MOVING DIMENSIONS THEORY: EXALTING EINSTEIN'S ELEMENTARY FOUNDATIONS & SCHRODENGER'S CHARACTERISTIC TRAIT

by Dr. Elliot McGucken

http://fqxi.org/community/forum/topic/238

"A physical theory can be satisfactory only if its structures are composed of **elementary foundations**. The theory of relativity is ultimately as little satisfactory as, for example, classical thermodynamics was before Boltzmann had interpreted the entropy as probability. –Einstein in a letter to Arnold Sommerfield on January 14th, 1908. CPAE, Vol. 5, Doc. 73:"

"When two systems, of which we know the states by their respective representatives, enter into temporary physical interaction due to known forces between them, and when after a time of mutual influence the systems separate again, then they can no longer be described in the same way as before, viz. by endowing each of them with a representative of its own. I would not call that one but rather the **characteristic trait** of quantum mechanics, the one that enforces its entire departure from classical lines of thought. By the interaction the two representatives [the quantum states] have become entangled." --Schrödinger

Moving Dimensions Theory's simple postulate, *physical* model, and equation account for both "relativity's elementary foundations," which Einstein stated we yet needed, and Schrödinger's "characteristic trait" of quantum mechanics—entanglement.

MDT: The fourth dimension is expanding relative to the three spatial dimensions at the rate of c, or dx4/dt=ic.

"If we are to go forward, we must go back and rediscover those precious values - that all reality hinges on moral foundations and that all reality has spiritual control." – Martin Luther King Jr.

Physics has ever been driven and advanced by physicists contemplating *physical* reality and presenting *physical* models, in the rugged pursuit of fundamental *physical* principles.

"My interest in science was always essentially limited to the study of principles.... That I have published so little is due to this same circumstance, as the great need to grasp principles has caused me to spend most of my time on fruitless pursuits." --Einstein

Einstein's Principle of Relativity (the first postulate), as well as the second postulate of relativity, both derive from MDT's single postulate which is more concise and has the added benefits of providing for free will, liberating us from the block universe, weaving

change into the fundamental fabric of spacetime for the first time in the history of relativity, and providing a *physical* model for time and all its arrows and asymmetries, entropy, and quantum nonlocality and entanglement, as well as reality's probabilistic nature. The fourth dimension is inherently nonlocal via its invariant expansion, and thus "quantum mechanics' characteristic trait" (in Schrödinger's words) naturally emerges.

1. First postulate (principle of relativity)

The laws by which the states of physical systems undergo change are not affected, whether these changes of state be referred to the one or the other of two systems of coordinates in uniform translatory motion.

2. Second postulate (invariance of c)

Light is always propagated in empty space with a definite velocity c that is independent of the state of motion of the emitting body.

Both of these postulates—as well as the Einstein/Minkowski spacetime metric—naturally derive from MDT's simple postulate and equation: the fourth dimension is expanding relative to the three spatial dimensions at c, or dx4/dt=ic. The derivation of relativity and motivation for replacing *x4* with *ict* may be seen here:

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Time as an Emergent Phenomenon: Traveling Back to the Heroic Age of Physics by Elliot McGucken

MDT presents a new universal invariant--an elementary law from which Einstein's Principle of Relativity can be built by pure deduction. Begin with a universe with four dimensions x1, x2, x3, x4, where the fourth dimension is expanding relative to the three spatial dimensions dx4/dt=ic, and the Minkowski/Einstein spacetime metric and all of relativity naturally emerge, as does quantum mechanics' nonlocality and entanglement, wave-particle duality, space-time duality, mass-energy duality, E/B duality, entropy, and time and all its arrows and asymmetries.

"Behind it all is surely an idea so simple, so beautiful, that when we grasp it - in a decade, a century, or a millennium - we will all say to each other, how could it have been otherwise? How could we have been so stupid?" --John A. Wheeler

MDT presents a physical principle more fundamental than Einstein's principle of relativity, as all of relativity naturally emerges from MDT's postulate, as well as entanglement and quantum mechanics' probabilistic nature.

Generally speaking, physicists of yore would come up with a postulate, representing a novel physical reality.

MDT's postulate: The fourth dimension is expanding relative to the three spatial dimensions at the rate of c.

That postulate would often have an equation associated with it.

MDT's equation: dx4/dt=ic

The postulate and equation would represent a new principle--in MDT's case, that of the hitherto unsung fact that the fourth dimension is expanding relative to the three spatial dimensions at the rate of c.

This postulate/equation would then be shown to have a myriad of far-ranging consequences, as Lee Smolin says:

http://www.youtube.com/watch?v=3bLwqnIfLRA&feature=related

MDT's far-ranging consequences:

1. MDT is the foundational *physical* source of nonlocality and thus quantum mechanics' probabilistic nature and entanglement.

2. MDT is the foundational *physical* source of relativity: begin with a 4D universe wherein the fourth dimension is expanding relative to the three spatial dimensions: dx4/dt=ic, and all of relativity arises.

3. MDT is the foundational *physical* source of time and all its arrows and asymmetries.

4. MDT is the foundational *physical* source of entropy.

5. MDT is the foundational *physical* source of Huygens' Principle and Heisenberg's Uncertainty Principle.

Simple proofs of MDT:

PROOF#1:

Relativity tells us that a timeless, ageless photon remains in one place in the fourth dimension.

Quantum mechanics tells us that a photon propagates as a spherically-symmetric expanding wavefront at the velocity of c.

Ergo, the fourth dimension must be expanding relative to the three spatial dimensions at the rate of c, in a spherically-symmetric manner.

The expansion of the fourth dimension is the source of nonlocality, time and all its arrows and asymmetries, c, relativity, entropy, free will, and all motion, change, and measurement, for no measurement can be made without change.

For the first time in the history of relativity, change has been wedded to the fundamental fabric of spacetime in MDT.

PROOF#2:

Einstein and Minkowski wrote x4=ict

Ergo dx4/dt=ic.

PROOF#3:

The only way to stay stationary in the three spatial dimensions is to move at c through the fourth dimension. The only way to stay stationary in the fourth dimension is to move at c through the three spatial dimensions. Ergo the fourth dimension is moving at c relative to the three spatial dimensions.

Best,

Dr. E (The Real McCoy)

Over the past several months I have only become more certain of MDT's simple beauty and elegance.

Thanks to fqxi for this unique forum and thanks to all the participants for the collegial dialogue and debate which helped advance and forge MDT!

Indeed, MDT heard, and answered, Einstein's call to adventure:

"A physical theory can be satisfactory only if its structures are composed of elementary foundations. The theory of relativity is ultimately as little satisfactory as, for example, classical thermodynamics was before Boltzmann had interpreted the entropy as probability. –Einstein in a letter to Arnold Sommerfield on January 14th, 1908. CPAE, Vol. 5, Doc. 73:"

MDT presents a physical principle more fundamental than Einstein's principle of relativity, as all of relativity (The Principle of Relativity (the first postulate), Einstein's two postulates of relativity, and the Minkowski/Einstein spacetime metric) naturally emerges from MDT's postulate, along with time as we measure it on our watches and computers.

And too, MDT, via the natural smearing of locality into nonlocality heralded by the expansion of the fourth dimension, provides a *physical* model for quantum entanglement--that which Schrödinger stated was the "characteristic trait" of quantum mechanics:

"When two systems, of which we know the states by their respective representatives, enter into temporary physical interaction due to known forces between them, and

when after a time of mutual influence the systems separate again, then they can no longer be described in the same way as before, viz. by endowing each of them with a representative of its own. I would not call that one but rather the characteristic trait of quantum mechanics, the one that enforces its entire departure from classical lines of thought. By the interaction the two representatives [the quantum states] have become entangled." --Schrödinger

So it is that MDT provides a common *physical* model for quantum mechanics and relativity, unifying them. Now a funny thing about our era is that the antitheory regiments use MDT's beauty, simplicity, and elegance against it. After deconstructing and dismissing Schrödinger, Einstein, and Maxwell, they created physics in their own image--snarky, meaningless math that is "always in its infancy," and which will require infinite funding from mommy to take it to its maturity.

The fact that MDT uses words to describe *physical* concepts has actually been used against it. The fact that the simple, foundational theory comes with a simple postulate--"the fourth dimension is expanding relative to the three spatial dimensions at c"--and a simple equation, dx4/dt=ic, which bestows us with a myriad of diverse, profound consequences across all realms of physics, has been seen as a deficiency. Yes--physics has entered the Twilight Zone, where to be noble to bolster snarky, indecipherable math while tearing true physicists down with crackpot indexes.

But yet, I will have to side with the heroic Greats, in words, equations, and deed:

"Mathematicians may flatter themselves that they possess new ideas which mere human language is as yet unable to express. Let them make the effort to express these ideas in appropriate words without the aid of symbols, and if they succeed they will not only lay us laymen under a lasting obligation, but, we venture to say, they will find themselves very much enlightened during the process, and will even be doubtful whether the ideas as expressed in symbols had ever quite found their way out of the equations into their minds." –James Clerk Maxwell

"I don't believe in mathematics." -- Albert Einstein.

"Do not worry about your difficulties in mathematics, I assure you that mine are greater." --Einstein

"Mathematics are well and good but nature keeps dragging us around by the nose."" --Einstein

"Geometry is not true, it is advantageous." --Jules H. Poincare

"Born described the weak point in Einstein's work in those final years: ". . . now he tried to do without any empirical facts, by pure thinking. He believed in the power of reason

to guess the laws according to which God built the world." --Einstein's Mistakes, Hans C. Ohanian

Plato: A good decision is based on knowledge and not on numbers.

Einstein: Not everything that counts can be counted, and not everything that can be counted counts. (sign in Einstein's office, hanging beside a picture of Faraday)

Einstein, "But before mankind could be ripe for a science which takes in the whole of reality, a second fundamental truth was needed, which only became common property among philosophers with the advent of Kepler and Galileo. Pure logical thinking cannot yield us any knowledge of the empirical world; all knowledge of reality starts form experience and ends in it. Propositions arrived at by purely logical means are completely empty as regards reality. Because Galileo saw this, and particularly because he drummed it into the scientific world, he is the father of modern physics -- indeed, of modern science altogether. (Albert Einstein, Ideas and Opinions)"

"Mathematics are well and good but nature keeps dragging us around by the nose." -- Albert Einstein

In Disturbing the Universe, Freeman Dyson writes, "Dick [Richard Feynman] fought back against my skepticism, arguing that Einstein had failed because he stopped thinking in concrete physical images and became a manipulator of equations. I had to admit that was true. The great discoveries of Einstein's earlier years were all based on direct physical intuition. Einstein's later unified theories failed because they were only sets of equations without physical meaning. Dick's sum-over-histories theory was in the spirit of the young Einstein, not of the old Einstein. It was solidly rooted in physical reality." -- Freeman Dyson

Smolin writes in TTWP that Bohr was not a Feynman "shut up and calculate" physicist, and from the above Dyson quote, it appears that Feynman wasn't either:

"Mara Beller, a historian who has studied his [Bohr's] work in detail, points out that there was not a single calculation in his research notebooks, which were all verbal argument and pictures." --Smolin's The Trouble With Physics

"I have hardly ever known a mathematician who was capable of reasoning."--Plato

Plato’s quote is hanging in the Boston Museum of Science, and it seems to agree with Albert Einstein, Galileo, and Max Born:

http://www.ilfilosofo.com/blog/2008/04/12/plato-mathematician-quote/

"I personally like to regard a probability wave as a real thing, certainly as more than a tool for mathematical calculations. ... how could we rely on probability predictions if we do not refer to something real and objective? (Max Born on Quantum Theory)"

Max Born wrote, "All great discoveries in experimental physics have been made due to the intuition of men who made free use of models which for them were not products of the imagination but representations of real things."

"Gradually the conviction gained recognition that all knowledge about things is exclusively a working-over of the raw material furnished by the senses. ... Galileo and Hume first upheld this principle with full clarity and decisiveness." --(Albert Einstein, Ideas and Opinions)

To reject *physical* intuition and replace it with the nonsensical block universe MDT does away with seems to go exactly against the spirit by which physics has ever advanced, according to Galileo, Einstein, and other noble physicists.

It seems a preposterous conclusion that quantum mechanics, which works so very well, must be thrown out and reformulated for something which MDT shows there is no need for--the block universe.

"In the long run my observations have convinced me that some men, reasoning preposterously, first establish some conclusion in their minds which, either because of its being their own or because of their having received it from some person who has their entire confidence, impresses them so deeply that one finds it impossible ever to get it out of their heads. Such arguments in support of their fixed idea ... gain their instant acceptance and applause. On the other hand whatever is brought forward against it, however ingenious and conclusive, they receive with disdain or with hot rage - if indeed it does not make them ill. Beside themselves with passion, some of them would not be backward even about scheming to suppress and silence their adversaries. I have had some experience of this myself. ... No good can come of dealing with such people, especially to the extent that their company may be not only unpleasant but dangerous."--(Galileo Galilei)

"my dear Kepler, what do you think of the foremost philosophers of this University? In spite of my oft-repeated efforts and invitations, they have refused, with the obstinacy of a glutted adder, to look at the planets or Moon or my telescope." --Galileo Galilei

We must forever keep physical reality in the front and center, along with logic and reason and *physical* intuition--otherwise progress in physics will grind to a halt, as it has for the past thirty years.

"But before mankind could be ripe for a science which takes in the whole of reality, a second fundamental truth was needed, which only became common property among philosophers with the advent of Kepler and Galileo. Pure logical thinking cannot yield us any knowledge of the empirical world; all knowledge of reality starts form experience and ends in it. Propositions arrived at by purely logical means are completely empty as regards reality. Because Galileo saw this, and particularly because he drummed it into

the scientific world, he is the father of modern physics -- indeed, of modern science altogether." --Albert Einstein, Ideas and Opinions

In Dark Matters, Dr. Percy Seymour writes, "Albert Einstein was a great admirer of Newton, Faraday, and Maxwell. In his office he had framed copies of portraits of these scientists. He had this to say about Faraday and Maxwell, in "Maxwell's Influence on the Development of the Concept of Physical Reality": "The greatest change in the axiomatic basis of physics--in other words, of our conception of the structure--since Newton laid the foundation of theoretical physics was brought about by Faraday's and Maxwell's work on electromagenetic phenomena" --p. 33-34, DARK MATTERS

In his book Einstein, Banesh Hoffman tells us: "Meanwhile, however, the English experimenter Michael Farady was making outstanding experimental discoveries in electricity and magnetism. Being largely self-taught and lacking mathematical facility, he could not interpret his results in the manner of Ampere. And this was fortunate, since it led to a revolution in science. . . Ampere and others had concentrated their attention on the visible hardware--magnets, current-carrying wires, and the like--and on the numbers of centimeters separating the pieces of hardware. In so doing they were following the action-at-a-distance tradition that had developed from the enormous success of the Newtonian system of mechanics and law of gravitation. . .But Faraday regarded the hardware as secondary. For him the important physical events took place in the surrounding space--the filed. This, in his mind, he filled with tentacles that by their pulls and thrusts and motions gave rise to the electromagnetic effects observed. Although he could thus interpret his electromagnetic experiments with excellent precision and surprising simplicity, most physicists adept at mathematics thought his concepts mathematically naive."--BANESH HOFFMAN, EINSTEIN

It is interesting that Einstein introduced relativity as a principle--as a primary law not deduced from anything else.

Well, I guess I was dumb enough to even ask, "why relativity?"

And I found the answer in a more fundamental invariance--the fourth dimension is expanding relative to the three spatial dimensions, or dx4/dt = ic. Change is fundamentally embedded in space-time. And not only can all of relativity be derived from this, but suddenly we have a *physical* model for entropy, time and its arrows and asymmetries in all realms, free will, and quantum nonlocality and entanglement. MDT accounts for the constant speed of light c--both its independence of the source and its independence of the velocity of the observer, while establishing it as the fastest, slowest, and *only* velocity for all entities and objects moving through space-time, as well as the maximum velocity that anything is measured to move. And suddenly we see a *physical* basis for E=mc^2. Energy and mass are the same thing--it's just that energy is mass caught upon the fourth expanding dimension, and thus it surfs along at "c."

On page 37 of "Einstein's Mistakes, The Failings of Human Genius," by Hans Ochanian, we read,

"Einstein acknowledged hid debt to Newton and to Maxwell, but he was not fully aware of the extent of Galileo's fatherhood. In an introduction he wrote for Galileo's celebrated Dialogue Concerning the Two Chief World Systems, he faults Galileo for failing to produce a general mathematical proof. Galileo regarded relativity as an empirical, observational fact, that is, a law of nature, and Einstein's own formulation of the Principle of Relativity three hundred years later imitated Galileo's in treating this principle as a law of nature and not as a mathematical deduction from anything else."

Well, MDT provides a more fundamental law with an equation: dx4/dt = ic, from which relativity is derived in my paper. And an added benefit are all the other entities dx4/dt=ic accounts for with a *physical* model, from entropy, to qm's entanglement and nonlocality, to time and all its arrows.

MDT accomplishes several things right off the bat:

1) unfreezes time & liberates us from the block universe, shwoing that we have free will

2) weaves change into the fundamental fabric of spacetime

3) derives relativity from a more fundamental universal invariant: dx4/dt=ic

4) provides a *physical* model for entropy

5) provides a *physical model for quantum entanglement

6) provides a *physical* mechanism for nonlocality--the fourth expanding dimension distributes nonlocality

7) provides a physical model unifying the dualities--space/time, energy/mass, wave/particle, E/B

8) provides a *physical* model for the invariance of c--both its independence of the source and its independence of the observer

9) provides a *physical* model for the spherically-symmetric expanding wavefront of probability that defines a photon's path

10) offers a resolution for both the EPR Paradox and Godel's problems with the block universe relativity implied

11) offers a physical model for why nothing can move faster than c.

12) offers an intuitive model for the length-contraction can accompanies all motion

13) accounts for both the agelessness (from relativity) and the nonlocality (from quantum mechanics) of the photon

14) accounts for the gravitational slowing of time and light, as well as the gravitational redshift

15) provides a unique physical model underlying wide-ranging phenomena in quantum mechanics, relativity, statistical mechanics

Surely MDT offers a brand new way and a new day!

And when you factor in how little MDT has cost so far, compared to the hundreds of millions of dollars which have gone into quantum gravity/string theory religions/regimes and the creation of crackpot indexes to suppress the bold, new ideas by the corporate-state Matrix, surely MDT is worth pursuing!

Moving Dimensions Theory—which regards time as an emergent phenomena—was inspired in part by Einstein's words pertaining to the higher purpose of physical theories--words which ought be nailed above the door of every physics department, so as to liberate us from frozen time and frozen physics: "Before I enter upon a critique of mechanics as a foundation of physics, something of a broadly general nature will first have to be said concerning the points of view according to which it is possible to criticize physical theories at all. The first point of view is obvious: The theory must not contradict empirical facts. . . The second point of view is not concerned with the relation to the material of observation but with the premises of the theory itself, with what may briefly but vaguely be characterized as the "naturalness" or "logical simplicity" of the premises (of the basic concepts and of the relations between these which are taken as a basis). This point of view, an exact formulation of which meets with great difficulties, has played an important role in the selection and evaluation of theories since time immemorial."

Attached please find the true, heroic spirit of science,

that which serves higher ideals,

that which boldy voyages forth via curiosity,

that which seeks truth and honor,

and that which returns on home,

with the boon.

A hero ventures forth from the world of common day into a region of supernatural wonder: fabulous forces are there encountered and a decisive victory is won: the hero

comes back from this mysterious adventure with the power to bestow boons on his fellow man. –Joseph Campbell, The Hero With a thousand Faces

Best,

Dr. E (The Real McCoy)