Gravity Does Not Exist

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First, I am not a physicist and my education in physics is nearly nil. This discussion is based on my own rudimentary knowledge and meditations. So, I should begin with apologies to the current establishment of physicists and all that they do. Their approach to the development and stewardship of knowledge is sound. And to Einstein and Feynman, well... I am but a small spec in the last row of the audience of their show. C'est la vie.

Developing Knowledge

I say that the methodology of physicists regarding knowledge is right and proper. This is worth some explanation. I am comparing and contrasting with social sciences and, most specifically, with sociology and education. Psychology, for example, probably does a great deal better in terms of following the Socratic method and ensuring some integrity in what is thought to be truths and foundational principles, etc. Education must surely be the worst. Educators think they know things, that they have discovered the nature of learning and the methodologies for teaching and the managerial principles for carrying out that mission. But, in fact, they barely have an ever-fluctuating set of guesses, fads, notions and ideological superstitions. The result, instead of a steadily growing and strengthening process of learning for America's youth, is an ever-fluctuating level and even deterioration of educational progress and waning expertise.

Physics, however, has steadily progressed for hundreds of years. Knowledge has positively increased and the advancements of key physicists are well-documented. Mainly, they ask questions. They ask questions without the presumption of ignorance or the fear of reprisal for challenging established ideas. I'm speaking of modern times rather than the rebel fortitude of Galileo and price he had to pay to expand our knowledge. Physicists explore and share their ideas and work to develop theories some of which may seem impossible to many. They work to build on what had been

established in earlier generations. But, with theories tested and experiments recorded, new knowledge can evolve incrementally as the discipline of physics has proven many times over. Education, by contrast, cycles through a seemingly endless series of fads, trends and fashions - unproven notions perpetuated by the superstitious, unscientific and biased practitioners. I say this because they no longer ask real questions, maintain inquiring minds and instead profess an unwarranted confidence and self-assurance. Yet, American education yields an ever lower literacy rate, loss of standing compared with other countries and an increasing population of American youth who know nothing of their own country, culture and history. All this even in the face of professionals who claim greater understanding of learning and greater confidence in their methods. Physics, as a discipline, and science in general, provide a more classic and infinitely more sound model of how knowledge can be developed. It is critical to continue to ask questions and recognize how something is unknown and often how something cannot be known given the proofs available.

Physics

The many years have provided, as I understand it, a fairly substantial understanding of three forces in nature. Furthermore, it is also known that the three forces explains everything with the exception of gravity - which remains elusive. One of the primary quests in physics, therefore, is to find a particle or a tangible component of gravitational force that would complete and hopefully unify the understanding of nature's forces.

One explanation of the function of gravity is through particles - subatomic particles - that serve as the communication of gravitational force from one object to another. That is, the attraction of one objection (B) by another (A) is applied as A sends a particle - a graviton (perhaps) - to B to somehow draw upon it, to pull it, to attract it in some fashion so a gravitational attraction is realized.

Whether the so-called "God" particle is in fact this singular element of gravity or some other unifying sub-atomic element is a preoccupation of physicists. Apparently, it is elusive, mystical, and, in any event, still completely hidden as no one has discovered any trace of it.

The 3 Forces

The 3 forces that are identified include the Weak Nuclear Force. The weak force, while it seems to be fairly well understood among physicists and has even been observed, is the least understood for me. The forces of nuclear fission, atomic particle decay (like the loss of neutrons from a heavy element such as Uranium 235) are governed by the weak nuclear force.

On the other hand, the Strong Nuclear Force is more intuitive for me. The constituent parts of an atom, for example, - the protons and neutrons - do in fact hold together. They do bind together and the Strong Force keeps them together. There would be no building blocks of the universe without them. The hydrogen atom could not exist without the Strong Force that binds even the singular proton and neutron together. High speed particle accelerators - super colliders - have smashed these tiny atomic pieces to find the smaller sub-atomic particles and explore the forces that make them what they are.

Electromagnetism includes the interaction of charged particles - electrical and magnetic forces - making up the 3rd of the known forces of nature. It works across both long and short distances and includes electrons, photons, etc. Light and heat are phenomena of electromagnetic energy and seems to me to be the most tangible and corporeal of the three forces. Shining a flashlight, watching television, talking on a phone or just seeing a sunny day all provide obvious examples of the electromagnetic force.

Gravity

Gravity is, for physicists, the elusive "force." I put it in quotes because I am not convinced that it is in fact a force, per se. They have not discovered a graviton. They have not found a gravitational particle - that thing which presumably conveys to object B that it is to be attracted to object A.

Nevertheless, a phenomenon obviously exists. The old fable of an apple falling on Isaac Newton to spawn the discovery of gravity is something we experience every day. Certainly, gravity - as a phenomenon - does exist. We are held to the Earth which is, in turn, held to the Sun, none of which go flying off in to space to find new random paths.

Gravity has been described as a force across distance. This is, object A must presumably convey in some manner, must communicate in some way across distance to reach object B that it is to be attracted to and drawn back to object A. How does the Sun communicate to the Earth that it is to stay close by and not go off on its own? What is the nature of and energy level of that force such that it seems to balance perfectly the inertial tendency of the Earth to continue outward along a straight line leaving the solar system behind? Of course, that same phenomenon plays itself out with Pluto, Haley's comet and all the other parts of the solar system just as the Sun is held within the grasp of the Milky Way galaxy.

One must also understand that the gravitational force - the gravitational "effect" - is shared between the two objects, A and B. That is, not only does the Sun attract the Earth but the Earth attracts the Sun. In fact, an orbiting planet can and does make the host star wobble or shudder to balance the mass of the two bodies. The star is not a perfect, unwavering anchor around which a planet travels. Instead, the two together, bound by gravity (whatever that is), act as a single unit both traveling around each other. It is, of course, severely lopsided as the huge mass of the star far exceeds the relatively light weight planetary object. So, the star has a small wobble while the planet swings widely around the large mass. But, the total mass of the two objects balance around a focal point around which both objects move.

So, what holds them together? That's where the concept of a force comes in and, in physics, the notion of a communicating particle through which that force is applied (or carried). I imagine a kind of test case - a simplified model. Imagine a universe in which only one single object exists. It sits, or floats, serenely in a kind of stationary existence unaffected by any outside force. Now add another such object into that universe, perhaps at some distance away. Gravity suggests that both of the objects

will be disturbed by the existence of the other. Both object, A and B, will be attracted to each other both affected by a mutual gravitational pull.

The Graviton

While the big question is about how this works or by what mechanism such attraction is executed, it must occur across a distance. Regardless of the distance, whether 1 mile or a thousand light years, the distance must somehow be covered or transversed by that mechanism. That mechanism is commonly thought to be a graviton - a theoretical particle of gravity.

But, since nothing can move faster than light, it suggests that gravity cannot affect things at a distance sooner than the rate that might be travelled by light. Knowing, for example, that light can take thousands of years to reach us from distant stars, it suggests that, if a given star were suddenly to cease to exist, it would not affect us gravitationally for perhaps thousands of years. Even on our own smaller scale, being 8 minutes from our own star, it suggests that we are affected - pulled or attracted - always with an 8 minute delay.

In our sample model, with A and B as the only two objects in the universe at 1 light year apart, it would stand to reason that adding the second object B into the universe would leave object A undisturbed for a full year. In spite of the logic, this seems contrary to my intuitive notion of how the universe would work.

One can further explore this model of interaction. For example, how does object A know where object B is located in order to communicate directly and specifically with it? The notion of a force using particle communication seems to presume that such particles are continually and perpetually emitted in all possible directions so that one coincidental path happens upon the new arrival, object B, to execute the gravitational attraction. This too seems counter intuitive.

We know that objects can and do exist for billions of years. Consider that object A might be alone in our imaginary universe, undisturbed and serenely waiting for 10 billion years before the arrival of object B, one light year away. So, the particle

communication concept - gravitational force at a distance - suggests that object A is emitting gravitons (for lack of a better term) in all possible directions 3 dimensionally, continuously for 10 billion years before finding the new arrival of object B.

This suggests that object A has a virtually unlimited supply of gravitons, assuming such gravity particles exist. How many gravitons must reach object B in order to be effective? One? Is there a difference in the gravitational attraction when an object receives billions of gravitons from its caller versus merely receiving one. Even without considering the dissipation, disbursement and thinning of such emissions over distance, this unlimited supply and continual emission in all possible directions virtually forever all seem counter-intuitive as well.

Alternative Gravity

This paper suggests instead that there is no graviton. There is essentially no such thing as gravity in that traditional sense. Gravity is not a force, per se. It will not be discovered in the traditional sense. There is no elusive particle waiting to be found.

I'm not suggesting that there is no "God" particle, something that would unify all of the forces into one cohesive theory of nature. Like **E-MC^2** has an elegance in that it captures and represents the general theory of relativity, such a singular representation of the forces of nature is desired and sought. Such a unification may exist and a discovery may yet be made. But, it will not include gravity where gravity is not one of the forces. In that sense, gravity does not exist.

But, of course, the phenomenon of gravity certainly does exist. Dropping a pencil, it will surely hit the floor. Loosing forward thrust in a plane will certainly bring you back down inevitably to land or crash. We have all experienced the difficulty lifting and carrying heavy loads. We step onto the scales daily to apply a numeric quantification to our dietary excess. We use science to develop new lighter-weight materials without sacrificing structural integrity. The planet really does continue to orbit our star which remains a faithful member of the Milky Way.

So, what is this thing called gravity if not a "force" in the usual particle communication sense? I suggest that the universe is a kind of container. A box? A bag? A large vat? It seems impossible to suggest a proper metaphor that fairly represents the enormity and the flexibility of the real thing. But, I suggest that the universe, as a container, has a character about it. That it is a real thing as compared to a non-existent thing or a nothingness.

We speak of space as empty except where objects exist. We speak of space as a lot of nothingness in which there are a lot of things - planets, stars, rocks, etc. But, the common notion is that space itself is a kind of nothingness. I would suggest that it is not a nothingness; that it is, instead, a real container and has a kind of character about it. Of course, the full character or nature of space itself is not at all well-understood and therein lies yet another quest for physics.

But, I suggest that space is pliable, flexible, even malleable. It responds to the presence of mass. That is, mass - any mass - will bend or shape space to accommodate its presence in the container. Even the theory of general relativity suggests a curvature of spacetime around mass - that the structure of space is not uniform and constant and indeed curves around objects.

This should not be all that confusing and, indeed, seems to me to be more intuitively comfortable than the emission and receipt of graviton particles communicating the mechanism of attraction. The best analogy I have conceived so far - and it is admittedly weak at best - is that of a large swimming pool filled with water. The universe (the 3 dimensional body of water) contains a single ball floating at one end of the pool (object A). In the absence of wind or other seismic influence, the water is serine and the ball is undisturbed. Adding a ball of some large mass into the water at the opposite end of the pool will naturally cause the water to rise. The first ball (A) naturally rises with the water level. This is not because object B (the large mass ball) sends a message to the first ball. Object A (the first ball) is affected because the container itself is affected. The body of water itself now has a slightly different shape, a different dimension, and the first ball "rides" in that evolving dimension.

Another analogy, which has been suggested often, is more 2 dimensional but serves well-enough. Imagine a kind of rubber sheet suspended above the ground. Placing a steel ball on the sheet will naturally cause a depression. The heavy mass bends and shapes the sheet and bends it around the ball. Attempting to roll a marble or something in a straight light will find it curving around the depression caused by the first heavy ball. It is a natural curvature in the rubber sheet which acts as the container - the universe - for the two balls.

In our imaginary two-object universe suggested earlier, object A does indeed bend and shape the universe container to accommodate its own existence not unlike the 2 dimensional rubber sheet. But, until object B is added, it remains undisturbed content in its own equilibrium. Once object B is added, even one light year away, object A is indeed disturbed. But, it is disturbed immediately not waiting for communication at a distance. It is disturbed because the container itself has changed. Like the water in the pool, planet A rides along on the slope or curve of its universe container. Like adding a second ball bearing to the rubber sheet, the first will roll down its 2 dimensional slope toward the second.

To continue the rubber sheet analogy, the two ball bearings roll toward each other not because they are attracted to each other but because the shape of their container demands it. Indeed, if there were a third even larger and heavier object on the rubber sheet both objects A and B would roll toward the larger object C as its mass has caused an even greater depression, a larger disruption in the otherwise uniform container.

It is not a difficult notion to conceive, that it is the shape and character of the universe itself that creates gravitational phenomena. That is, we are not attracted to the earth by gravity where the two masses involved - my body and the planet - each emit graviton particles communicating an attraction for each to pull together. Instead, we are essentially falling into the 3 dimensional depression caused by the great mass of the earth in our otherwise uniform container.

The space around us - the universe in our local region - has a lot of depressions in it caused by all sorts of objects. From the Sun to each individual planet along with every

asteroid or tiny space rock, each object disturbs the surface or character of the space around it creating a kind of 3 dimensional depression into which all other things are drawn. Each object creates a disturbance consistent with its mass which dissipates to ever smaller degrees over distance without ever disappearing completely.

There are no gravitons communicating anything nor being emitted and received anywhere. Gravity in that sense is not a force. It is not a particle. It does not exist in that sense. Gravity is an experience of the deformity of space - our universe container - caused by and correlated directly with the mass it contains. So, gravity is not a force, it is just the shape of the container.

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