The Big Bash Alternative Model of the Universe

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Abstract

Evidence of the big bang is overwhelming and researchers pinpoint that event at 13.8 billion years ago. Yet, they also find much older objects, inclining one to believe the big bang is but a local event in a grander universe. This perspective sheds amazing light on the log jam of mysteries incongruent with the current standard model.

The Inflationary Hot Big Bang model is based on the premise the big bang created the universe. There is growing evidence, however, that is inconsistent with that model and researchers would prefer one that is more coherent and cohesive.

This paper presents an unexamined model that more logically explains mysteries challenging the current model. These mysteries include: structures older than the big bang and too massive to exist in current theory; dark energy; big bang origin; ultimate outcome of the big bang's expansion; disparity between matter and antimatter; causes of microwave background texture; optimal anthropic conditions; genesis of early stars and galaxies; dark matter; and explaining cosmic gravity's relationship with quantum mechanics.

The amalgamation of this evidence leads one to conclude we live in a steady-state universe that naturally grows ultra massive singularities which eventually collide to produce big bangs.

Introduction

The goal of the Inflationary hot big bang model is to determine how the big bang gave rise to our universe[1]. That model, with its adjustments and updates, has prevailed for three decades and is now broadly accepted as the standard model or "concordance model" of the universe; with the word "concordance" implying the model is in agreement with evidence researchers have presented.

While it was not unreasonable to initially assume the big bang marked the birth of the universe; researchers find a growing body of evidence that the universe is much older than the 13.8 billion year age of the big bang. The concordance model ignores this evidence and deploys several "supernatural" behaviors that have never been proven and are creating a growing list of dissenters among serious physicists.

A.K. Lal's paper, "Big Bang? A Critical Review", focuses on research covering Great Walls and Great Voids that take five to twenty times longer to form than the age of the big bang[2]. And the Sloan Digital Sky Survey consortium continues to produce sky maps and a database that researchers are mining to reveal more comprehensive pictures of these great structures[3,10,11]. Some structures are much larger than the theoretical limit of any mass the big bang is capable of generating[17].

In their extensive analysis of the makeup of local galaxies, P.J.E. Peebles & Adi Nusser conclude that while the relativistic Big Bang theory provides a good description of our expanding universe, observed properties of nearby galaxies "suggest that a better theory would describe a mechanism by which matter is more rapidly gathered into galaxies and groups of galaxies[4]."

In 2004, 34 scientists endorsed "An Open Letter to the Scientific Community", complaining about "fudge factors" plugged into big bang theory in order to explain findings that are in great discord with the "concordance model"[5]. They published that letter in the May 22, 2004 edition of *New Scientist* and announced the formation of an Alternative Cosmology Group. Hundreds of scientists and institutions have since joined the ACG's endorsement of that open letter.

While authors of the standard model admit to not knowing from whence the big bang came, they proceed in their analysis as though all this mass was created spontaneously out of nothingness. This is based on observations of the creation of short-lived electron/positron pairs in the lab and in space, where it's not difficult to find sufficient energy concentrations to generate these unstable particle pairs. Explaining the big bang by simply scaling up that tiny particle/antiparticle process just doesn't cut the mustard.

In order to concentrate enough energy in the tiny space hypothesized to have spawned all the matter in the universe, you'd have to violate the rules of thermodynamics. That is, if you didn't already have matter to concentrate the energy in, then the heat and pressure within the body of raw energy will dissipate at the speed of light, long before a significant concentration can accrue. In order to accumulate a lot of energy you need a vessel.

At this point standard model adherents might apply the fantasy physics of Isaac Asimov and say all that energy was bottled up in their supernatural spatial dimensions. The energy was transferred to our three spatial dimensions by space warps that momentarily intersected to inflate our, now natural, 3D space. There are now a near infinite number of string theory possibilities mathematicians can massage to prove any universe-shaping phenomena that ever was or ever will be needed to explain the cosmic findings that researchers present.

As Peter Woit explains in his masterful book, *Not Even Wrong*, these string theories are not even legitimate theories, as they're not able to predict anything that hasn't already been observed[6]. They're a new form of "hindsight only" theories that use spatial dimensions whose existence have never been proven, but are plentiful in the science fiction world where we get a steady diet of time warps, space warps, worm holes, and warp-speed drives that magically accelerate space ships that travel a zillion times faster than the speed of light.

Einstein ascribed to only three dimensions of space, plus the non-spatial dimension of time. The alternative model I'll describe invokes no dubious physics and needs only three spatial dimensions to explain phenomena the standard model is choking on. While I cannot prove the non-existence of supernatural dimensions, this model eliminates any need for them. It's the same classical sort of logic science uses to dispel supernatural beings.

The theories of quantum physics and cosmology are both facing findings that are red flags indicating that these theories may have taken some wrong turns several decades ago. Many are suspicious of these theories and find them to be no longer bounded by reality.

Perhaps the most outspoken of outsider groups are mature techies who sense that the tangible forces of plasmas and electromagnetic fields provide more logical explanations for observed phenomena than the *intangible* forces that flow from "mathmagical" dimensions. Having only recently discovered the publications of this outsider group, I must confess that they formed their opinions about today's controlled peer review system and poor publishing disciplines long before I came along.

These publishers' barred gates make it difficult for dedicated outsiders who pay for the privilege of reading about publicly funded research. We occasionally make observations we feel should be aired, but are blocked from sharing them with their readers. Publishers should most certainly block any input that's obviously irrational or redundant, but when readers introduce new and seemingly valid perspectives, they should publish these insights. Many loyal academic outsiders are dedicated to making sense of life and the universe and continue to endorse public funding for serious science.

An alternative model

When we attempt to supersede a model intellectual giants have vested their lives in, we soon realize the daunting task at hand. One difficulty lies in finding a point of common agreement from which to diverge. After many revisions, I've concluded it is best to introduce this story in the 1929-1950 setting, where cosmic theorists approached a fork in the road.

In 1929 Edwin Hubble presented evidence that the known universe is expanding. That led to the struggle between steady-state theorists and big bang theorists in which big bang evidence prevailed. Today we see evidence that the universe is much older than the big bang. My story begins at the juncture from which steady-state advocates and big-bangers diverged. It consolidates their models. **Instead of describing how the big bang spawned our new universe; it describes how our old universe spawns big bangs.**

The challenges that stimulated this effort stem from the long list of mysteries for which the standard model either has no answer or provides answers that don't stand up to scrutiny. This leaves many of us outsiders with a feeling we're being sold a bill of goods by students who were fed a steady diet of unsubstantiated physics. Ten of these mysteries include:

- How can there be huge structures older than the big bang?
- What is dark energy?
- What caused the big bang?
- What will become of the expanding big bang?
- Why is there 100,000 times as much matter as antimatter?
- What gave the cosmic microwave background its texture?
- What caused the early genesis of stars and galaxies?
- How did improbable anthropic conditions evolve in just 13.8 billion years?
- What is dark matter?
- What causes gravity and why is it such a weak force?

I'll provide more description of these problems as we broach their topics. When we examine all the puzzle pieces as a set, it provides a coherent picture of a universe that's every bit as simple as Einstein hoped it would be. While this bouquet of mysteries is a tight fit in the little Inflation model, it arranges beautifully when displayed in a larger vessel and becomes the evidence that supports this larger model. Here's an overview of the story I'll elaborate on:

The big bang fits very neatly into a greater universe who's observed processes will produce even more big bangs—*which are actually big bashes*. What appears to be dark energy is simply the gravitational pull of great masses located beyond the perimeter of the big bang. Its matter/antimatter disparity stems from the fact that the colliding singularities never did contain 50% antimatter.

Our big bash was caused by the collision of singularities that grow in natural processes we see occurring today. CMB texture and early formation of stars and galaxies were caused by the merging of hot big bang matter with the old cold stuff that was already here. The mixing of old and new matter provides the complex molecules needed to nourish life. And it's the old huge structures that manufacture massive singularities that cause big bangs.

On a grand scale, our dynamic steady-state universe is mostly about the gravitational formation and dissipation of heat. The heat, of course, is electromagnetic radiation. It is the immersion of everything in this pervasive electromagnetic field that attracts all matter to all other matter, creating gravity.

Even if this behavioral model is flawed, theorists should come away with insights to dispel the myth that we're out of 3D space ideas with which to explain the non-conforming evidence researchers have placed before us. The model is introduced in the hope researchers will assess its cohesiveness, coherence, and comprehensiveness and use it as an alternative context for examining any of their own findings I don't address here.

The **Big Bash model**, presented here, consolidates big bang evidence with evidence that we live in an older and grander universe. This union provides the nuances and dynamics necessary for updating our current model to one that is more consistent with the findings. The model retains many Standard model attributes, but that model's initial assumptions need to be revised, since our big bash did not occur in a void and the universe's preexisting background imposes many of its own dynamics. If it was an older universe that gave rise to our big bang, we can reasonably assume our big bang inherited the DNA of its forbearer and shares a strong resemblance with its older family members. Age is the primary delimiter.

Noting that our big bang started out hot, dense, and as a uniform ball of light matter; and has since cooled to become sparse clumps of heavier matter; we can reasonably assume the older background universe includes even colder and sparser clumps of heavy matter, with black holes that are more numerous and more massive than those originating in our big bang.

Since the processes of a steady state universe are both homogeneous and circular, I'll begin by examining the evidence for that older background universe and describe how it produces big bangs before discussing how the other entries in our list of mysteries conform to this model.

Dark energy

The 2011 Nobel Prize in Physics went to Saul Perlmutter, Adam Riess, and Brian Schmidt for their discovery that the big bang's expansion is accelerating[7]. (More accurately, the prize was awarded for their discovery that the *universe's* expansion is accelerating; as the current standard model posits that the big bang *is* the universe.) There is no apparent mechanism to stop this expansion and, from appearances, the universe's three spatial dimensions are becoming infinite—if they weren't already infinite. The Big Bash model posits that the big bang took place within our universe's preexisting 3D space and that our big bang is but a local example of many such events.

The mysterious force accelerating our big bang expansion is called "dark energy". From our perspective dark energy behaves like negative gravity. So when dark energy modulates the expansion, we find an early decelerating expansion caused by the gravitational resistance of the big bang's own mass, and then—several billion years later—the dark energy causes a gradual reacceleration. The Big Bash model provides a simple explanation for dark energy's decelerating and reaccelerating character:

If we shoot a projectile to earth from our moon, the moon's gravity initially decelerates the missile until earth's gravity becomes dominant. Then the projectile reaccelerates as it continues its journey to earth. If our view beyond the departing missile were obstructed the way big bang matter obstructs our distant view of the universe, we'd sense that the missile had encountered a negative gravity; the same sense we get when observing our reaccelerating expansion. So the big bang's expansion has the same velocity profile we might expect to see if our big bang is surrounded by other colossal masses that share its 3D space.

This reacceleration in all directions tells us there is far more mass in any given direction beyond our big bang than there is within it. The masses of, and distances to, these outlying attractors should be somewhat random; therefore the rate of our bang's expansion is not necessarily uniform in all directions.

Thus, dark energy itself, helps substantiate that our big bang took place in an older and grander universe. The Big Bash model, therefore, does not need either negative gravity or Einstein's rejected cosmological constant in order to explain dark energy.

On the other hand, standard model proponents posit that there may be variations in the "vacuum energies of space" that somehow got turned up several billion years ago to increase the big bang's expansion rate. It may even reverse again someday to bring the expansion back to its earlier deceleration and perhaps even result in a big crunch. They seem satisfied these supernatural explanations will placate critical thinkers and have gone on to produce impressive edutainment videos of such magical phenomena "to educate the general public".

Growing the singularities that become big bangs

Galactic superclusters are the most gravitationally attractive objects we see from inside our big bang. They are gigantic groupings that contain millions of galaxies clustered in strings, sheets, or walls that can be 100 million to billions of light years across. These clusters will continue to grow in mass for as long as there are nearby objects to attract and merge with. But if our big bang had contained all of the universe's matter, as the standard model posits, then even the largest superclusters will grow to but a tiny fraction of the big bang's mass, since the trajectories of most of these clusters show them to be accelerating radially outward and away from one another. The big bang's own gravitational mass is not sufficient to ever pull them back together again.

Superclusters may contain tens of millions of black holes and countless chunks of galactic star stuff. It's all merging and compacting into fewer and ever more massive galaxies and black holes. Over a period of hundreds of billions of years—much longer than the age of our big bang—each cluster will eventually be rendered down to one super massive black hole. But, since our clusters are accelerating outwardly, it looks as though there is far more gravitational mass where they're headed. So what could possibly stop their endless growth? It looks like our older and larger universe easily has the means to grow black hole singularities sufficient to source big bangs like our own.

Black holes squeeze captured particles until they collapse and can no longer move. In the process the black holes' heat gets squeezed out. Stephen Hawking tells us that the more massive a black hole becomes, the lower its temperature gets[8]. He says, "A black hole with a mass a few times that of the sun would have a temperature of only one ten millionth of a degree above absolute zero." He goes on to say that a black hole will continue to absorb more mass than it emits until the background radiation temperature falls below the temperature of the black hole. At that point the black hole will begin its virtual eternity (10^{60} years) of slow evaporation.

Now, if we had a black hole ten billion trillion times more massive than our sun—on the order of the mass of our big bang—and it had a temperature near absolute zero, it would be the most stable mass imaginable. What sort of natural force could possibly cause such a mass to blow itself to smithereens?

One mission of CERN's Large Hadron Collider is to smash heavy particles together at near light-speed in order to simulate a big bang. Well, ultra-massive black holes are pretty heavy particles and gravity would be the only force capable of smashing them. The Big Bash model requires *two* such singularities to produce each big bang.

Powering big bangs

In this model gravity sparks all of the heat, pressure, electrostatic, and electrodynamic energy forms when it bashes black holes together to create big bangs. It also quiesces these energies by squeezing heat out of the atoms in stars, where smaller atoms are transformed into ever more massive, but cooler and less energetic elements. Gravity finally subdues their motion and quenches their heat by crushing them back into black holes. This constant crushing process generates a continuous stream of out-flowing heat in the form of photons and electromagnetic energy.

When super-duper clusters run low on nearby matter to sweep up and the surrounding space becomes relatively empty; most of their stars and galaxies get consumed by the black holes and the black holes centrifugally spin down and merge into a massive singularity; creating a gravitational focal point for other singularities to home in on.

Newton's equation for gravity's accelerating force is: $F = G(m_1 \times m_2)/d^2$, where G is his gravitational constant, m_1 and m_2 are the masses of our two singularities, and d is their ever closing distance. The product of the masses is huge and as their speeds approach light-speed, relativity's mechanics tell us their effective masses approach infinity.

Gravity's particle accelerator has an amazing feature, however, and during the last hour, while the singularity distances are closing from a billion kilometers to a nanometer; gravity's force gets cranked up a million trillion trillion trillion (10^{42}) fold. And since the radii of singularities are thought to be very near zero, gravity's force continues to increase and this relentless force also approaches infinity as the two singularities pancake and splatter; instantly transforming two of the coldest and most massive objects in the universe into a hot plasma cloud that is expanding at the same velocity as the speed of the collision.

Big bashes become natural phenomena when mass and space are unlimited. Bashes would come in many sizes and shapes; coexisting and comingling at all stages of their life cycles. Smaller bashes may even exist within our own big bang, though it is yet to be determined how large a void and how much time is required to accelerate and focus the energies of two singularities. It seems that great adjacent masses would easily draw them off their collision courses, causing them to orbit around one another and eventually merge.

Our own bash takes the form of a splat and central ball of hot plasma; much like that of the Standard hot big bang model; but due to the spinning singularities, their splat, and the preexisting universe's heat and dense matter; the system is not smoothly inflating nor does the expansion create the existence of space—as space was already in place.

It's likely the colliding singularities began drifting toward one another long before they had consumed most of their nearby galaxies and it's also likely that millions of these galaxies followed them and were within a several million light years from the point of the bash we now know as our big bang. These orbiting masses will be prime contributors to the roughness in the microwave background we'll discuss shortly.

An aside

I and others have had difficulty comprehending the scale and meaning of Einstein's concept of c^2 — the speed of light squared. Here's an exercise that helps visualize that concept:

For simplicity, assume our two colliding singularities are of similar mass and energy. Each singularity's kinetic energy, then, would be expressed as: $E = \frac{1}{2} mv^2$ (half the mass times the square of its velocity). Summing their two energies yields: $E = mv^2$. And if they collide at the speed of light, substituting c for v yields: $E = mc^2$. Thus, Einstein's famous equation very simply describes the kinetic energy of two masses bashing one another at the speed of light and c^2 is simply the upper limit of velocity squared.

What is the destiny of our expanding big bang?

Over the past half century researchers have expended great effort to understand the ultimate outcome of the big bang's expansion. They ask: will the big bang expand and thin forever; will the expansion slow but never quite stop; or will it all collapse on itself in a big crunch?

The steady-state big bash model's answer is simply "none of the above". Our big bang is being reabsorbed by the same universe that spawned it and this reabsorption nourishes the continuous growth of black hole singularities that will lead to more big bangs. These occur periodically throughout a universe that vastly exceeds the size and age of our own big bang. The old cold universe makes a perfect blotter for soaking up the spilled heat of big bangs.

Matter/antimatter disparity

One unanswered question the Standard model has is: why does the observed universe contain 100,000 times more matter than antimatter[9]? Since the Big Bash model provides a glimpse at what precedes big bangs; we'll examine the question from that standpoint. Our expectations change when we see big bangs and the formation of black holes as a cyclical process.

The notion that big bangs should yield 50% matter and 50% antimatter stems from the belief that big bang mass was spawned from nothingness and therefore that nothingness should generate matter and antimatter in equal quantities in order for the equation to balance at zero.

Our big bash did not take place in a spatial void, but rather happened in a universe that imparts its own biases. If the black holes involved in our bash were not 50% antimatter to begin with, then smashing them together won't necessarily generate 50% antimatter; and if it did, there is plenty of old matter in our segment the universe to neutralize it. While it's not unreasonable to expect that some positrons and antiprotons will form during the bash, they should have been nominal and fleeting, just as they are today.

If one of our colliding singularities had been matter and the other antimatter, we might expect the collision to result in an equal distribution of both, but to date we have not observed any stars or black holes that are made of antimatter; so it would appear that our region of the greater universe doesn't contain significant quantities of antimatter.

The Inflation model's expectation that matter and antimatter should form equally is a false expectation that stems from trying to grow a whole universe from just one big bang.

Cosmic Microwave Background Texture

Other questions researchers pose are: what gives our big bang its uniform temperature in all directions and what created its patchy texture if its temperature is so uniform? [12]

The Inflationary Hot Big Bang model has dubious and complex solutions for problems the Big Bash model simply doesn't have. For instance, the Inflation model concerns itself with the problem of matter being created and moving outward in opposite directions from its point of origin at the speed of light. These oppositely headed masses are moving away from one another at twice the speed of light, so their radiation energies could never mix to influence one another and provide the uniform background temperature we see.

To overcome that quandary the model summons a magical field that holds all matter together momentarily (~10^{-33} seconds) so it can attain a uniform temperature before it inflates the big bang expansion in less than an attosecond by accelerating it to a zillion times the speed of light before slamming on the brakes and slowing it back to a mere light-speed expansion. The instant expansion amplifies spaces between subatomic particles and creates the texture we see in the cosmic microwave background, in a system whose radius is much greater than it would be if it had inflated at the speed of light.

In contrast, the Big Bash model has no uniform temperature problem since its colliding singularities have temperatures near absolute zero and they make intimate contact before they explode. While the explosive force was truly awesome, Einstein says matter has an infinite resistance to being accelerated beyond the speed of light. Besides, that's all this model needs.

Now let's deal with the background texture. The question is: if all matter originated in a uniform ball of heat, what would divide it up into swirling galactic clouds, each with its own center of gravity that allows it to form its own stars? If it hadn't broken up this way the whole system would be a smooth gravitational mass that condenses uniformly to form a central star that becomes a single black hole in a single massive galaxy that smoothly collapses on itself in a big crunch.

This question was posed in the context of the standard model's big bang, which has no external matter to influence its behavior. That model mathematically manipulates its fantasy physics and yields answers that provide no coherent vision of the universe's machinery. Its theoreticians could have saved us a lot of time and trauma if they simply said, "It's magic!"

The Big Bash model doesn't hatch its big bangs in a void and therefore doesn't need magical ingredients that produce somethingness from nothingness. It's an organic model that uses only all-natural ingredients in its wholesome recipe for problem solving. This not only provides a presentation that's a feast to behold, it's also easier to digest.

It's a bit of a random happenstance that determines how and when big bashes occur. Each of these events will inject some of its own personality into the mix. While it seems possible that some of our colliding singularities will have completely consumed all of their nearby matter before colliding with other singularities; it seems more likely they will still be soaking up nearby galaxies at the time they collide. The great concentrations of gravitational mass within these two colliding pinpoints should be adequate to draw them together head-on, even if they still have millions of galaxies orbiting them.

When they bash and explode in a great vapor cloud, the uniform cloud overruns the uneaten galaxies which bore holes and slice swirls in the expanding plasma. They also leave behind the large cold lumps we see in the background of the primordial radiation. The vision this conjures is one of an exploding cloud, orbited by masses of galactic residue concentrated within a few million light years of the blast. Beyond this residue is a mostly void expanse the expanding system has to cross before it runs into the networks of old galaxies surrounding the void. This marks the beginning of its reabsorption into the older universe.

As the cloud of light elements blows past the orbiting galaxies, both radiation pressure and the passing gravitational mass cause the orbiting matter to spiral outward, boring tunnels, shredding the cloud, and creating swirls that form primordial galaxies. Even before the compressed radiation cloud becomes fully transparent it begins to overrun old stars, galaxies, and other orbiting detritus.

What provides such hospitable anthropic conditions?

When old planets get smashed by early big bang energies, they squirt out magma and molten metal from their cores; oceans turn to steam; and dense dust clouds resembling those of volcanic explosions generate lightening storms that turn the clouds into virtual chemical factories and our big bang inherits a host of heavy and complex molecules from the get-go.

There are remnants of older expanding bashes scattered throughout the universe. Their constantly mixing matter creates an anthropic world, loaded with the old and highly evolved molecules necessary to nourish life. These precious molecules are gathered, nursed, and dispersed to planets by the trillions of wandering comets that are ubiquitous and highly mobile throughout the universe. Even manmade molecules may one day enter this stream and spread our legacy to future beings. Perhaps it was beings from distant worlds that designed our programmable RNA and DNA molecules and thus helped to connect earthlings to the universe's conscious web of life.

By sowing the universe's fertile past with seeds of the future, nature hybridizes life into an infinite variety of big bang perennials. The most advanced life forms may be able to wend their way through the hazardous maze of these overlapping worlds and thereby allow their progeny to continue evolving without the necessity of starting over as single-cell creatures.

A steady state universe

The Big Bash model is a steady-state universe requiring vastly more mass than our big bang contains in order for it to cycle in perpetuity. Old stars have been intermixed with our big bang's younger stars and we should be able find ancient white dwarfs that have cooled and darkened sufficiently to indicate they are much older than the big bang. Black dwarfs are difficult to detect and none have yet been detected. If and when they are, they will point to ages hundreds to millions of times older than the big bang.

For math modeling purposes it seems appropriate to start with a minimal universe, only trillions of light-years in diameter and having millions of big bang masses. However, there may be no upper limit to our universe's mass, volume, or age. It's difficult to say the universe is infinite without using my own definition of infinity, which is simply, "that which extends far beyond the limits of my imagination".

Within this constantly recirculating universe, massive bodies continuously sweep up most of what they encounter and any matter not gathered gets flung to distant reaches. Cosmic clusters are growing denser while their surrounding space is becoming ever more vacant. This local cleansing continues until another expanding bash refills vacated spaces with clouds of new dust. The voids remain randomly littered with old cosmic debris; so the expanding clouds of light gasses encounter plenty of cold and dense seeds from which to grow new stars.

Such a huge universe would have a much higher order of granularity than a stand-alone big bang would. In fact, we'd expect this steady-state universe to contain structures at least as big as our own big bang. These are much bigger than the largest structures supported by the Inflation model.

Great Walls and Great Voids

The cosmological principle says the big bang is expanding uniformly and therefore its mass should be distributed uniformly in all directions throughout its entire volume. Large and small blobs of matter should also be distributed evenly; with a limit to how big any blob can get without unbalancing the system. Theoreticians say the upper limit of this structure size is no more than 1.3 billion light years across; yet researchers analyzing Sloan Digital Sky Survey (SDSS) data have found a structure 4 billion light years across.[17]

It looks as though the assumptions and/or calculations of the concordance model's homogeneity scale are either wrong or the big bang is overrunning matter from an older universe and the assumption that the big bang created the universe that is wrong.

Connected groups of galactic super clusters observed since the 1980s are now classified as great walls. The SDSS project has a growing database of large structures that also include large and relatively empty voids, called great voids[2,10,11].

A more recent structural classification includes groupings known as large quasar groups, or LQGs. In 2012 an LQG was discovered that's so massive it marked the start of an HLQG subclass, or Huge-LQGs. This first HLQG has a mass greater than 10^{18} solar masses and its length spans some 4 billion light years.

I call it the *first* HLQG because instrumentation for identifying such structures is just beginning to evolve and, if this Big Bash model has merit, we'll eventually find structures 10,000 times more massive than this first HLQG. The reason behind this assertion is that the universe incorporates *our* big bang's structure and therefore its upper structural limit is at least as massive our big bang, which contains more than 10^{22} solar masses.

As rivers of ancient galaxies cross the bow of our big bash's expanding wave front, the dense new gas gets deposited throughout the old cold strings of galaxies and these engulfed structures become the great walls we see. Having blocked and absorbed much of the outward flowing gases, great voids would remain in their shadows. This would explain why we find huge old structures in the middle of our much younger 13.8 billion year old big bang. Great walls include tens of millions of galaxies strung out over billions of light years of space and are interspersed with great voids of similar sizes.

The new gas refuels the fusion processes of old cold stars and provides the vitality that lets them blend in with their newer surroundings. Their most notable characteristic should be that they are more metallic and heavier than newer stars of similar size.

The sparsely filled void surrounding our big bash may have been only several billion light years in diameter at the time of the bash, as it appears our expanding system is already overrunning dense areas of the older universe. The increasing gravitational pull of this old dense matter is the most logical explanation for why our big bang's expansion is accelerating.

The early expanding system packed a powerful electromagnetic and acoustic wallop. When it overran the nearby galaxies that were orbiting our colliding singularities, it smashed their stars and planets, creating enormous strings of debris similar to the smaller debris clouds we see around supernova explosions. When the shockwave scattered galaxies, their black holes would remain intact and get dispersed in the strings of new dust and old stars. Once the expanding plasma cooled and thinned, external bodies being overrun would mostly remain intact and show up as red or blue shifted objects that are out of character with their local surroundings.

When the uniform plasma cloud overran the old cold sky, its smooth background radiation was perforated and textured while colliding with all these ancient objects. This process breathed life into the smoothly expanding dullness; animating its countenance and eliminating any need for an accelerated Inflationary event to account for its texture.

What generated Quasars and what caused Reionization?

Quasi-stellar radio sources, or quasars, are black holes millions to billions of times more massive than our sun. They are active black holes in the process of consuming any gasses, stars, or other black holes that fall into their gravitational grasp, which is what makes them so bright. These powerful objects far outshine whole galaxies and are among the brightest objects ever detected. Many are found in distant galaxies we see in their early formative stages, within a few billion years after the big bang, so they exhibit a high redshift.

In March of 2013 a group of researchers submitted their analysis of an ancient proto-galaxy illuminated by quasar ULAS J1120+0641 and whose redshift dates it at 772 million years after the big bang[13]. The surrounding gas was still mostly non-ionized and there is little evidence of heavier elements to indicate that star formation had yet begun. The question this research poses is: if stars had not yet begun to form, then where did the massive black hole that became the quasar come from?

If the black hole had formed within the galactic cloud, its evolution would have brought it through star formation and supernova processes, just to create a *stellar mass* black hole. Then it would need to continue consuming gas and/or stars for many millions more years before becoming the mass of a quasar. That much heat radiation would ionize the galaxy's hydrogen, yet the hydrogen was not ionized.

The most logical answer is that the massive black hole already existed when the proto-galactic gas cloud overran it. The dense new gas had only activated the quasar a few million years earlier and it did not yet have time to ionize its galactic cloud.

A universe that continuously smashes objects would be thoroughly littered with debris like the asteroids and comets that litter our solar system. Black holes also make up a goodly portion of this cosmic litter. Mixing new and old bashes will amass conglomerates that would seem anomalous in an isolated big bang.

When ancient black holes pass through dense rotating clouds; instead of orbiting the black holes, the gas plows directly into them and matter accretes prodigiously. Vast radiation sprays form as the black holes become hyperactive quasars.

A quasar's velocity may either propel it through a gas cloud and on to other clouds, or it may slowly oscillate through a clouds' gravitational center and settle in as its central black hole. The oscillating quasars drag a lot of gas with them and these streams might shape the clouds into barred spiral galaxies. Short oscillations create simple spiral galaxies while progressively longer oscillations create the whole spectrum of barred spiral galaxies. Once a quasar settles in at its galactic center and becomes part of the centrifugal system, its rate of accretion will slow significantly, causing the quasar to dim and behave like an ordinary central black hole.

A bash's newly expanding cloud constantly overruns older objects. Huge quantities of old black holes rapidly accrete the new gasses and form quasars by the billions. While their masses are texturizing the cosmic background, the extreme collective quasar radiation is reionizing the surrounding gasses.

Redshift implications of the Big Bash

Proponents of the Standard model tell us it's the expansion of the empty space between the galaxies that generates the redshift we see in distant objects. It's a weird expansion though; for while strings of galaxies are growing farther apart, the clusters of galaxies within the strings are getting closer together. Why would the expansion of space only place its newly grown space in lumps and not insert it uniformly between all masses? And why is it that when we look longitudinally along a string of galaxies we see the same redshift magnitudes we see when we look orthogonally across these strings to the next strings over?

Since the Big Bash model does not execute its big bangs in an empty null, it has a different explanation for distant redshifts. The collision generates an electromagnetic pulse and forms a spherical electromagnetic field around and throughout the expanding plasma cloud. The field's boundary expands outward at the speed of light while internal regions expand at rates proportional to their distance between the point of the bash and the field's periphery. This expanding magnetosphere is stretching everywhere within its bounds at increasing rates from the center outward. The expansion not only stretches the electro-magnetic ether, it also stretches the wavelengths of any photons flowing in this medium. The more time photons spend in this stretching ether the more redshift they acquire. This expanding magnetosphere yields the same redshift results that the Hubble model attributes to the expansion of space.

As the big bang's electromagnetic bubble grows, it overlays other big bangs. Boundaries and turbulences at these intersections may create lensing distortions for radiation passing through them. The plasma and electromagnetic ether engulfs all cosmic bodies and imparts dynamo-like forces on them. The field would align galaxies into rivers the same way magnets align non-magnetized iron filings. The expanding magnetic field generates an orthogonal electric field whose outward-flowing current helps to sustain the reionization of the cosmos.

Dark matter

The rotational behavior of most large gravitationally bound structures, like galaxies and galactic clusters, suggests they may contain much more mass than they appear to[14]. The extra mass would cause the extremities of these structures to rotate around their centers with a rotational period similar to their central matter. This is much faster than one would expect the outer matter could rotate without flying off in space. Since this extra mass does not transmit or absorb light it is called dark matter. The problem is that we have never been able to detect or identify dark matter. Physicists even seek it down at quantum levels.

While the Big Bash model does provide a means for depositing old heavy matter in galaxies that would otherwise be lighter, my conjecture is that dark matter is not matter at all. Instead, it's a magnetohydrodynamic force behavior that appears when the radiation of stars ionizes the gasses in their galaxies and causes rotating matter to behave like it's suspended in a viscous jell.

In 1960 I serviced IBM reel-to-reel magnetic tape drives that used magnetic clutches to engage the rotation of their ten-inch-diameter tape reels. These clutches used powdered iron as the medium for engaging the clutch plates. When a coil surrounding the powdered iron was activated, its magnetic field stiffened the powdered iron and essentially bonded the two steel clutch plates together, and when the coil was turned off the iron particles again became a fluid that let the plates slip past one another freely. The magnetic field essentially altered the viscosity of the powered iron.

At the end of 2012, *Scientific American* published an undated commemorative edition about six Nobel Prize Winners. One was a story about Hannes Alfvén, an engineering professor who also found it difficult to get published, or even to get a peer review, by the entrenched science publishing machine, back in 1948.

He won the 1970 prize "for pioneering the study of galactic magnetic fields generated by the electrically conducting plasma that pervades the universe: such magnetohydrodynamic waves are now known as Alfvén waves." The article contained a reprint of Alfven's paper entitled "ELECTRICITY IN SPACE", first published in his 1948 book *The New Astronomy*[15]. Therein he described two experiments that demonstrate Alfvén waves.

"If you tap the side of a vessel containing a pool of mercury, the surface quakes and ripples as if it were alive. We found that when we placed such a pool in a strong magnetic field of 10,000 gauss, its behavior instantly changed. It did not respond to jarring of the vessel; its surface stiffened, so to speak. The magnetic field gave a curious kind of viscosity to the mercury."

The second experiment used a tank of mercury in which the bottom of the tank contained vanes that could be moved back and forth like the agitator in the bottom of a washing machine. "In the absence of a magnetic field, the slow oscillation of this agitator, stirring the mercury at the bottom of the tank, will not disturb the surface of the mercury at the top of the tank; the mercury molecules slide past one another so that the motion dies out before it proceeds very far up the tank." … "When a strong vertical magnetic field is applied to the tank, however, the motion at the bottom is quickly communicated to the top."…

"To be sure, the magnetic fields in the stars are very much weaker than the 10,000 gauss of our experiment (the sun's general field is estimated at between 1 and 25 gauss). But our theory tells us if we made the vessel larger, we could produce the magneto-hydrodynamic effects with a smaller magnetic field; the magnetic force required would decline in proportion to the increase in size of the vessel. Hence in a star, which is, say, 10 billion times as large as our experimental vessel, the magnetic field need be only one 10-billionth of the laboratory field. The stars' fields are much stronger than this."

Alfvén goes on to describe how this principle applies to the turbulent interior of the sun, but does not scale it up to apply to galaxies. Galaxies are a trillion times bigger than our sun and that suggests it may take as little as 25 pico gauss of radiation to stiffen the interstellar medium enough to rotate galaxies with little slippage between their inner and outer stars.

Alfvén says, "Furthermore, there are good arguments for assuming that a weak magnetic field (some millionths of a gauss) pervades all of space." This would be more than ample to generate the "dark matter" behaviors seen in the rotations of galaxies and clusters.

Spiral galaxies look as though their outer stars rotate around their galactic centers much slower than their inner stars do. One explanation may be that these galaxies got their shapes before enough stars formed to provide the radiation that gels their rotations. This would allow the early slippage to drag outer stars into spiral tails before the radiation froze-in the shape of the galaxies.

And so it appears that the rotational behavior attributed to dark matter is not caused by ultra-dense matter at all, but is a product of the electrodynamics of a universe whose radiation generates a pervasive electromagnetic flux.

Quantum gravity?

When we seek to understand quantum gravity we need to ask what quantum gravity means and what it might look like. Gravity behaves like an all encompassing force-field that draws and binds objects together, be they galaxies, molecules, or quarks; like a magnetic field would. We have difficulty attributing gravity to electromagnetism, though, since it seems an electromagnetic field would provide two polarities and exhibit repulsive forces we don't see in nature. Physicists often hypothesize about magnetic monopoles that might help us explain gravity, yet we have no evidence that monopoles actually exist. Well, here's a model that bears some semblance to a monopole:

A big bang's electromagnetic pulse generates a spherical radiation pattern whose outer extremes would exhibit a single magnetic polarity. That expanding system would exhibit a continuum of centrally polarized magnetic spheres whose perpendicular electric field stretches radially outward from the point of the bash's impact. The cloud produced by the impact was mostly electromagnetic plasma, so the sphere is best described as an expanding ball of radially flowing electricity. Negatively charged electrons are much lighter than the positively charged nucleons, so electromotive forces move the electrons more rapidly than the nucleons. This universal electron flow helps keep cosmic atoms in an ionized state.

The initial radiation ball was so dense that its photons could escape only from its outer periphery—like photons flowing only from the outer surface of the sun. It took some 370,000 years before central photons could elbow enough space to begin their lightspeed journeys outward. That's when the big bang's space finally became transparent. This radiation provides a continuously stretching and radially polarized electric field that is at least partially responsible for generating gravity. So if magnetic monopoles actually exist, it would seem we live in one.

Ampère's and Lorentz's force laws tell us that when electrical current flows in the same direction through parallel conductors, the conductors become attracted to one another. So if unidirectional currents flow through rivers of galaxies, they'd provide only attractive forces, with no repulsive counterpart, and draw the galaxies toward one another. This same force field will be felt by smaller objects within the galaxies, e.g. an apple and the earth.

The force of electromagnetic gravity is proportional to its field strength as well as the conductivity, permittivity, and permeability of any matter influenced by its field. The more concentrated the mass the more it concentrates the field's flux density. A black hole has a lot of mass in a tiny space; so its induced gravitational field becomes highly concentrated. And since light radiation is electromagnetic, its trajectories are drawn inward by the strong concentrated fields of great masses. It is this electromagnetic focus that causes the curvature of space-time around massive objects by drawing inward any photons or matter flowing in their vicinity.

It seems that any mass in transit through this viscose magnetic field would generate drag and heat in proportion to its speed and thus limit its relative velocity to the speed of light. It would be this geometrically increasing drag that behaves as Einstein's concentration of mass as that mass approaches the speed of light. This magnetic drag would also be responsible for Einstein's dilation of time.

The next question is: how do we account for gravity's apparent constancy and steadiness in the universe's noisy electromagnetic environment?

Electromagnetic reluctance resists changes in a magnetic circuit's electron flow by storing spurious energy in a magnetic field surrounding the circuit, called the near field. The near field absorbs energy pulses by expanding over a large volume, then rereleases that energy when the field contracts. This dampens the effect of large energy spikes.

Huge pulses occur when stars explode and become supernovas. You'd think they'd generate easily detectable spikes in cosmic currents, yet our gravity seems to be steady and smooth. Electrical inductance and magnetic reluctance may smooth out those ripples. When current flows through strings of galaxies it generates standing magnetic waves that resist changes in both the direction and magnitude of current flow. This inductance dampens current spikes by momentarily storing the energy and releasing it more smoothly back into its surroundings. Supernovas may need to be fairly close to our solar system in order for us to detect the effects of their spikes, e.g. gravity waves, on the local force of gravity. The inertia of great surrounding masses pretty well absorbs most of these electromagnetic spikes.

Besides electromagnetism's mechanical work, its omnipresent ether provides awesome communication capabilities via infrared, visible, and UV light rays; plus x-rays; gamma rays; radio & TV signals; etc. There are magnetic fields in magnetic fields in magnetic fields, simultaneously flowing in all directions; yet we can discriminate radiation from each galaxy, star, TV channel, and cell tower with amazing fidelity. And now that the internet is connected with cell phones and Wi-Fi, recorded human history is being broadcast to the universe. One has to wonder if we'll ever have technologies that can ferret out the histories of civilizations radiating from other stars.

On the grand scale our big bang overlays old bangs and overlaps even older bangs—all of which are stretching and expanding at the speed of light. Their electromagnetic spectrum includes both amplitude and frequency modulations, with amplitudes as great as big bangs and wavelengths that range from Planck length (1.6×10^{-35} meter) to more than 13.8 billion light years. These polarized and heterodyning frequencies create all of the environmental variables that physicists seek in Higgs fields.

Induced high frequencies vibrate atoms and elliptically rotates their electrons like hula hoops, keeping the negatively charged electrons from falling out of orbit and crashing into their positively charged nuclei. Within each spherical big bang monopole, every radius is a dipole and each bang introduces new polar coordinates having spherical timelines. These should give string theorists plenty of *mathematical* dimensions to apply their skills to.

In quantum physics we often hear that electromagnetism is some 10^{39} times stronger than gravity. This is based on observations in atoms that coulomb forces of charged particles seem to be 10^{39} times stronger than the influence of gravity. However, in cosmology we never hear physicists claim that electromagnetism is 10^{39} times stronger than the gravitational force of black holes.

While I doubt electromagnetic force exceeds the force of gravity, I'll bet it can equal it. As magnetic flux disperses from its source outward, its force diminishes with the square of distance; approaching but never equaling zero. Conversely, as flux lines are increasingly concentrated in dense matter their local forces are limited only by the density of the matter. When distances get down to quark spacing levels, gravity's force can get pretty high, but not nearly as high as it gets between big-bash-scale singularities.

While the repulsive coulomb forces of charged quarks may be able to hold them apart from one another at normal quark spacing; either shooting quarks together in a supercollider or squeezing them together in a star will ultimately force quarks so close to one another that the force of gravity will ultimately compress the quark surfaces together and bond them. The range of gravity's forces easily accommodates both the weak and the strong nuclear forces.

Magnetic polar alignments are significant to the determination of these forces, and we should keep in mind that gyroscopic forces and inertias can each temporarily misalign the gravitational field forces. Atoms, planets, solar systems, and galaxies are all essentially gimbaled systems and their long-term precessions will ultimately bring them into magnetic and gravitational alignments.

There is much conjecture that all particles are made up of pure energy and that mass is but a construct of this energy. I'm inclined to disagree, based on the observation that when black holes squeeze out all of their heat energies, what remains is pure mass. If we sort out all the mass in the universe and place it in vaults, it would be in black holes. And if we isolated energy, it would become a great electromagnetic near-field that no longer has moving charges to sustain it, so as it collapses it gravitationally draws the black holes toward one another and the bash again re-homogenizes mass and energy.

This notion suggests there is a level of granularity in which mass and energy each become distinct and each has a Planck limit that can't be broken down farther. In the energetics of a big bang, mass wants to retain its outward momentum while energy wants to rein it in and pull it back together. In their hybridized form they become hot masses that resist being drawn together and the expansion becomes the cooling process that allows masses to reunite. When gravity finally succeeds in squeezing masses back together, it releases heat as radiation that wanders off to influence other interactions.

In 1962, Paul Dirac wrote a paper entitled "An extensible model of the electron", in which he proposed and supported the notion electrons have a spherical bubble membrane[18]. Quarks had not yet been discovered and he never updated this work to include them. We have little evidence his model was either rebuked or supported by his colleagues, though today researchers continue to reference this particle membrane paper.

My hypothesis suggests Dirac was not only correct in his view that electrons have a spherical membrane, but that all electrically charged particles do. While Dirac's model places charge on the outside of the membranes; mine encloses them within, since quark charges don't annihilate one another on contact when neutron stars press them together extremely tightly. It would be these strong elastic membranes that isolate the charges and impart mass to particles. When neutron stars get dense enough to transition to black holes, the membranes finally pop and neutralize their charges, but the new black holes retain the membrane masses of the spent particles. It's conceivable neutrinos are exploded bits of membrane matter.

Differentiating between mass and energy makes it easier to imagine how induced electromagnetic energy can act as both the strong and weak nuclear forces. The force of gravity = $G(m_1 \, x \, m_2)/d^2$, and we can see the gravitational force between two quarks is limited only by distance, e.g. how close together they can be squeezed.

When externally magnetized quark membranes get squeezed together, their contact surfaces enlarge and their holding force becomes adequate to overcome the repulsion of the internally trapped charges. This membrane-flattening increases the contact holding force of electromagnetically induced gravity enough to compensate for the fact that the distance between the centers of the quarks doesn't actually go to zero. Trapped charges are isolated by membranes so their spacing cannot go to zero; thus their repulsive forces become limited by both the thickness and the dielectric nature of the membranes.

Quantum physicists need to examine the strong and weak nuclear forces as though they are induced forces and not forces that are native to the particles. This should change their perspectives on radioactive decay, symmetry, and isotropy.

Predictabilities

If there's variability in constants like gravity, Planck constants, or the speed of light; one might expect each big bang to demark that variability due to differing singularity masses and collision speeds, as well as the lapsed time and loss of system energy since the collisions. The overlapping magnetic domains of multiple big bangs may *also* produce metric gradients.

The fine structure constant, commonly referred to as alpha, constitutes calculations involving the elementary charge, the Planck constant, the speed of light, the magnetic permittivity of space, and the Coulomb constant. Teams of scientists are investigating alpha variability and have detected what appears to be a variation increasing across a broad expanse of sky[16]. The gradient seems to be contained in a lobe of space in one region of the sky. Its shape seems consistent with the overlapping domains of multiple big bangs.

An alternative, if the gradient is continuous over *extreme* distances, is that this variance may follow a radial of our big bang's electric field, originating at the big bang's center and extending to its outer periphery. This would help us locate our big bang's point of origin and indicate which direction to look in order to locate the nearest edge of our big bang expansion. That, in turn, would help us detect matter positioned outside the big bang's periphery. Should either of these alpha alternatives fit the pattern of alpha variance, it may lend credence to the Big Bash model. While matter at the fringe of our big bang may be moving away from us too fast to see, due to an expansion velocity near the speed of light; even more distant blue-shifted external objects will be approaching us and should be quite visible. New instruments with increased resolving power will let us see incoming galaxies from far beyond the fringes of our big bang.

If, indeed, there was no super-inflationary moment in the first attosecond of the bash, then big bang matter does not exist beyond its 13.8 light year expansionary radius. Matter outside this radius should be foreign and free of contaminants from our bang. And if we're not located at the expansions center, perhaps we're close enough to its periphery to have a good view beyond this edge. It is likely; however, that changing the initial assumptions of the big bang to include a warmer and non-vacuous background will lead to adjusting our big bang's perceived age.

As technology lets us see farther out through deep field peepholes, we should find distant objects peering back at us. We'd also expect to see bodies moving laterally across those peepholes. The mixing of matter from multiple bashes will yield phenomena described as anomalous to the Inflation model, but will make sense when viewed in the context of a larger and more energetic universe.

A vision of the grander universe – What you see is much of what you get

Our own local big bang has long since overlaid and begun to fade into the background of the grander cosmos. The skeletal structure of our steady-state universe is now being revealed in the composite imagery of the Sloan Digital Sky Survey[3]. The SDSS Galaxy Map reveals a structure that is much older and vastly larger than our local big bang. We should find similar structures extending as far as our instrumented eye will ever see.

The picture is one of intertwining streams of galaxies whose intersections form dense hubs of galactic superclusters. While our own big bash may have blown apart some of these linking streams and slightly modified the local cosmography; new dust clouds are coalescing and, like floodwaters on the earth, are forming new streams and channels that only slightly modify the global terrain.

This infinite web of galactic thread is continuously compacting matter. Concentrated masses reel in their galactic strings and the thinning filaments, pulled by opposing masses, will eventually break. This creates great tears in the cosmic fabric and forms huge islands of isolated web segments. Over trillions of years each island becomes rendered down to one singularity that is already moving toward other gravitational masses; for everything in the universe is gravitationally aware of everything else.

The ever thickening and thinning of galactic strings provides us an image of elastic gravitational fields and suggests we will find Newton's gravitational "constant" to be but a local variable with a very long time constant. Imagine a slow-motion version of the plasma globes you find at science fairs, where plasma arcs are dancing around the glass globe and constantly toggling in new directions. Just touching your fingers to the side of the glass will create new focal points for the plasma strings. Now expand that picture to a cosmic scale where instead of seconds, major electrical arcs last for millions to billions of years.

Discussion

The Big Bash is a steady-state model whose colliding black holes are entropy's rechargeable batteries and whose improbable anthropic conditions become highly probable when nature can roll her dice, gather them up and roll them again for as long as it takes to roll life's lucky numbers. This dynamic churn creates unlimited possibilities. Its splats impinge on one another the way Set Theory's spheres overlap to blend unique domains, each having its own peculiarities. It may take centuries to associate anomalous data with its proper domain and circumstance; however, each domain's expanding wave front should provide a fascinating degree of predictability. It will take far more work to back-track this complex system and explore its beginnings than it took to rewind and examine our relatively simple big bang.

In contrast to the Inflation model, big bashes need no accelerated inflation, have no antimatter parity mystery, and exhibit pre and post-bang characteristics that don't require imaginary dimensions or Einstein's discarded gravitational constant. Its omnipresent electric ether provides the particle forming energies that physicists call "the vacuum energy of space" and its electromagnetic force masquerades as all of the other physical forces. One must wonder how the undulations of intergalactic current flow might affect solar cycles and the drift of earth's magnetic poles. The breathing expansions and contractions of magnetic fields would be the most natural means for animating a perpetual motion universe.

The incomplete part of this story is how the intermixture of mass and energy occurs when the electromagnetic field strikes cold black holes together and sparks heat. At this point the finest granularities of mass and energy start their self organizing journey of particle building and star formation that will eventually isolate the black hole matter from the energy again.

Scientists seek to unite the cosmic universe with the world of quantum mechanics. These two worlds are the same size. In an infinite universe, every neutrino will ultimately run into a black hole that consumes and recycles it; so physicists need to add black holes to their list of particles and consider them as part of the circuit when balancing mass and energy equations.

Temperature and pressure are what give electromagnetic energies their spectrum of personalities. The cosmic background is mostly near two to three kelvins and colder black holes must surely be superconductors. Quantum physicists may need to base more of their cosmic research on the field of cryogenics.

Galaxy behavior is much about magnetohydrodynamics and cryogenics. Their spin physics attributes are worthy of more attention. In order for two black holes to collide and splat, one would need its north magnetic pole aligned to the other's south pole. The merger of black holes within a galaxy may take place in a different alignment determined by galaxy rotational directions. On a grand scale, galaxies likely have their polar alignments determined by their shared magnetic fields.

The time is ripe to reunify Maxwell and Einstein's worlds. We'll need to map the cosmic electromagnetic field continuum and its plasma flows if we are to understand the universe's mechanical behavior.

In my own mind's eye all matter is gravitationally aware of all other matter and magnetic flux lines form the web of life that interconnects everything. They radiate outward from big bashes then curve and densify everywhere mass is concentrated, creating the curvatures of space. Their greatest concentrations are through black holes and especially ultra massive singularities. While it's difficult to imagine that black holes have no perceptible radius, it's not difficult to imagine how the curvature of space around them might mask their actual radius. There the flux becomes so concentrated that it commands the only force that can draw two singularities together at lightspeed. When singularities collide, their concentrated flux lines again fan out to regather their belongings. When we find a solution to quantum physics' mysterious two-slit particle behaviors, I'm sure flux lines will be playing the leading role.

While the Big Bash model provides a source for our big bang's genesis, it makes no attempt to explain the creation of the whole universe. That yarn must remain for future theorists to unravel.

Methods

This Big Bash model was designed utilizing a conservative engineering approach that uses only reliable off-the-shelf components, provided by world-class teams of international researchers. The design would need to secure all the loose ends flailing the Inflation model and provide one that is simpler and more reliable. Being a systems engineer, early on I saw the problem as systemic and felt the theoretical attention focused on elemental problems was misdirected.

This modeling effort began with an extensive analysis of the anomalous dangling pieces of the Inflationary model listed at the beginning of this paper. I sought a means to connect them with the piece that was being ignored; namely, evidence that the universe is laced with matter that's older than the big bang. The most logical conclusion was that the big bang took place within a much older universe. This provides a framework with all the sockets necessary for the loose ends to plug into.

The big aha moment that triggered this hypothesis was the 1998 Scientific American article about the discovery of the big bang's accelerating expansion. It provided evidence that there is far more mass beyond the periphery of the big bang than there is within it. Ever since, I've been writing letters to the editor in response to various journal articles that focus on dark energy, but they've never been published nor have I received any responses. From that point the problem became one of understanding how all this machinery produces big bangs.

Having learned in the 1950s how hydrogen and helium form stars and heavy elements and later learning how it all compresses into merging black holes; it became apparent that the universe has the means to grow singularities that are easily as great as the singularity believed to have spawned the big bang. It occurred that bashing two of them together was the best way to create big bangs and this supposition was reinforced when CERN announced that it hoped to simulate a big bang by smashing heavy particles together at near lightspeed.

Having been immersed in electromagnetic technologies during my 28 year IBM career, and being an avid reader of research journals; I came to sense the machinery of the universe must surely be steeped in electromagnetic forces that reach across unlimited distances. I'm somewhat dismayed, though, that mainstream cosmic theories do not place much emphasis on electromotive forces. In recent years it occurred that I need to understand the opinions plasma physics researchers have about the cosmos. The book I homed in on was *The Electric Universe*, by Wallace Thornhill and David Talbot[19]. It's a summary of the findings of a score of electrical and plasma sience giants who not only feel the universe's electrical forces are overlooked by cosmology publishers; they suggest the topics are deliberately censored out.

Hannes Alfven's paper, published in Scientific American's year-end 2012 Special Commemorative Edition, *Nobel Prize Winners*, validated my suspicions about dark matter.

A steady-state universe has unlimited time, space, and matter with which to attain any possible combination of its resources; I could comfortably discard, as redundant, any need for the vacuum energy of spatial voids, inflationary preambles, supernatural dimensions, and virtually any other dubious or superfluous physics that taxed my sensibilities. This gives us a perceivable and more logical science to teach our children. It should also reduce the number of science deniers who are capable of critical thinking, but have seen modern scientists using magic in their models and therefore believe their own conjured magic is equally valid.

This model is being introduced in its entirety for the first time, so it likely contains flaws, either in theory or presentation, that need to be addressed. The author welcomes input and will respond to as many e-mails as he can.

References:

1. Guth, A. & Steinhardt, P. The Inflationary Universe. *Scientific American* May 1984. p. 116-128. (1984)
2. Lal, A. K. & Joseph, R. Big Bang Model? The A Critical Review, *Journal of Cosmology*, **Vol 6,** 1533-1547. Cosmology http://journalofcosmology.com/BigBang101.html (2010)
3. SDSS Sloan Digital Sky Survey, http://www.sdss.org/ Updated 07/31/12 (2012)
4. Peebles, P. J. E. & Nusser, A. Nearby galaxies as pointers to a better theory of cosmic evolution. Nature **456,** 565-569, doi:10.1038/natureo9101 http://www.nature.com/nature/journal/v465/n7298/full/nature09101.html (2010)
5. Alternative Cosmology Group. An Open Letter to the Scientific Community, published in *New Scientist*, May 2004. http://www.cosmologystatement.org/ www.cosmology.info/index.html (2004)
6. Woit, P. Not Even Wrong. Basic Books. ISBN-13:978-0465-09276-5. (2007)

7. Riess, A. G. et al "Observational evidence from supernovae for an accelerating universe and a cosmological constant". Astronomical J. **116**: 1009–38. doi:10.1086/300499, arXiv:astro-ph/9805201v1 (1998)
8. Hawking S. A Brief History of Time. Bantam Books. ISBN 0-553-38016-8. p. 111-112 (1996)
9. Preskin, M. The matter with antimatter, *Nature* **419,** 24-27 http://www.nature.com/nature/journal/v419/n6902/full/419024a.html (2002)
10. Shandarin, S. F. The origin of 'Great Walls', *Institute of Physics Publishing for SISSA/ISAS* http://arxiv.org/pdf/0812.4771.pdf (2009)
11. El-Ad, H. & Piran, T. Voids in the Large-Scale Structure. Submitted to *ApJ* http://arxiv.org/pdf/astro-ph/9702135.pdf (1997)
12. Davis, R.L. The Light From the Other Side of the Universe, *SLAC-PUB-3948* http://slac.stanford.edu/cgi-wrap/getdoc/slac-pub-3948.pdf (1986)
13. Simcoe, R.A. et al. Extremely metal-poor gas at a redshift of 7, http://arxiv.org/pdf/1212.0548v1.pdf (2013)
14. Oort, J.: The Hidden Lives of Galaxies - Hidden Mass. *NASA Goddard Space Flight Center* http://imagine.gsfc.nasa.gov/docs/teachers/galaxies/imagine/hidden_mass.html Updated October 4, 2006 (1932)
15. Alfvén, Hannes, The New Astronomy p. 74-79 http://www.catastrophism.com/texts/electricity-in-space/ (1948)
16. Webb, J.K. et al. Evidence for spatial variation of the fine structure constant: http://arxiv.org/abs/1008.3907 revised 1 Nov 2011 (2010)
17. Clowes, R.G. et al "A structure in the early universe at z ~ 1.3 that exceeds the homogeneity scale of the R-W concordance cosmology". http://arxiv.org/pdf/1211.6256v1.pdf (2011)
18. P.A.M. Dirac An extensible model of the electron, Proc. Roy. Soc. A 268,p. 57-67,– http://dieumsnh.qfb.umich.mx/archivoshistoricosMQ/ModernaHist/Dirac1962.pdf (1962)
19. Thornhill, W. & Talbott D. The Electrical Universe, Mikamar Publishing. ISBN-13 978-0-9772851-8-1

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I'm grateful to *Scientific American* to which I've subscribed since 1962. Its thousands of authors and illustrators provide much of my awareness of life and the universe. I'd be even more grateful if it was searchable online. That flaw necessitates my dependence on Wikipedia for updates and links to substitute references, in lieu of the actual references that inspired my thinking.

Author Contributions

I wish I could acknowledge the tens of thousands of amateurs and professionals who contributed to this grand picture over the past 2,500 years. This modeling of their work took place within my own imagination and I am solely responsible for having documented it.

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