, but force could be one of the effects. Orbital motion creates an imbalance of momentum because one side of a body moves faster than the other. Consequently, the underlying spin of force-free circular motion is unbalanced as well. This must be so, because a body's force-free orbit is caused by its underlying spin. One distinct motion is physically tied to the other. How can they be independent? Any change in one motion will naturally affect the other. For instance, suppose the fundamental spin of a body's orbit happens to slow down while the underlying straight-line motion stays the same. The orbit will naturally get larger. On the other hand, if an orbit has an imbalance of momentum, its underlying spin must be unbalanced, too. The unbalanced spin is like any unbalanced spin. It creates a twisting force. The twist can be described as an *off-center* rotation; *i.e.*, it does not twist about its center of mass. A body tries to rotate about its point of least momentum, or its nearest point to the center of motion.

In summary, orbital motion creates an imbalance of momentum while the imbalance of momentum creates a twisting force. And since a body and its orbit have no fixed point of reference, a substantial twist might rotate the position of a body's orbit around the body itself. Motion is the cause of the twist, so the twist will carry the motion. Wherefore, a body circles about an orbit as the orbit is shifted around the body as well. Each discrete motion is constant and uniform by itself, but together they create an irregular motion. This will produce various effects depending on the strength of a body's twist.

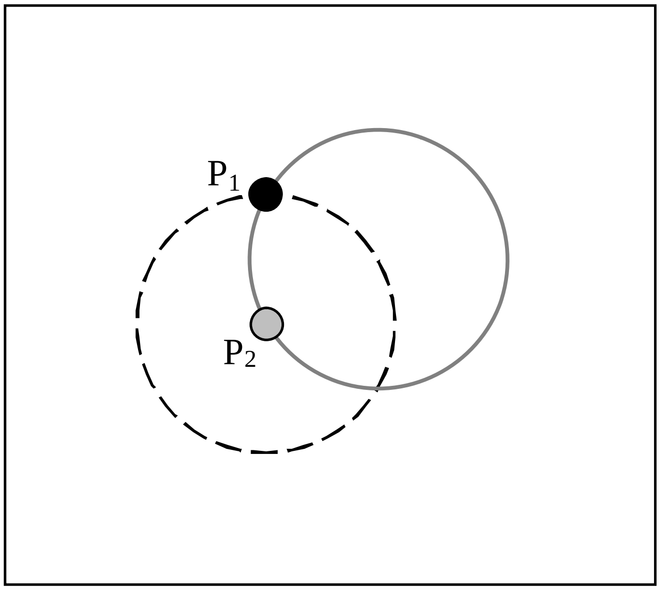

Figure 1.

The twisting effect of force-free circular motion is shown in Fig. 1. A body is pictured at two different points of an orbit, P_1 and P_2. The orbit is of a counterclockwise direction, while its position is turned in the same direction by an off-center twist from the body itself. A strong twist is presumed to shift the orbit one degree for every degree the body orbits. Initially, the body is at P_1 of the orbit shown by a dashed circle. Sometime later, the body is at P_2 where it has moved 60° about its orbit, while the position of the orbit has shifted 60° itself. A solid circle depicts the orbit. In effect, the body falls to the center of its original orbit. One step at a time, this idea goes on to explain things like gravity.

A twisting force like that described in Fig. 1 seems to agree with Newton's Law of Gravitation, while a lack of it agrees with how a galaxy spins. Suppose the mass of a revolving body is increased by a factor of two. The imbalance of momentum and the strength of its twist will double as well. Yet, if everything else remains the same while the radius of its orbit is doubled, the body's twist will be only one-half as strong. An orbit of twice the radius will take twice the time to shift, so the enlarged orbit will take twice as long to shift while the shifting force becomes only one-half as strong. Ultimately, the gravity-like force is only one-forth as strong and in total agreement with the inverse-square law. Still, a revolving body has no real tendency to move in a straight line, so things like dark matter [3] need not exist. Moreover, the twisting force of a body's momentum comes from the body itself, so the effects of gravity are instantaneous just as Newton described.

The Earth orbits the Sun just as the Moon orbits the Earth, except the Earth also has an *independent* daily spin. The twist of a planet's orbit is fairly weak, and might only shift the orbit as with a perihelion precession. However, a much stronger twist may cause a body to turn itself as to curve toward the center of its observed orbit. The body's path will truly be curved, but it will look like a straight downward fall to an observer who turns with the same angular speed. Likewise, a star near the center of a galaxy might be drawn into a supernova by the same twisting force.

A similar twisting force was predicted in Albert Einstein's *General Theory of Relativity* [4]. It is theorized that the daily rotation of the Earth creates a twisting of the local space-time fabric. The effect is known as 'frame dragging'. A body is also thought to experience the warping of space-time from what is called the geodetic effect. A force is presumed to push the body in a direction perpendicular to the frame-dragging effect. As a result, the overall effect is the same as that produced by force-free circular motion.

Figure 1 represents only 60° of what could be an ongoing event. Looking at Fig. 1, imagine a full 360° orbit as the orbit itself shifts a full 360°. An orbit as such will have two circular motions because its position is shifted about an orbit of its own. The effect is shown in Fig. 2. Furthermore, the direction of one circular motion will alternately agree with and oppose the direction of the other. This creates a looping effect with an ever-changing velocity. From a fixed point of view, the body moves about a small loop followed by a much larger loop.

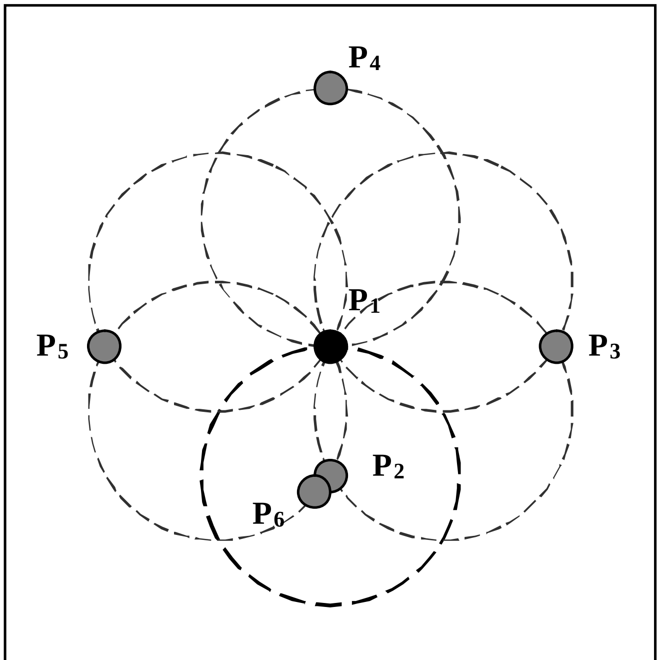

Figure 2.

A body is pictured in Fig. 2 at six different points of an orbit, P_1 through P_6. The orbit has a looping effect because it shifts a full 360° while the body circles 360° about the orbit. From its position at P_1, the body curves sharply toward the center (P_2) of its observed orbit. Its dual motion creates the effect of gravity as shown in Fig. 1. But unlike most things that fall, the body just keeps falling as if into a bottomless pit. At P_3, the body has turned 120° in its orbit as to agree with the orbit's roundabout shifting effect. Thus, its overall velocity will increase while the radius of its loop becomes greater. The effects are maximized at P_4, or at 180°, just as the two underlying orbits begin to oppose one another. The overall velocity then becomes less and the observed orbit gets smaller. At P_5, the body has circled 240°. It then begins to shift back to the inner loop as shown by P_6. This looping effect helps to explain the workings of an atom while adhering to the one and same set of new principles.

The principles of force-free circular motion can be applied to the Earth's rotation. Suppose the Earth rotates while each and every particle from within moves about with a straight-line motion that is carried and turned effortlessly by a spin of its own. In such case, the Earth's rotation is the cause of its gravity, but its gravity is the result of three different effects. First of all, the imbalance of momentum will twist everything directly toward the Earth's rotational axis. This particular twist is called a *downward* twist for the purpose of reference. A *sideways* twist is then created by what is called the Coriolis force.

Imagine a ball lying directly on the Earth's equator. The ball has two sides with reference to north and south. Each side will have the same momentum because the velocity of the Earth's rotation is balanced. But suppose the ball is moved to the north. It will press itself against the Earth with a downward twist as the speed of the Earth's rotation becomes less. Eastward momentum will then turn the ball sideways, or give it a twist toward the equator. The twist is not only caused by inertia, but also by contact force from the Earth. It is no different than the twirling of a tetherball. Force keeps the straight-line motion of a twirling ball at a right angle to the force itself. However, a ball pressing against the ground has not just a simple straight-line motion, but a downward turning motion with a twist. Hence, the sideways twist will pivot the ball's downward twist toward the center of mass.

A ball resting on the Earth might have a slight leaning effect for it will have the tendency to roll top over bottom as it pushes against the ground. Again, the leaning effect might compare to that of frame dragging. A ball rolls down a hill because of gravity, but the rolling motion is a separate motion by itself. The cause of the motion explains why. Motion caused by inertia, such as the Coriolis force, is not produced in the same way as motion caused by gravity. Gravity is a twisting force produced by motion alone. Therefore, any motion produced by gravity has a separate cause of its own, and is totally independent from motion caused by inertia.

The linear speed of the Earth's rotation varies according to location, but so does the radius of its turn. One change compensates for the other so as to produce a consistent downward twisting force. Thus, the downward twisting force itself maintains a constant sideways twisting force. In other words, the double twisting action of gravity is produced and maintained by the Earth's rotation. However, the strength of its original downward twist becomes weaker with the change in its direction from the Coriolis force. Moreover, this pattern will continue as a body is moved further north. Effects from the Coriolis force become increasingly stronger as the body's momentum is turned and directed further south. The strength of its downward twist becomes weaker, but the *apparent* strength of gravity is nearly constant because another effect is yet produced by the Earth's rotation.

An observer looking to the east from the equator might think of the Earth as turning in a downward direction. This downward motion makes the Earth move away from an object as the object falls. The effect is like that of a steep hill in the track of a roller coaster. Passengers float in their seats when the coaster drops because their car moves away from them as they fall. The same effect is produced by the Earth's rotation. Therefore, a slight bulge around the equator is produced. Yet, the effect is much less near the poles. At the poles, the Earth's rotation is more of a sideways turning motion relative to a falling object. The downward direction of the Earth's rotation becomes less while the downward twist of gravity becomes weaker. Thus, the apparent strength of gravity is nearly constant.

The Earth's orbit also makes the Earth move away from an object as the object falls. From this point of view, a solar tide is created because the Earth turns away from the ocean as the ocean falls. The Sun has nothing to do with it. In essence, the Earth expands because it turns away from everything in itself as everything falls. Any spin as such will create the same effect as a body turns away from itself, or turns away from a falling mass. From now on, this effect will be called the *escaping effect*. Any mass with a spin of this nature becomes larger as the escaping effect of its orbit is increased by its speed or by its curvature. In likeness, speed will also affect the spinning parts of an atom so as to make them expand or contract.

The Earth's orbit also tries to twist and turn everything toward the Sun with no real influence from the Sun itself. Another solar tide is one of the effects, while the same twisting force may cause a planet's orbit to shift. All planetary motions produced from within are carried by the twist because they are all of one body and the same.

Initially, the Earth rotates while everything moves about with force-free circular motion. However, the roundabout motion creates a twisting force that tends to shift a body's path eccentric to the Earth's rotation.

The twisting force makes an object fall. Yet, the twist is never seen. The further an object falls the more it twists. The more it twists the faster it falls because its angular path is constantly turned more directly toward the Earth. Tests have already shown this to be true. Experiments performed by Hideo Hayasaka and his Japanese team [5] indicate that a rapidly spinning gyroscope might slow down its twist and thereby reduce the strength of its gravity. The phenomenon was called *anti-gravity*, but most experts dismissed it. A gyro's spin is relative to the Earth's rotation, so it is relative to the effects of gravity as well. Thus the effects of anti-gravity depend on the speed and direction of the gyro's spin. In one direction, a gyro's spin gets stronger as the relative strength of gravity becomes weaker. The gyro then falls more slowly. But in the other direction, a gyro's spin gets stronger as the relative strength of gravity gets stronger, too. The two effects then cancel one another. This was revealed by the tests

From the viewpoint of this study, space and time are each separate and absolute entities. But if the Earth happens to rotate faster, the twisting force of gravity will be stronger and everything will fall a bit faster. Likewise, if the Earth rotates slower, the effect will be weaker. The effects of gravity cannot be produced by force, but they can be changed by force. For example, the motion of an eastbound train is equivalent to increasing the Earth's rotational speed. The train pulls itself along the curved surface of the Earth as to change the effect. Therefore, gravity becomes stronger and an object falls a little faster while on the train. Atoms from within the train will also expand because the train's speed will increase the escaping effect of the Earth's rotation. The motion of a westbound train is the same as reducing the Earth's rotational speed. The strength of gravity gets weaker and an object falls a bit more slowly. Atoms in the train will then shrink.

The Earth's rotation slows down while the standards for weight and time change accordingly. The strength of gravity becomes weaker, but a clock driven by weight detects no change (in weight) because it is also regulated by weight, such as the weight of a pendulum. But to some degree, a clock will also shrink in size. The swing of its pendulum gets shorter, so ultimately the clock runs fast. Still, most clocks are calibrated to the Earth's rotation. As a result, a change in gravity is not measured because a clock runs slower as everything falls slower. Atomic clocks will also run fast as the Earth spins slower, but again this can be explained by a change in frequency according to the physical size of an atom.

Suppose all heavenly bodies spin with a similar force-free rotation. A newly formed body will squeeze and compress itself with its gravity, while the smaller it gets, the faster it spins from the conservation of angular momentum. Rising pressure from the escalating effects of gravity might cause explosions with hot matter erupting from the body. Still, any discharge will carry and maintain the motion of its source. Its curved path in conjunction with its own massive discharge of radiation may cause the matter to spin itself into a big ball of hot rotating gas, or some kind a solid material. Accordingly, planets come from the stars while moons originate from the planets.

From this point of view, our Moon is nothing but a huge volcanic discharge that was pushed away from the Earth as the Earth was in turn pushed away from it. The big push caused the Earth to have an off-center rotation, or a wobble that correlates with the Moon's orbit. Lunar tides are caused by the wobble and not by the Moon's gravity. The wobble has an escaping effect whereas the

Earth moves away from the ocean and makes it rise with a tide. The ocean also gravitates toward the center of motion so as to produce a second tide. In addition to these tides, smaller tides are created semi-annually as the Earth moves closer to and further from the center of galactic spin.

Planetary Motion

A body can move about with several straight-line motions at the same time, so one might also move about with several force-free, *circular* motions. Moreover, one such motion could be perpendicular to another. Assuming this to be true, the entire Universe could have two perpendicular rotating motions. A dual spin as such would produce a whole host of inertial effects that could all be mistaken for gravity.

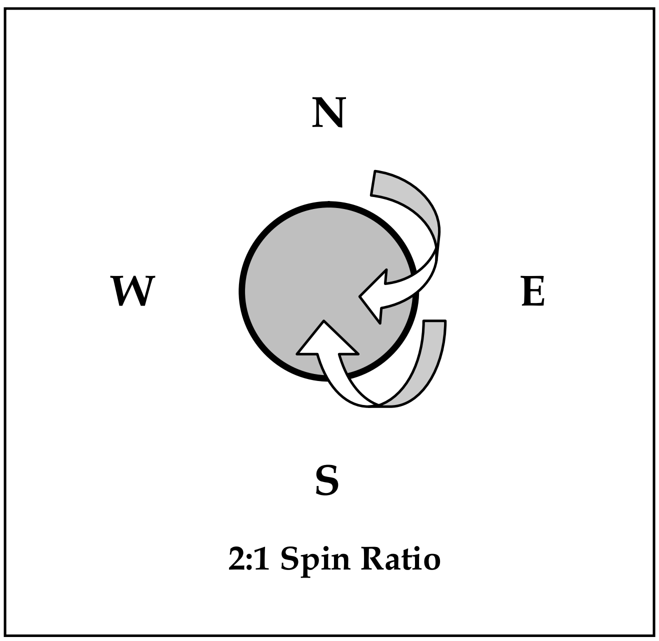

Figure 3.

Most orbits are not circular in shape, but instead elliptical. Also, the speed changes along the elliptical path. I would attribute such changes to a 'northerly curved motion'. This curve is just one of two *perpendicular* rotating motions of the Universe. This idea is pictured in Fig. 3. A dual spin as such cannot be produced by force, but it could very well exist with no apparent beginning. The east to west horizontal spin might also be faster than the north and south vertical spin; possibly as with a 2:1 ratio, or thereabouts.

Now suppose this dual motion was once that of a highly compressed singular mass which was caught up in a vicious cycle of self-destruction. The faster it rotated the more it compressed, while the more it compressed the faster it rotated. The acceleration was caused by the conservation of angular momentum. In essence, the strength of gravity was growing with the intensified spin. Nevertheless, gyroscopic effects eventually put a drag on the dual spin while the squeezing effect of gravity lost its grip. The state of its compression then caused the mass to inflate very rapidly just prior to exploding. Still, the two fundamental spins did not stop.

More on creation will be explained later, but keep in mind that a natural curve in all starlight can explain many things. It not only explains why the Universe appears to be infinite, but also why the Universe appears to be expanding at an increasing rate, when in reality it may expand at a decreasing rate. Regardless, it can be assumed that the entire Universe now expands with two perpendicular rotating motions. But with respect to the Earth, the dual spin might be described more clearly as two large curves. One curve is in a westward direction, similar to the spin of our galaxy. It is somewhat in the same plane as the Earth's daily spin and its orbit around the Sun. The other curve is in a northerly direction relative to the Earth. The entire solar system is moving with the same northerly motion, but again, the motion is not in a straight line. It is a curved path somewhat parallel to the Earth's rotational axis. Hereafter, this northbound motion of the Universe can just be called the northerly curve.

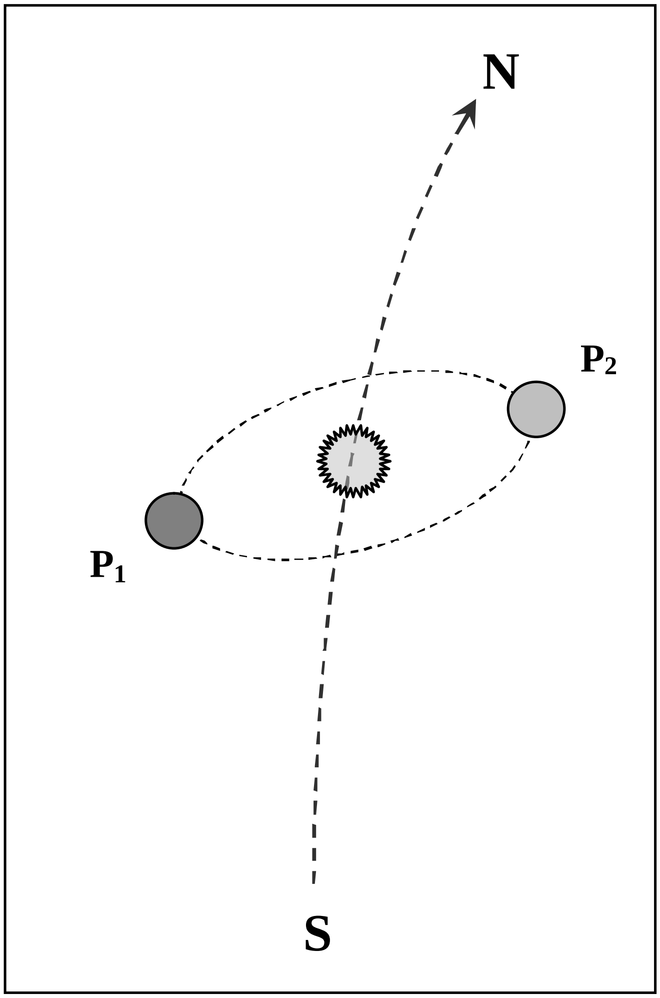

Figure 4.

The northerly curved motion of the Earth does not change independently, but changes by effect when combined with any other motion. See Fig. 4. It shows the Earth at two different points in its orbit, P_1 and P_2, as it also moves in a northerly curved direction. Depending on its ever-changing direction, the Earth's orbit will sometimes lengthen the radius of its northerly curve (P_1), and other times shorten the radius of its northerly curve (P_2). Consequently, the angular speed of the Earth's northerly curve fluctuates as well. This can be noted with reference to the Sun because any difference in their angular speeds will cause the Earth to change in distance from the Sun. Hence, the Earth's orbit is elongated, or elliptical, according to Kepler's Laws.

The ever-changing angular speed of a planet's northerly curved motion will cause the plane of its solar orbit to be tilted relative to the Sun's rotational axis. The Earth's rotation will also create a gyroscopic effect so as to tilt its axis with reference to the plane of its orbit. Also, a slight wobble is produced as a planet rotates because one side of the planet moves faster in its northerly curve than the other. The imbalance of momentum makes the planet wobble as it spins. Other wobbles are also produced by the different turning motions of a planet, such as its orbit around the Sun.

All planets move with a northerly curved motion, but their curves do not stay fixed with reference to one another. Primarily, they all move to the north, but some planets might curve a little to the northeast while others curve more to the northwest. Again, the twisting force of a planet's orbit may cause a slight shift in the orbit itself. The twist is caused by the imbalance of momentum, which makes it very unique. The twisting force of a planet arises from the motion of the planet itself, while the effect is in the same body as well. Therefore, the twist will carry and turn all of a planet's motion, including its northerly curved motion. Hence, the northerly curve will change in direction as to shift the oblong shape of an orbit, as with a perihelion precession. Each planet may have a different twist, so the ellipse of one orbit does not necessarily align with the others.

Tilting effects from the northerly curve change with the size and speed of an orbit, but only to a small degree because the northerly curve is very large in comparison. Regardless, a small orbit is more easily tilted than a large one because it takes less time to tilt to any given degree. Yet, a faster orbit tends to decrease the angle of its tilt because less time is allowed for the effects to take place. Thus, smaller and/or slower orbits tend to be most easily affected by the northerly curve.

An orbit like that of Mercury is rather small compared to others. Thus, Mercury is affected more easily by the northerly curve as seen by the shape of its orbit. On the other hand, Mercury's orbit is quite fast, but not fast enough to compensate for its size. A slow speed like that of Pluto's orbit also creates an outstanding ellipse, even though its orbit is very large. The slower speed allows more time for the effects to take place. In the same way, these things also happen to our galaxy and our local group of galaxies.

The Earth moves about a number of circular motions while each one has different effects. Wherefore, effects from the northerly curve will constantly change as the Earth is shuffled about the Universe. This will not only change the Earth's orbit around the Sun, but also the relative position of the Sun itself. The northerly curve is just like a big curve in a highway. Everything pulls ahead as it shifts to the inner lane and falls behind as it moves to the outer lane. This will cause the solar system to have a north and south bobbing motion [6]. The bobbing effect could be caused by relative motion, but in a true sense, the Earth might sometimes fall back in a southwardly direction. The spin of our galaxy along with that of our local group of galaxies might be fast enough to produce a southerly motion as the radius of the northerly curve is maximized. This may account for the flipping of the Earth's magnetic poles [6], but the cycle is very unclear. Furthermore, expansion of the universe will lower the frequency of these things because it will lengthen the time for them to occur.

Most everything in our solar system spins and revolves in the same general direction. Presumably, this is because the planets came from the Sun while their Moons originated from the planets. Hence, the Moon carries not only the Earth's motion, but the Sun's motion as well. The size of its orbit around the Sun constantly changes while the Moon orbits the Earth. Thus, gravitational effects from its solar orbit change accordingly. The Moon's position, or its motion within the galaxy, also affects the shape of its orbit and its distance from the Earth. Still, the distance really has nothing to do with the tides. The two just coincide because they both arise from the same cause.

Projectiles

According to this study, all projectiles carry at least three different basic motions; straight-line motion produced by force, the natural force-free circular motion of its origin, and a fundamental twist from the imbalance of momentum. The combination of straight-line motion and circular motion will effectively change the size of an orbit, while the size of an orbit will change the strength of its twist. Moreover, straight-line motion of different directions and different speeds will produce different effects.

A ball can be thrown into the air by force. Straight-line motion produced by force will in effect change the radius of the ball's roundabout motion with the Earth. Still, the imbalance of momentum will produce a twisting force from within the ball itself. Hence, the ball's orbit is shifted as to become eccentric to the Earth's rotation. At some point in time, the ball's circular path is aimed toward the Earth as to overcome the speed of the ball's upward straight-line motion. Thus, the ball falls to the Earth. Yet, a ball thrown hard enough could theoretically fall into an orbit about the Earth.

When a rocket is launched from the Earth, it still carries and maintains the motion of the

Earth itself. However, each of its Earthly motions become an orbit of a different size when combined with the straight-line motion of the rocket's thrust. The orbits might get larger, or they might get smaller, depending on the force and direction of a rocket's thrust. The size of a rocket's orbit will then change its twisting effect along with the strength of its gravity.

If positioned properly with respect to its naturally curved motion, a rocket in space can put itself into an orbit. Again, force is produced by a rocket's thrust, while the motion produced by force is in a straight line. However, a rocket carries and maintains its curved motion from the Earth, so the straight-line push of its thrust is angular with reference to the rocket itself. Hence, the push is unbalanced and will turn the rocket end for end as with a spin. The acceleration is caused by force, but the end for end spin is caused by the curved path of the rocket itself, or its inertia. Wherefore, the spin is force-free.

A rocket's straight-line motion from the force of its thrust is then carried and turned by the rocket's spin so as to produce force-free circular motion. And just as with a planet's orbit, the orbit of a rocket will create a twisting force from the imbalance of momentum. Therefore, the twist of a rocket's orbit will carry and shift the orbit itself, along with its northerly curved motion. Given the proper speed and the proper orbit, the twist will produce an outward spiraling effect. See Fig. 5. The effect might be just one aspect of what is called 'sling shooting'.[2] A much weaker effect of this kind will also cause the orbit of a planet, or a moon, to expand very slowly.

But suppose a rocket is meant to have a true orbit of some kind. According to its thrust and the desired orbit, a rocket must be aimed slightly toward the center of its intended orbit. Straight-line motion from force will then push the rocket toward the center of motion. This will not only counteract a sling shooting effect, but will also help the craft fall into an orbit.

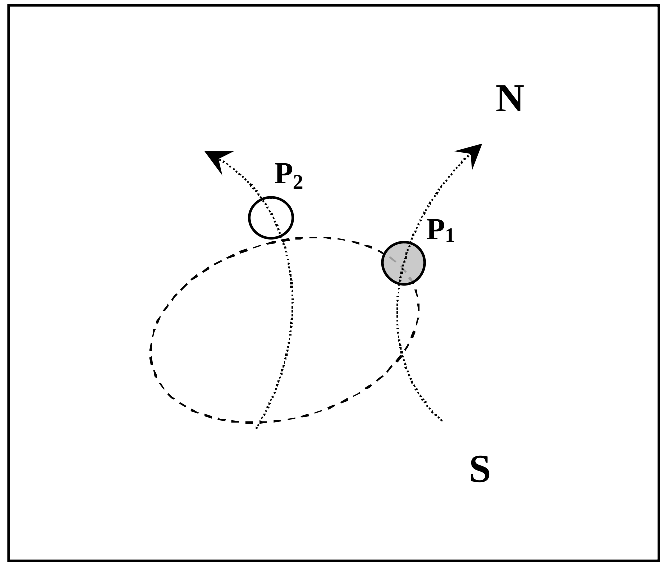

Figure 5.

A spacecraft carries all the different turning motions of the Earth as it travels to the Moon. Accordingly, the craft can put itself into an orbit around the Moon, depending on the craft's position and the force of its thrust. Still, the craft will maintain its orbit around the Earth. In other words, the craft's lunar orbit is separate from its orbit around the Earth. This will create a looping effect with an inconsistent speed as the rocket's lunar orbit alternatively agrees with and opposes its orbit about the Earth. The reason is pretty simple but has nothing to do with a pull from the Moon itself.

A spacecraft can also travel to the outskirts of the solar system, or even beyond. Still, it will carry and maintain its circular motion from the Earth as it moves further from the Sun. However, the angular speed of its northerly curved motion will constantly

[2] A spacecraft may also twist and rotate itself due to radiation drag as it flies near a large planet such as Jupiter.

change as the craft moves away from, and around, the Sun. Again, it might be compared to a car that switches lanes on a big curve in a highway. As a result, the craft will have an unexpected acceleration as it drifts away from the Sun. Space probes, *Pioneer 10* and *Pioneer 11*, have shown this to be true by their unexplained sunward accelerations.

A photon of light emitted from the Earth is just like any other projectile. It carries and maintains the motion of the Earth, but its orbit around the Sun becomes smaller as a photon moves closer to the Sun. Thus, the twisting force of its orbit becomes stronger. The stronger twist creates a gravitational time delay, or what is called the *Shapiro Effect,* as a photon swerves toward the Sun.

Suppose all radiation is emitted in a straight line by force, but also carries and maintains the motion of its source. The faster a star spins the faster and more curved the path of its radiation will be. However, a spinning mass will lose momentum through radiation while its spin is slowed down by the angular impact of radiation from neighboring bodies. The slowing down of its spin may have some unexpected effects.

The Earth's daily spin is completely independent of its orbit, but according to the principles herein, its orbit also has an underlying force-free spin of its own. But suppose the Earth's daily spin loses momentum and is slowed down by the angular impact of radiation from neighboring bodies. The same thing will also cause the underlying spin of its orbit to slow down. The spin will then carry and turn the Earth's underlying straight-line motion more slowly. Consequently, the Earth's orbit will expand or get larger. Now suppose the Earth's daily spin slows down at a constant rate. The rate of its spin will always slow down by one-half in the same given period of time, but the speed of its rotation will slow down at a decreasing rate. The underlying spin of the Earth's orbit will do just the same. This will cause the Earth's orbit to expand at a decreasing rate while the Earth's rotation slows down at a constant rate.

So, the Earth's daily spin will slow down while its orbit around the Sun gets larger. In other words, the days will get longer as the years get longer, too. Yet, this cannot always be detected because a slowing down of the Earth's spin will also reduce the strength of its gravity. An object will then fall more slowly, but a clock set to the Earth's rotation will not detect it. The overall effect is like a *cosmological constant* because everything is truly changing, but seems unchanged with relation to everything else.

Gravity mapping is accomplished by monitoring the distance between two satellites as they orbit the Earth [7]. Slight variations in gravity are thought to move the satellites, but the effects could actually be caused by radiation pressure. Again, all radiation carries and maintains the circular motion of its source. Furthermore, different areas on the Earth's surface will reflect or emit more radiation than others. The high speed *angular* impact of this radiation will change the speed of a satellite according to its direction. On the other hand, dragging effects might also play a part in the overall effect.

Light

Without consideration for its wave form, suppose starlight emits in a straight line due to force (at speed *c*) but also maintains the free circular motion of its source. If this idea is true, then the faster a star rotates, the more curved its light will be. A similar effect takes place due to the orbit of a star. Any curve in the path of starlight will increase its length of travel from emitter to receiver, and the greater the curve becomes, the longer the distance will be. But because any increase in length of travel is proportional to an increase in angular speed, the motion of a star has no effect of the *apparent* speed of its light. Herein, the apparent speed of light refers to the magnitude of its average velocity (total displacement divided by elapsed time). But unlike the emission of light from a star, the emission of light from a source on Earth is in the same rotating inertial frame as the observer. Because of this, the speed of light is constant *c* with reference to the source of emission, but its path of travel is curved due to the Earth's rotation. What is more, any curve in light due to Earth's rotation is affected by the light's direction of travel. The path of an eastward moving light signal is longer and more curved than a westward moving light signal. Thus, the apparent speed of light from a source on Earth is constant only with reference to the fixed nonrotating Earth Centered Inertial (ECI) frame.

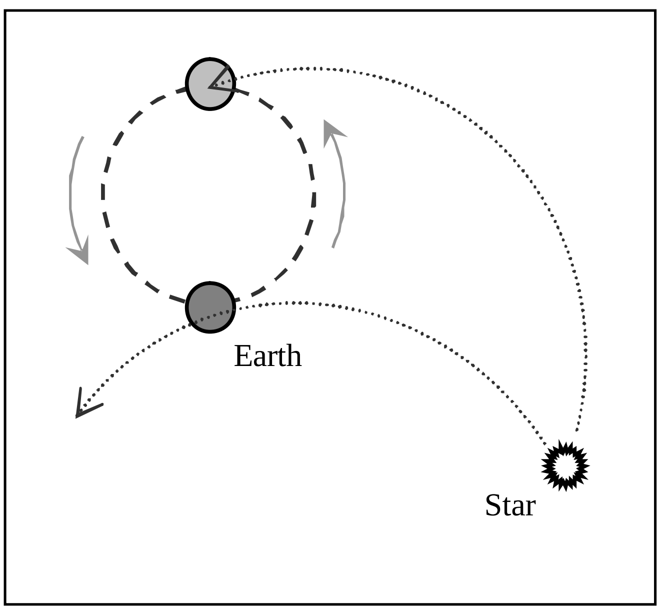

Figure 6.

The Earth is pictured in Fig. 6 at two different points of its orbit. The orbit is shown with a counterclockwise direction, while starlight curves toward the Earth from a distant star. Yet an observer on Earth does not recognize the Earth's motion, but "sees" it as the light's *apparent* motion. Effects of this apparent motion are equal in magnitude but opposite in direction to those of Earth's relative motion. Hence, any curve in the transmission of starlight will seemingly change with reference to Earth so as to maintain the apparent speed of starlight at a constant *c*.

The apparent speed of light can be explained by yet a different scenario. Suppose an eastbound train is parked at a railroad station, and a light source is mounted at the rear of the train. A beam of light is then aimed toward the front of the train. An observer on the train will see the light just as an observer at the station does. And if possible, they would each note the light's apparent speed as *c* relative to the ECI frame. Now suppose the train accelerates to a high rate of speed and fails to stop at the next station. An observer at the station might see the light, but no change in its apparent speed will be noted. The eastbound motion of the train is in effect the same as increasing the rate of the Earth's rotation, and so the motion of the train itself is carried over to the beam of light. Each photon moves faster with the train but with a greater curve in its path. Hence, the apparent speed of light does not change according to an observer at the railroad station. Yet the speed of each photon remains constant relative to the train, while the curved path of light becomes more curved. Subsequently, the apparent speed of light becomes less relative to the train but seems unchanged with reference to a clock on the train. An atomic clock placed on the train runs slow because the curved path of its radiation also becomes more curved, while its apparent speed slows down with reference to the train.

Starlight appears to be bent by the Sun's gravity, but in truth the effect could be caused by refraction from the Sun's atmosphere. Based on the idea of force-free circular motion, radiation from the Sun does not travel in straight lines—but only in curved paths. Furthermore, the Sun's atmosphere is like an optic lens in that it bends the path of starlight. And so does a curve throughout the Sun's atmosphere have the same effect as a curve in an optic lens? If it does, then the solar lens could bend starlight to a greater degree than that predicted by Newtonian physics, and in closer agreement to that predicted by general relativity theory.

The curved path of starlight and other radiation seems to explain a lot about the Universe. A Black Hole is a mysterious dark spot near the center of a star. It is produced by the absence of starlight and caused by a powerful gravitational force. Supposedly, the force will grow on the mass of which it consumes. In agreement, a Black Hole really is the absence of starlight as it curves away from the view of an observer. It is like a blind spot. However, the star is caught up in a vicious cycle of cause and effects. A rapid spin will increase the strength of gravity and make a star compress, while the smaller it gets the faster it spins from the conservation of angular momentum. The smaller and faster it spins, the more its light will curve. Hence, the Black Hole gets bigger as the star gets smaller. But on occasion, things might be discharged from a Black Hole by the rising pressure from within.

Particles seem to pop in and out of existence at the atomic level [8], but the effect might be something like a small Black Hole. Just as with the Earth's orbit, escaping effects will occur at the atomic level. However, they will cause expansion at some points, but compression at others, depending on the direction of a particle's spin in relation to its orbit. Therefore, particles may expand at some points, and then be squeezed out of sight at others.

The operation of an atomic clock will change according to its motion. For example, a clock's path becomes less curved as it moves away from the Earth and into a geostationary orbit. The effects of gravity become weaker, and so the path of its radiation is less curved, and its wavelengths are spread over a longer straight-line distance. In other words, the average velocity of its radiation becomes faster relative to the clock itself. But since the wavelengths also get longer, the clock detects no change in frequency. On the other hand, escaping effects produced by circular motion will constantly change with any change in a clock's motion. Whereby, the expansion and contraction of an atom changes according to its motion. Escaping effects become less from a geostationary orbit, so the atoms of a clock shrink. To be explained later, smaller atoms produce shorter wavelengths of radiation at a higher frequency. A higher frequency makes an atomic clock run fast.

The speed and direction of a clock's orbit will also affect its operation [9]. Escaping effects will change according to the speed and direction of a clock's orbit, so the size of its atoms change as well. As a result, the operation of an eastward moving clock slows down while the operation of westward moving clock speeds up.

The origin of the Universe is most often described by the Big Bang theory. The Big Bang was not an explosion of matter into preexisting space [3]. Instead, it was a cosmic explosion of space itself. New space is thought to be created as the Universe expands and galaxies get further and further apart. Even the wavelengths of light seem to be stretched by it because old starlight has longer wavelengths than newer starlight [10]. Furthermore, the Universe appears to have no center or outside edges.

The Big Bang is a fascinating theory, but there is a much better explanation for everything. For starters, the Universe appears to have no center or outside edges because starlight is curved. The motion of the stars curves it. Starlight circles to the outskirts of the Universe and then circles back. An observer might look to the east and see the backside of everything in the west. Still, it will look much different because the light is from a lot further away and from a different period in time. Secondly, the fabric of space does not stretch light. Space has no fabric. Atoms and everything else are losing momentum through radiation itself. The loss of momentum causes them to shrink and thereby to produce shorter wavelengths of light. All of this will be explained in the following Sections.

The Universe appears to be expanding at an increasing rate, while some sort of funny energy drives the phenomenon [3]. The energy is one of those weird things that must exist in order to justify an observation. On the other hand, the observation could be an illusion. The further starlight travels, the dimmer it gets because photons scatter, or move apart like the spokes of a wheel. But the *curved* path of photons will be longer than expected. It is like having longer spokes on a wheel. This will cause starlight to scatter at a faster rate than predicted. Thus, the brightness of a type Ia supernova is dimmer than predicted [3] and appears further away than it really is. Accordingly, the rate of expansion is actually slowing down. Smaller particles, called neutrinos, also scatter faster than expected as they radiate from the Sun. Consequently, the number of neutrinos passing through the Earth is significantly fewer than predicted [3].

Atoms

The entire Universe might have two perpendicular rotating motions, and so the atom could also have two such motions. They would have been acquired from creation. Suppose this idea to be true. An electron carries two perpendicular orbital motions. The two orbits are similar to the dual spin of the entire Universe. A double spin is pictured in Fig. 3. However, the primary orbit of each electron creates a looping effect as shown in Fig. 2. In addition, the secondary orbit is similar to the first in that it creates a looping effect of its own. And just as with the Universe, the rate of one orbital motion compared to the other is in something like a 2:1 ratio. This dual looping motion will cause electrons to change constantly in both velocity and position. Gyroscopic effects from the dual motion also explain the properties of inertia. A body's momentum is continuously turned 180° so as to resist any change in motion.

A strong force and a weak force seem to exist [9] in the workings of an atom. But in reality, the absorption of particles could be the only interaction to exist. Suppose an electron is like a sponge that absorbs particles at an exceeding rate. For every action, there exists an equal and opposite reaction. An electron might absorb so fast that particles are drawn into it while the electron is drawn toward the particles. The pulling effect of absorption is similar to the pull of a tether, except it will periodically let loose. Particles will sometimes break away from a very rapid spin during absorption. The concept is no different than that of small stones that fly from a rotating carousel. The stones are turned by force, but flee from the carousel when their speed becomes too great. Various particles in the atom might be exchanged and absorbed at different rates, and thereby create different forces.

Basically, a nucleus consists of neutrons and protons. Protons spin as to emit a field of particles, but the field becomes less concentrated as the particles move away from the nucleus. Thus, an electron absorbs particles and is pulled toward the nucleus, while it also bonds with surrounding atoms. Still, the pulling force has no real changing effect on the electron's orbit. It only shifts the *position* of its orbit closer to the nucleus.

The parts of an atom spin with force-free circular motion, but their exchange and absorption of smaller particles creates a number of pulling forces and inertial effects. The pulling force of absorption has the same effect as any other force; it holds the underlying straight-line motion of an absorbed particle at a right angle to the force itself. Hence, the spinning parts of an atom sometimes produce a discharge of radiation. Still, the true nature of the spin remains force-free because the pulling effects of absorption are like those of a ball twirling from a string. The pull of the ball is caused by inertia, while the string pulls back with a force. During absorption, the parts of an atom and their exchange of particles each create a pull of their own from inertia, while exerting force on each other. However, the inertial pull of an electron is not in a straight line. So in essence, an electron pulls itself into a force-free spin. The spin is no ordinary spin. In likeness to its dual orbit, an electron pulls itself into a double spin. The dual spin also has a 2:1 ratio, or thereabouts.

Again, the pulling force of absorption only moves the position of an electron's orbit closer to the nucleus. Its off-center orbit then steers the electron away from the nucleus as it circles about a full 180°. In other words, the absorption rate is not fast enough to cause an atom to collapse. The orbit is always eccentric to the nucleus, and therefore allows for an escape. An electron might then pull and shift its orbit to a neighboring atom.

Protons may try to push or repel one another with their emissions, but they also have a highly concentrated exchange of particles with neutrons. They apparently bond themselves together with a much faster or stronger absorption rate of particles. It is the pulling force of absorption, and a proton's spin that makes a proton emit a field of particles. Electrons absorb the particles and pull themselves toward the field, and subsequently toward the nucleus. However, electrons move away from each other when one electron or another blocks the field. Electrons protected from the field will naturally move away from the nucleus and away from the obstruction as well. Thus, electrons seem to repel one another. Still, electrons might also radiate particles that actually push electrons away from each other.

Referring to Fig. 2, an electron is pictured at six different points of an orbit, P_1 through P_6. In truth, it revolves about an orbit as the orbit shifts about a circular path of its own. This makes the orbit deviate in distance from the nucleus. An electron circles close to the nucleus with a small loop, and then circles out and away from it with a large loop. Furthermore, an electron has a secondary orbit that is perpendicular to the first. Hence, the dual turning motion will cause an electron to spiral about an orbit adjacent to the nucleus. This can be visualized most easily at P_4, and is called a halo orbit [11]. The dual orbit will also cause an electron to curve about in a direction somewhat parallel to the axis of its spin. A wobble is therefore produced by the imbalance of momentum. The wobble makes the emission of photons waver back and forth as to produce different frequencies and wavelengths of light.

The spin of an electron creates a squeezing effect, so the size of an electron is affected by the rate of its spin. Yet, the strength of its spin also depends on the direction of the spin in relation to its orbit. The dual spin of an electron will sometimes agree with the direction of its orbit. The electron will then expand. But at other times, the dual spin will *oppose* the direction of its orbit. The escaping effect is then replaced by a compressing effect, so the electron is squeezed more tightly and made smaller.

With reference to Fig. 2, electrons tend to spin more slowly in the outer orbit (P_4) because the field of particles is more scattered. A slower spin naturally creates a weaker squeezing effect. Yet, a backward spin in relation to its orbit will *increase* the effect. Hence, the net squeeze at P_4 is stronger than that of P_1. Still, the spin at P_4 is too slow to cause a discharge of photons. However, electrons will absorb more particles and spin faster as they move back toward the inner orbit. A faster spin at P_6 will then produce a discharge of photons.

The squeezing effect of its spin will change as the electron gets closer to the nucleus. The electron will try to spin faster at P_1 because it absorbs more particles, but the escaping effect of its orbit becomes very strong. In fact, it gets so strong that it overcomes the spin. The electron will then expand and slow down its spin from the conservation of angular momentum. Thus, no discharge of photons will take place during the inner orbit.

Another event takes place at P_2 as the electron moves back toward the outer orbit. Escaping effects are minimal which helps the electron shrink from the squeeze of its spin. Its spin then becomes very fast from the conservation of angular momentum. At this point, the squeeze of its spin is maximized, but photons are prevented from discharging. The reason can be seen by analogy to the squeeze of a sponge. A very tightly squeezed sponge has no capacity to absorb. Without the pulling force of absorption, straight-line motion is no longer produced by the spin of an electron. An electron might even seem to disappear from what can be called the Black Hole effect. But it reappears in the outer orbit after its spin is slowed down by the angular impact of particles. The speed and direction of an electron's spin will constantly change with reference to its orbit, so the physical size of an electron changes as well.

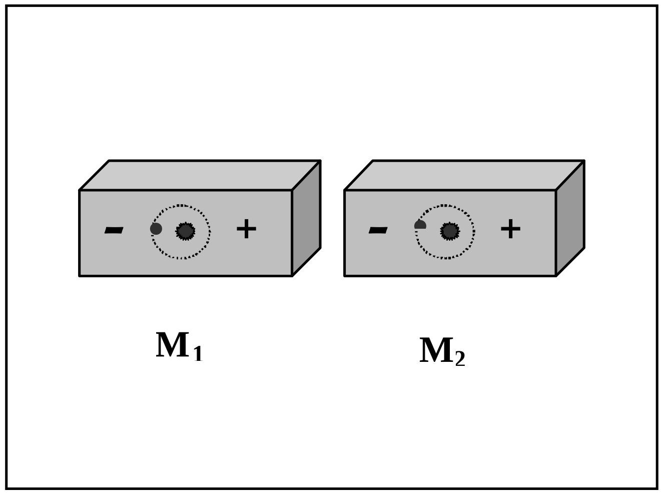

Figure 7.

Atoms typically move about randomly, but suppose the atoms of a magnet have perfectly synchronized orbits. Refer to Fig. 7. It is meant to illustrate a set of magnets, M_1 and M_2, with atoms of similar orientation.

The atoms pictured are very basic while electrons from each magnet are positioned exactly the same as those of its neighboring atoms. The organized flow of radiation creates magnetic lines of force. Opposite ends of the magnets are aligned so as to alternately place electrons from each magnet directly between the protons of one magnet and the other. Therefore, electrons from each magnet will alternately absorb particles from the other, and draw the magnets together. But suppose similar ends of each magnet are aligned. Protons from each magnet will openly face one another at some points, while electrons face one another at other times. Atoms will then bombard one another with radiation and drive the magnets apart.

A simple explanation of the photoelectric effect might be as follows. The process of absorption creates a pulling force, and so the pulling force complies with Newton's Third Law. Photons are absorbed and pulled toward an electron as the electron is pulled toward the photons. Photons are absorbed one at a time, but since they travel in a wave-like pattern, electrons are pulled from "side-to-side" in likeness to the wave pattern. And so when electrons in a metal plate absorb photons from a beam of light, the electrons are pulled from side-to-side according to the frequency of light. At higher frequencies, electrons become unstable and are pulled away, or emitted, from the metal plate.

Intensity (flux) of light has no impact on the photoelectric effect. This is because electrons absorb photons just one at a time regardless of their intensity. The flow of photons will increase with intensity, and so the number of photons absorbed by an electron over a given period of time is greater. But still the photons are absorbed only one at a time. The process of absorption does not get stronger; it is just more continuous with one photon after another. Pulling effects produced by the wave-pattern of light are independent of those produced by an increase in flux. Quite simply, low frequencies of light are not strong enough to pull electrons away from a metal plate no matter how often they pull.

According to Planck's radiation law, radiation power increases proportionally with its frequency. You can see this effect when comparing the light of two electric light bulbs of 50 watt power each with the light of a single 100 watt bulb. Though both settings require the same electric power, the single 100 watt bulb emits brighter light than the two 50 watt bulbs. This is because the temperature (and subsequent frequency) of a 100 watt filament is higher than that of a 50 watt bulb.

Typically speaking, the brightness (intensity) of light is determined by its flux. Flux is the rate of flow of energy, and the energy of light comes from momentum. Momentum is the product of mass and velocity ($\mathbf{M}=m\mathbf{v}$). An increase in flux comes with an increase in the flow of photons. Photons have mass, and so the end result of more photons is more mass. An increase in mass (flux) leads to an increase in momentum (energy), and so the brightness of light becomes more intense (brighter).

Momentum not only depends on mass, but also on velocity. The rate of change (velocity) in the wave pattern of light is affected by its frequency. Again, the frequency of light is produced by the wobble of its emitter. The wobble has momentum, and so the faster an electron wobbles the greater its momentum. Momentum is never lost with a discharge of photons—it is conserved. Momentum is transferred from the emitter of photons to a receiver of photons via the wave-pattern of light. A receiver absorbs photons, and is therefore pulled from side-to-side according to the wave-pattern of light. The side-to-side pulling effects become faster with any increase in frequency. In other words, higher frequencies of light produce higher rates of change (velocity) during the absorption of photons. Higher rates of change (velocity) produce an increase of momentum, and so the intensity of light increases proportionally.

In summary, the intensity (brightness) of light is a function of its momentum (energy). Momentum is the product of mass and velocity, while velocity is the rate of change. As a result, the intensity of light can be increased either by its flux (mass) or by its frequency as determined by its rate of change (velocity).

The Earth is believed to have an iron core from which a magnetic field originates. Presumably, its inner core is solid, while the outer core is liquid. Now suppose the Earth rotates while it also moves in a northerly curved direction. The northerly curved motion will cause the Earth to wobble as it spins. But the Earth's inner core is like a gyroscope that spins and wobbles independently within a liquid outer core. Thus, the inner core will have a separate and distinct wobble of its own, so a compass needle points other than due north.

Creation

Suppose at some point in time there was only but one mass, for it contained all the matter in the Universe. For good reason, this body can be called the *Big Mass*. The Big Mass had two force-free rotating motions that were each perpendicular to the other. Yet, one spin was faster than the other, as with a 2:1 ratio. The effects of gravity squeezed the mass very tightly while the tighter it got the faster it rotated. Again, this idea is pictured in Fig. 3. The increase in speed was caused by the conservation of angular momentum. This ever increasing and dual spinning motion is called the *Big Spin*. The primary spin, which was the faster of the two, can be described as an east to west rotation, or a horizontal spin. Its direction was like that of our galaxy while the Earth spins and revolves in the opposite direction. A second and slower spin then turned the first spin top over bottom as with a flipping motion. It can be described as a north and south rotation, or a vertical spin. The escalating effects of gravity produced a *Big Force* similar to that of a tight squeeze on a rubber ball. At first, gyroscopic effects shook the mass and brought about an even distribution of matter. But afterwards, the effects grew stronger and eventually put a drag on the Big Spin. Gravity then lost its grip while everything got a big push from decompression. The Big Mass quickly inflated and exploded into preexisting space. The big push was incredibly fast, but the Big Spin continued throughout creation.

Big chunks of matter moved outward as they turned and followed the dual spinning motion. Furthermore, inflation caused the outer mass to move away from the center at a faster rate than those areas closer to the center. Hence, everything now moves apart and away from each other in all directions. But since the horizontal spin was faster than the vertical spin, the two squeezing effects were not the same. Thus, inflation was not balanced, nor did the Universe expand into a perfectly shaped sphere. Instead, it is somewhat flattened by its slower north and south vertical spin. But at some point, a hole could be left where the mass first exploded, so the Universe might be shaped like a donut. Someday, the rate of expansion will slow down and stop as all things circle back toward the center of mass. The contraction rate will continuously increase and create what can be called the *Big Squeeze*. During the Big Squeeze, everything will compress very tightly into a singular rotating mass. The whole event will then start over with a *Big Bounce* as the mass explodes into a brand new world.

Each consecutive world is almost identical to the previous world because the cause stays nearly the same. It has the same mass with the same motion and the same force, so the effects are basically the same. However, evolution takes place very slowly over the course of many worlds. It would occur in very small and gradual steps, while each step might happen only by chance. By chance, an effect has no apparent cause. A phenomenon as such can actually take place because force-free circular motion has no cause itself. It has existed forever. The effects of something with no cause of its own might reflect a similar condition.

In reality, the Big Bounce caused a series of explosions in very rapid succession. The first and second stages (and possibly more) were caused by decompression. The Big Mass quickly inflated and blew itself into big chunks. Still, the chunks followed the Big Spin while massive heat from radiation was released from them. Radiation was emitted in a straight line by force, but each body moved in a curved path caused by inertia. Wherefore, the big chunks were spun by the push of their emissions. The chunks would each become a group of galaxies for their inflation went on to blow themselves into smaller chunks. The smaller chunks also released radiation that made them spin.

Spinning chunks of matter were now scattered throughout space while curving in two different directions. The dual spin caused everything to be tipped and turned in all different directions, just as galaxies are today. The independent spin of each body somewhat agreed with the much faster horizontal spin of the Universe, while the slower north and south vertical spin made them wobble. Again, the wobble was caused by an imbalance of momentum. The Big Bounce and its push were nearly done when the internal pressure of heat blew the smaller chunks completely apart. This type of thermal explosion was much weaker or less intense than those caused by inflation. It simply pushed all the particles of a spinning mass into various orbits around a common center of rotation. Therefore, the smaller chunks of matter were blown into rotating clouds of dust and gas. Particles from within the clouds would eventually cluster together as to form the stars of a galaxy.

A thermal explosion will push the inner most parts of a rotating mass to the outer most parameters of a newly formed cloud of dust and gas. In other words, a body will turn itself inside out as it explodes into a much larger, but more dispersed cloud of particles. Yet, gravitational effects from the cloud's rotation will draw everything back toward the center of rotation. A cloud as such becomes very dense, and so its particles begin to clash with one another. And since the cloud originates from a body that turns itself inside out, its outer circumference moves more slowly than its center. The difference in their angular speeds will cause the collision of particles to whirl about in the opposite direction of the cloud's rotation. Subsequently, huge balls of dust and gas are created with a spin *opposite* to that of a galaxy. Our Sun is one of them.

The explosion of a spinning mass often creates a spiral pattern as particles move out and away from the center of rotation. The linear speed of rotation does not change as the particles are pushed into larger orbits. It just takes longer to complete a full circle of travel. Accordingly, everything trails behind the center of rotation. This will cause the veins of a galaxy to point away from the direction of its spin. But why do the veins—or the bars—of a galaxy exist?

Prior to its explosion, the original Big Mass of creation underwent very rapid inflation. During inflation, the Big Mass expanded outward from its center in all directions. Yet if looking at just a small piece of the whole (other than its center), expansion was predominately in just one direction. So when the Big Mass exploded, each smaller piece of the whole went on to expand just as it was. Thus, a small piece of the whole did not expand equally in all directions. Primary, each piece expanded laterally, or lengthwise, so as to elongate itself. So when the internal pressure of heat blew the fragments apart, the strength of impact was affected by its direction. Along the main course of inflation, the effects were diminished to some degree. Inflation caused a body to expand lengthwise, and so the force of a thermal explosion had less impact in that direction. Hence, particles of dust and gas were propelled most abundantly in directions perpendicular to that of inflation. Accordingly, the number of stars along the line of inflation is few and far between, and the bars of a spiral galaxy coincide with a direction perpendicular to inflation.

Indeed, a thermal explosion may turn a body inside out, but the effects depend on the speed of a body's inflation. However, the rate at which a body inflates depends on the force of its compression. And the degree of its compression depends on where a body originates from within the Big Mass as a whole. A body might be from deep within the Big Mass, or it may come from its outermost parameters. As a result, different shapes of galaxies are produced according to their inflation rates.

But at least one galaxy has been found that is curiously different [12]. The veins of its spiral pattern point toward the direction of its spin. The cause may have been a delayed thermal explosion, or the total lack of it. Inflation does not cause the outer parts of a rotating body to trail behind its center because the body is physically whole. Yet, a rotating body could have inflated to the point of its annihilation. Still, particles from the aftermath may have clustered together while gravity pulled everything inward, so the outer edges are now moving ahead of the center. Thus, the spiral pattern appears to be backwards.

In summary, particles from a rotating cloud of dust and gas clash together, so as to form rotating balls of the same. Newly formed bodies are then compressed by their spins, while their spins grow faster from the conservation of angular momentum. Faster spins also cause wobbling effects to subside.

Rising pressure from escalating effects of heat and gravity might cause a new body to explode, but pressure is often released as if from huge volcanoes. Particles from within a spinning mass might also be separated according to weight, just as water and oil separate. Thus, commonly collected gas and other matter is discharged with a release of pressure. A big ball of gas then becomes a parent and the discharge is an offspring. Basically, offsprings are fired into space like cannon balls. Some may fall back to their parent, but others are launched into orbits while a massive discharge of radiation makes them spin. The spin will then squeeze a body into a ball of gas, or some kind of solid material. Collisions might also occur which may cause some offsprings to be turned sideways, or upside down, with reference to their orbits.

Any force that pushes an offspring away from its parent is like that of a cannon in free space. It pushes an offspring away from its parent as it pushes the parent away from its offspring. This will cause a parent body to have an off-center rotation that might be seen as a wobble. Mistakenly, the wobble is normally attributed to some sort of attraction between a parent body and its offspring.

Rising temperature from the escalating effects of gravity eventually ignited the huge balls of gas. Stars were born. Some offsprings also became stars while others became planets that revolve around a Sun. The Earth is one of them.

The Earth's rotation and the effects of gravity are constantly changing. Among other reasons, the Earth's daily spin is slowed down by the angular impact of radiation from neighboring bodies. A slower spin creates a loss of gravity, but a clock set to the Earth's rotation detects no change at all. Hence, a day gets longer but remains 24 hours in time. The Earth's wobble and the size of its orbit are also changing, but it might not always be detected because our references of space and time change accordingly. Constantly changing but unnoticed effects of this kind help to explain many things about the cosmos.

Just as with the Earth, a star's rotation slows down and cuts back on the strength of its gravity. The internal pressure of heat may overcome its gravity and cause a star to expand, or even to explode. Still, a star may simply shrink if it depletes its supply of hydrogen gas fast enough. The relative speed of light will change along with the rotation of a star, but a different spin will add a different curve to its light. Wherefore, the apparent speed of light remains constant.

Our Sun is nothing but a big ball of hot rotating gas [3], but it takes 25 days for it to rotate one time at the equator while it takes 35 days to rotate at the poles. So why the big difference in its rotational speed? Hydrogen gas is burned on the surface of the Sun as huge streams of fuel flow outward from its inner core. The Sun's inner core is closer to the center of rotation, so its linear speed should be of the very least.

Gravity is produced by the Sun's rotation just as it is by the Earth's rotation. Wherefore, the strength of gravity is weaker at the poles than at the equator. Remember, it is only the *apparent* strength of gravity that is consistent. This means that the internal pressure of heat will push fresh fuel most easily from the poles. It then migrates across the surface of the Sun, but inertia will fight change as the fuel's low velocity blends with that of the surface gas. It will make swirls and turbulence in the ocean of gas as it flows toward the equator. Sunlight emitted from the swirls will be more curved and subsequently more widely dispersed. Hence, the swirls will look like dark spots on the Sun. Moreover, the heavy concentration of fresh fuel will slow everything down at the poles, but it will gain momentum as it spreads across the Sun. Thus, the poles rotate more slowly than the equator.

Just as with the Earth's rotation, escaping effects on the Sun can be likened to a roller coaster. Passengers float in their seats during a rapid descent because their car moves away from them as they fall. But suppose the car is lifted from its track. Passengers would then be pressed back into their seats. Internal pressure from the Sun's heat will cause the same effect.

The Sun expands from the pressure of heat as everything is pushed outward from its center. Therefore, escaping effects are reduced like those of a roller coaster lifted from its track. Gravity will oppose the pressure, but with more strength at the equator than at the poles. Consequently, pressure might create a bulge at the equator as fuel is stopped from rising to the surface. It was force like this (but much greater) that once propelled planets from the Sun's equator.

A binary star system consists of two stars that orbit a common center point [3]. One is the parent and the other is an offspring. Each star's rotation and orbit curves starlight differently. Light from a point in a star's rotation that agrees with the direction of its orbit will have a different speed and curvature than light from an opposing direction. The speed and curvature of light maintains average velocity *c*, and therefore allows for a true perception of the stars.

Radiation from a star is emitted straight out from its atoms by force (at speed *c*), but carries a curve from the spin of the star itself. All celestial bodies produce radiation while their radiation carries momentum. Accordingly, all bodies lose momentum through radiation, and their spins are slowed down by the angular impact of radiation from neighboring bodies. Still, everything was originally spun by the massive release of radiation during creation. Most of that radiation now circles about the Universe, but will return in time to help push and spin everything back together as it once was. All radiation from the beginning of creation will be back someday for another Big Squeeze. This radiation is called the cosmic microwave background [3].

The spin of a star slows down with a loss of momentum, and cuts back on the strength of its gravity. However, the escaping effect of its spin becomes less with reference to atoms within the star itself. This will increase the effects of gravity within the atoms. The spinning parts of an atom will then be squeezed more tightly while electrons fall closer to the nucleus. Atoms will therefore shrink while their inner parts spin faster from the conservation of angular momentum. Electrons will also wobble faster as they spin faster, but the wobbles will be less intense. As a result, the wavelengths of newer light are shorter than those of older light.

In truth, the essence of time is never changed by speed or by anything else. Time is nothing but a reference to change, or a value set on the duration between two events. Yet, any gauge for time is sensitive to the slowing down of the Earth's rotation. Moreover, the Earth's orbit is growing right along with the length of a day, so the length of a year is growing, too. And since our reference of time slows down, it might always take about 8 minutes for light to travel from the Sun to the Earth. Again, this phenomenon is like a cosmological constant. Thus, we have no reliable reference of time. This makes the results of radioactive dating and the historical time line of the Universe very obscured. A radioactive material's rate of decay is measured by its half-life, but a half-life is not a truly accurate measure of time. A year was once much shorter than it is today, so the rate of radioactive decay is faster than we detect.

Gravity is very intense near the center of a galaxy. Orbits are much shorter in length and time, whereas the imbalance of momentum is very strong. Wherefore, a star may shift its orbit as to turn itself toward the center of a galaxy where a supernova and a Black Hole reside. Massive radiation from the supernova will curve and impact the falling star so as to reduce the speed of its rotation. Subsequently, escaping effects from within the atoms of the star become less. Thus, atoms of the falling star will get smaller. In other words, the squeezing effect of gravity from within the atoms of the star will increase and cause the atoms to shrink. The conservation of angular momentum will then make their parts spin faster. The parts will naturally have less wobble, but the diminished wobbles will be much faster. Consequently, an observer might see a burst of gamma rays when the star shrinks [13] and disappears into the Black Hole.

Escaping effects were very strong during creation because orbits were smaller and much more curved. Accordingly, the force of a body's spin was weakened by its orbit, but became stronger as the orbit grew larger. Yet, if a body's spin slows down at a constant rate, its orbit will expand at a decreasing rate. Hence, the strength of gravity changes over time, but the rate of change is not constant. The rate has various highs and lows. The effects of an expanding orbit may exceed those of a body's spin at some points, while the effects of a slower spin overcome those of expansion at other times.

Dinosaurs roamed the Earth during rapid expansion of the Earth's orbit. Its orbit grew larger while effects of the Earth's gravity became stronger. Escalating pressure from inside the Earth may have caused volcanoes to erupt in vast numbers, so the ash produced may have killed the dinosaurs. Yet, a large gain in gravity may have stopped dinosaurs from reproducing. They were simply too big and too heavy.

Once again, if the Earth's rotation slows down at a constant rate, its orbit will expand at a decreasing rate. Thus, gravity would have increased at a decreasing rate before it began to subside. This would have cut back on the frequency of volcanoes. Regardless, a loss of gravity is not detected because our standards of weight and time change accordingly. The mechanical weight of a clock remains balanced, but the clock shrinks so as to make it run fast. Electric clocks speed up as well because atoms get smaller, but faster. The acceleration of gravity will get slower, but our reference of time will mask the change. Yet, the effects of gravity might be unfair to athletes. Over time, world records in running speed, jumping height, and throwing distance are more easily broken.

Evolution

The Universe may not have always been as orderly as it now seems. Each world is a little more organized than the previous world. Wherefore, the Universe might not be recognized if looking far back into time. Many worlds ago, it may have been in total chaos. It was only through the course of infinite time that particles clashed together and formed into the Big Mass of which we call the Universe. Yet, the more organized it becomes, the less change it may incur.

The world is made in perfect likeness to its cause. The cause was a powerful, rotating force with no apparent beginning. Subsequently, everything whirls about in circular motion. It might seem intelligent, but the force may actually do its work through logistics and probabilities. But how can this possibly be? The chance for life to originate spontaneously and to evolve without direction seems to be outrageously small. In fact, the odds appear so small that it can mathematically be dismissed as never happening. However, a true picture of the Universe brings about a much better understanding of everything.

The Universe can now be thought of as a never-ending cycle of small worlds, for it repeats itself eternally. Thus, life may have evolved very slowly over the course of many worlds. Evolution is like throwing a handful of dice in trying to roll all sixes. The odds are very low on the first try, but they become greater as the dice are rolled again and again. Yet, the chance of rolling all sixes becomes a near certainty if each six rolled is left standing, and only the remaining dice are tossed with each consecutive roll.

A Big Force created this world and makes everything happen as it does, but it follows the path of least resistance. Evolutionists believe that life originated from an ocean of organic soup. The soup contained all the necessary building blocks for life. Still, life may not have existed for a vast number of worlds. It started only by chance at some point in time, but even then it may not have reproduced or survived. It may have taken the course of not only one world, but many worlds for life to adapt to the Earth's environment. Typically, force takes the same path from one world to the next unless one just happens to occur with less resistance. Less resistance usually means greater compatibility, so everything tends to improve and get better. But when something is continuously improved upon, it becomes increasingly more difficult to make better. Hence, very little change will occur as we see it today. Each world is nearly a carbon copy of the previous world, and life is recreated via the same chain of cause and effects. Whereas, each world serves as a blue print for the following world, and life is recreated as if by intelligence.

Conclusion

Trouble with Newton's First Law is plain to see, and with it comes a radical change in physics—the possibility of a rotating inertial frame of reference. By such means, a body's momentum is carried and turned by a force-free spin from the body itself. In consideration of Occam's Razor—what could be simpler? Everything just moves about the Universe according to a proper understanding of motion, and the original idea of gravity goes to the wayside. Indeed, this idea can change most everything in physics, and it just might be the change we are looking for. Another point made by Smolin is this: "Good ideas are not taken seriously enough when they come from people of low status in the academic world; conversely, the ideas of high status people are often taken too seriously." And so is the foundation of all physical theories based on Newton's Law—or Newton's Flaw?

Definitions

Apparent speed is the magnitude of average velocity (total displacement divided by elapsed time).

Average speed is not the same as apparent speed. Average speed is found by dividing total distance by the elapsed time.

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