Title –
Mistake about time travel by “Doctor Who” writer

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Abstract -
On page 19 of "Doctor Who Magazine 447", Steven Moffat says "Time travel is impossible." Ouch!! That comment hurt. Here's a detailed, **non**fictional explanation of why time travel is **not** impossible –

Content –
Introduction:
While the planned Mars mission of 2018 is robotic, we cannot limit our sights to that since we hope to follow with manned exploration of the Red Planet in the 2030’s. The physical bodies and psychology, as well as technology, we possess now or will possess in the foreseeable future are not well suited to prolonged space travel (e.g. our brains and bodies are vulnerable to radiation, muscle and bone loss, abnormal psychology, etc. when travelling in space … and simply reaching nearby stars would take hundreds or thousands of years). However, there is an alternative to astronauts (or cosmonauts, or taikonauts) reaching Mars and being unable to walk, or think clearly. We can thank the theories of Albert Einstein, an electrical engineering experiment conducted at Yale University in 2009, and some conclusions that logically follow from Einstein/Yale, for pointing the way to this alternative. When fully developed, the “Einstein-Yale Bridge” will take us anywhere in the universe and anywhen in time.

Electrical Engineering:
In July 2009, electrical engineer Hong Tang and his team at Yale University in the USA demonstrated that, on silicon chip-and transistor-scales, light can attract and repel itself like electric charges/magnets.[1] This is the “optical force”, a phenomenon that theorists first predicted in 2005 (this time delay is rather confusing since James Clerk Maxwell showed that light is an electromagnetic disturbance approx. 150 years ago). In the event of the universe having an underlying electronic foundation (see "**A few paragraphs supporting the idea that this is an electronic universe")**, it would be composed of "silicon chip-and transistor-scales” and the Optical Force would not be restricted to microscopic scales but could operate universally.[2] Tang proposes that the optical force could be exploited in telecommunications. For example, switches based on the optical force could be used to speed up the routing of light signals in fibre-optic cables, and optical oscillators could improve cell phone signal processing.

A few paragraphs supporting the idea that this is an electronic universe:
Hidden variables is an interpretation of quantum mechanics which is based on belief that the theory is incomplete (Albert Einstein is the most famous proponent of hidden variables) and it says there is an underlying reality with additional

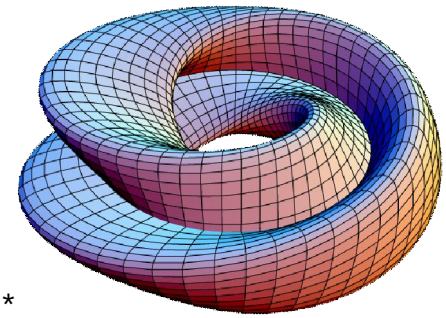
information of the quantum world. I suggest this underlying reality is the binary digits generated in 5D hyperspace (see **Poincare conjecture)**
These allow time travel by making it possible to warp space, simultaneously adding precision and flexibility to the elimination of distances.

"Empty" space (according to Einstein, gravitation is the warping of this) seems to be made up of what is sometimes referred to as **virtual particles** by physicists since the concept of virtual particles is closely related to the idea of quantum fluctuations (a quantum fluctuation is the temporary change in the amount of energy at a point in space). The production of space by BITS (BInary digiTS) necessarily means there is a change in the amount of energy at a certain point, and the word “temporary” refers to what we know as motion or time. Vacuum energy is the zero-point energy (lowest possible energy that a system may have) of all the fields (e.g. electromagnetic) in space, and is an underlying background energy that exists in space even when the space is devoid of matter. Binary digits might be substituted for the terms zero-point energy (since BITS are the ground state or lowest possible energy level) and vacuum energy (because BITS are the underlying background energy of empty space). Relativistically, space can’t be mentioned without also mentioning time which can therefore also be viewed as gravitation (since “dark matter” is invisible but has gravitational influence, its existence could be achieved by ordinary matter travelling through time).

I call hidden variables (or virtual particles) binary digits generated in a 5th-dimensional hyperspace which makes them - as explained in the next sentence - a non-local variety, in agreement with the limits imposed by Bell's theorem. (Bell’s Theorem is a mathematical proof discovered by John Bell in 1964 that says any hidden variables theory whose predictions agree with quantum mechanics must be non-local i.e. it must allow an influence to pass between two systems or particles instantaneously, so that a cause at one place can produce an immediate effect at some distant location [not only in space, but also in time] – please see “Quantum” by Manjit Kumar, published by Icon Books 2008.) Comparing space-time to an infinite computer screen and the 5th dimension to its relatively small – in this case, so tiny as to be nonexistent in spacetime – Central Processing Unit, the calculations in the “small” CPU would create and influence everything in infinite space and infinite time, and thus permit a distant event to instantly affect another (exemplified by the quantum entanglement of particles separated by light years) or permit effects to influence causes (exemplified by the retrocausality or backward causality promoted by Yakir Aharonov and others). Of course, the development of an embryo from an egg cell is not a quantum (subatomic) process and would not appear to occur instantly. In a universe described by fractal geometry, the 5th dimension wouldn't exist only on a cosmic scale but also as a hyperspace in every fermion and boson. Also, black holes would manifest as supermassive, stellar, and Stephen Hawking's mini, black holes: they could also manifest as the most supermassive of all supermassive black holes ie all of space-time itself.

Gravitational-Electromagnetic Equivalence:
From 1929 until his death in 1955, Einstein worked on his Unified Field Theory with the aim of uniting electromagnetism (light is one form of this) and gravitation. Future achievement of this means warps of space (gravity, according to General Relativity) between spaceships/stars could mimic the Optical Effect mentioned in **Electrical Engineering** and could be attracted together, thereby eliminating distance (similar to traversing a wormhole* between two folds in space). And "warp drive" would not only come to life in future science/technology ... it would be improved tremendously; even allowing literally instant travel to points many, many billions of light years away. This reminds me of the 1994 proposal by Mexican physicist Miguel Alcubierre of a method of stretching space in a wave which would in theory cause the fabric of space ahead of a spacecraft to contract and the space behind it to expand.[3] Therefore, the ship would be carried along in a warp bubble like a person being transported on an escalator, reaching its destination faster than a light beam restricted to travelling outside the warp bubble. There are no practical known methods to warp space – however, my extension of the Yale demonstration in electrical engineering may provide one.

Poincare conjecture



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Mathematics' proved Poincare conjecture has implications for the universe's shape and says you cannot transform a doughnut shape into a sphere without ripping it. My interpretation follows: This can be viewed as subuniverses shaped like Figure-8 Klein Bottles (above; similar to doughnuts) gaining rips called wormholes when extended into the spherical spacetime that goes on forever (forming one infinite superuniverse). Picture spacetime existing on the surface of this doughnut which has rips in it. These rips provide shortcuts between points in space and time – and belong in a 5^{th}-dimensional hyperspace.

Time Travel And Teleporting:
Since Relativity says space and time can never exist separately, warps in space are actually warps in space-time. Eliminating distances in space also means "distances" between both future and past times are eliminated - and time travel becomes reality. If you travelled at the speed of light to a star 700 light years away, you'd take a trip lasting 700 years. But if you traversed that distance literally instantly, space-time would be so warped that you'd find yourself 700

years in the future. Doing away with distances in space and time also opens the door to Star Trek-like teleportation. Teleportation wouldn't involve reproducing the original and there would be no need to destroy the original body – we would "simply" be here one moment, and there the next (wherever and whenever our destination is).

References For The Red Planet, Instant Intergalactic Travel & Time Travel

[1] Mo Li, W. H. P. Pernice & H. X. Tang (2009) Nature Photonics 3, 464-468

[2] R. Bartlett (2012) http://vixra.org/abs/1203.0098

[3] Alcubierre, Miguel (1994). Classical and Quantum Gravity 11 (5): L73–L77

DOCTOR WHO

Since we live in a cosmos with an electronic foundation, we could simulate the spaceship's endeavours and teleport into the future or past (and anywhere in space, or the 5-D hyperspace which produces space and time) using a stationary machine like Doctor Who.

MATHEMATICAL HYPERSPACE AND QUANTUM SPIN

The term "hyperspace" used here is not borrowed from science fiction but is used in the mathematical sense of "a space of more than 3 dimensions". The following paragraphs will give more details of my thoughts on this. On page 247 of "Physics of the Impossible" by physicist Michio Kaku (Penguin Books 2009), it's stated "astronomers today believe that the total spin of the universe is zero". This is bad news for mathematician Kurt Godel, who in 1949 found from Einstein's equations that a spinning universe would be a time machine (p. 223 of "Physics of the Impossible"). Professor Hawking informs us that "all particles in the universe have a property called spin which is related to, but not identical with, the everyday concept of spin" (science is mystified by quantum spin which has mathematical similarities to familiar spin but it does not mean that particles actually rotate like little tops). Everyday spin might be identical to Godel's hoped-for spinning universe.

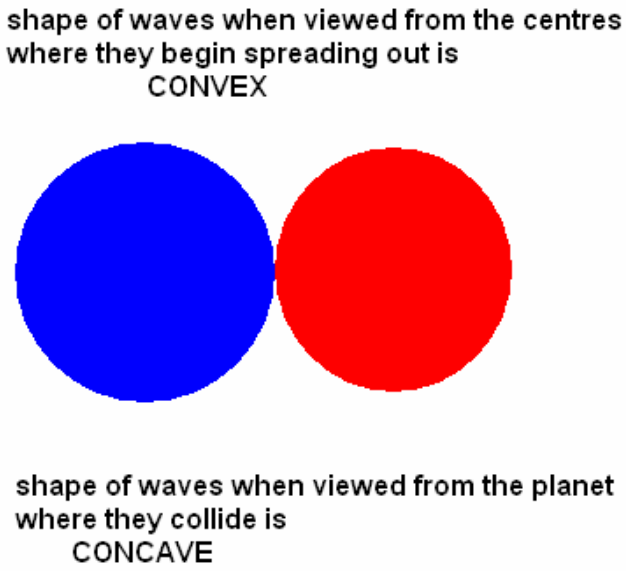
MOBIUS LOOP

If the universe is a Mobius loop (a Mobius loop can be visualised as a strip of paper which is given a half-twist of 180 degrees before its ends are joined), the twisted nature of a Mobius strip or loop plus the fact that you have to travel around it twice to arrive at your starting point might substitute for the lack of overall spin. Then the cosmos could still function as a time machine. We've seen how it permits travel into the future. We can journey further and further into the future by going farther and farther around the Mobius Universe. We might travel many billions of years ahead - but when we've travelled around the Mobius Universe exactly twice, we'll find

ourselves back at our start i.e. we were billions of years in the future … relative to that, we're now billions of years in the past. The 3 familiar dimensions of length, width and height along, for example, the left side of a loop would have a 4th dimension (time) perpendicular to them (the twisted part at the top). And there would also exist a 5th dimension called hyperspace, at right angles to the 4th and 180 degrees from the length/width/height i.e. on the right. H-space is extended from the side along the loop's bottom because the WMAP space probe (Wilkinson Microwave Anisotropy Probe) has determined that a very large 72% of the universe is dark energy … and we'll see later that transmissions of binary digits from hyperspace are an interpretation of dark energy.

LOCALIZED UNIFIED FIELD

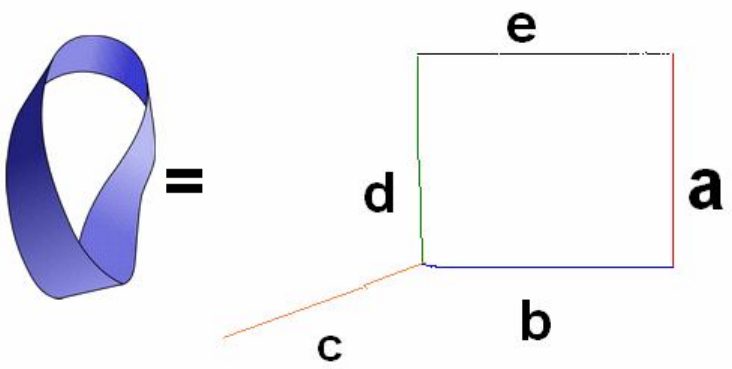
Instantly travelling to a planet 700 light years away and instantaneously arriving at a spot in the future which a light beam could only reach by travelling for 7 centuries can be likened to a wave which spreads out from the point of departure. This is because of quantum mechanics' wave-particle duality which can view the spaceship not as a collection of particles but as a wave, or collection of waves.



At the destination, the convex shape of the spreading wave arrives instantly (meaning the ship and planet are quantum entangled). This situation is equivalent to space being translated (shifted) by 90 degrees so that the ship is perpendicular to length, width and height simultaneously. What if the spaceship is simultaneously quantum entangled with another wave arriving at the planet from the other side of the universe? Since the waves are entangled and unified, their motions are instant and this situation is equivalent to space being translated by 180 degrees. It's inverted and

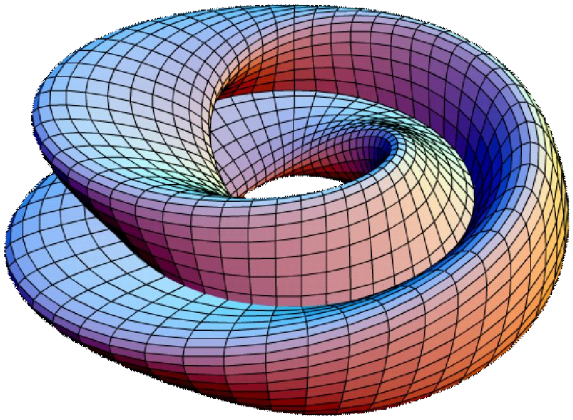
becomes 5th-dimensional hyperspace.

THE MATRIX AND THE FIGURE-8 KLEIN BOTTLE



Width a is perpendicular to the length (b or e) which is perpendicular to height c. How can a line be drawn perpendicular to c without retracing b's path? By positioning it at d, which is then parallel to (or, it could be said, at 180 degrees to) a. d (the spaceship) is already at 90 degrees to length b and height c. To be at right angles to length, width and height simultaneously; it has to also be perpendicular to (not parallel to) a. This is accomplished by a twist, like on the right side of the Mobius loop pictured above, existing in a. Then part of a is indeed at 180 degrees to d, but part of a is at 90 degrees to d. This situation requires a little flexibility or "fuzziness" which allows the numbers to deviate slightly from their precise values of 90 and 180. The fuzziness is represented in nature by past, present, future, space, time, and hyperspace existing everywhere rather than being confined to particular locations. Thus, 90+90 (the degrees between b & c added to the degrees between c & d) can equal 180, making a & d parallel. But 90+90 can also equal 90, making a & d perpendicular. (Saying 90+90=90 sounds ridiculous but it has similarities to the Matrix [of mathematics, not the action-science fiction movie] which is an array of numbers placed in rows and columns. It was worked out in the mid-nineteenth century by British mathematician Arthur Cayley, matrix mechanics is a version of quantum mechanics discovered by Werner Heisenberg in 1925, and matrices say X multiplied by Y does not always equal Y times X.) If the infinite universe is composed of subuniverses shaped like figure-8 Klein bottles (diagram at end of paragraph - 2 Mobius loops are joined on their sides to form Bottle), in each subuniverse there would be 2 perpendicularities to the twist (one lot of 90+90, then another 90+90). 180+180 could equal 360 – represented in physics as a subuniverse, a galaxy, or one of the spherical waves above producing quantum entanglement and translating space by 90 degrees.

180+180 could also equal 180 – represented in physics by both of the above spherical waves interacting to produce inversion (translation by 180 degrees) of space which permits the spaceship to enter hyperspace. Since a fuzzily spherical figure-8 Klein bottle is necessary to form (90+90) + (90+90), any spherical or fuzzily spherical thing in this fractal universe (subuniverse, galaxy, black hole, asteroid, subatomic particle, or anything made of either fermions or bosons) would be an example of altered or warped space-time and must include hyperspace in its composition.



REAL / IMAGINARY / NEGATIVE

The space-time we live in is described by ordinary (or "real") numbers which, when multiplied by themselves, result in positive numbers e.g. 2x2=4, and -2x-2 also equals 4. Inverted "positive" space-time becomes negative hyperspace which is described by so-called imaginary numbers that give negative results when multiplied by themselves e.g. i multiplied by itself gives -1.
(Supporting info from Stephen Hawking's "A Brief History of Time", p. 134)

If we encountered an ocean in hyperspace, altitude readings could no longer give positive results like "height of 3 metres above sea level" but would always give negative results like "depth of 3 metres below sea level". Traversing 700 light years instantly would be meaningless. In hyperspace, time would be travelling backwards for the light beam and we could only ever travel into the past i.e. instantaneously traverse -700 light years. ***Now you see why I wrote all that stuff about hyperspace, quantum spin, matrices, Mobius loops and figure-8 Klein bottles: it was necessary to explain travel into the past.***

In 1928 English physicist Paul Dirac (1902-84) proposed that all negative energy states are already occupied by (then) hypothetical antiparticles (particles of antimatter) – "Workings of the Universe", a book in the series "Voyage Through The Universe", by Time-Life Books 1992. Antimatter and antiparticles would therefore be neg(ative)matter and negparticles, described by imaginary numbers. Virtually every modern physicist suspects

that antimatter has positive mass and should be affected by gravity just like normal matter, although it is thought that this view has not yet been conclusively empirically observed. ("Negative mass" in Wikipedia) But I agree with the minority and think antimatter has negative mass. In this way, antimatter would be our peek into the mysteries of a hyperspace with 5 dimensions. Isn't it nice to know that the secret of time travel into the past might be revealed by the antiparticles used in hospitals' PET (positron emission tomography) scanners, and by the antimatter possibly useful in future space propulsion?

FROM IDEAS ON TIME TRAVEL TO IDEAS ON TIME'S NATURE

All space-time is generated by the binary digits 1 and 0 in hyperspace. We contribute … since we've begun our development of computer technology and, we previously saw, "…inversion (translation by 180 degrees) of space … permits the spaceship to enter hyperspace". If sections of hyperspace are identical and the same everywhere and everywhen, our accessing of hyperspace enables us to access infinite space-time. This is somewhat similar to accessing, and engineering, of the genetic material of an egg cell (ovum) enabling us to access, and engineer, any part of a developing embryo. And if we engineer all space-time via access of hyperspace, we'd no longer be restricted to any spaceship or starship but would be what a less developed civilization chooses to call gods. Since each one of us has access to every point in space-time (in quantum mechanical terms, we'd be in more than one place – actually, in infinite places – at the same time), everyone would inhabit every subatomic spot in everyone else and everything else.

Everyone (along with everything) merges, and there are no gods - only what is called God, existing everywhere … even beyond space and time (in hyperspace, responsible for Creation). Albert Einstein showed that space and time cannot exist independently of each other. So the merging, or unification, would have to exist throughout all time. It would affect everyone and everything that ever existed, or ever will exist. God would be eternal. The continuing, accelerating expansion of space-time which results in an infinite universe instantly ripples back in time and means the cosmos has always been infinite.

But what about the statement "The continuing and accelerating expansion of space-time which results in an infinite universe instantly ripples back in time and means the cosmos has always been infinite"? This means quantum processes, in which effects and causes are not necessarily separated, wouldn't be confined to tiny subatomic scales but would also occur on large macroscopic scales. In turn, this means 1) "the Optical Force would not be restricted to microscopic scales but could operate universally" and 2) embryonic development must be instant in a real sense, even though we can't perceive it that way. How could an embryo (indeed, a fully formed plant or animal) exist simultaneously with its egg

cell? Suppose time is like the playing of a DVD or video tape. The entire disc or tape obviously exists all the time. But our physical senses can only perceive a tiny part of the sound and the sights at any fraction of a second. (How can travel into both the future and past not be possible if ALL time always exists? The feedback between string-sized bits - feedback MUST always exist in the unified universe created by binary digits - would keep the past from changing from what history has recorded and stop the future from changing from its glorious destiny; like a digital thermostat regulating a hot water system and keeping the temperature constant). And if DVDs themselves could be said to correspond to our spatial and temporal environment along with our bodies and brains, could the laser which reads the data on the disc correspond in this analogy to consciousness? In a cosmic-quantum unification where all parts of a disc – and its player's laser - form a unity; wouldn't it be possible for consciousness to read data from anywhere on a disc (suggesting consciousness is not limited to sensory perception)?

Time Cloaks

The Invisibility Cloak became reality (on a small, 2-dimensional scale) in 2006 "when physicists demonstrated that a class of synthetic materials could bend light completely around an object. (Think of water in a stream flowing around a rock.) Without light bouncing off the object, it would essentially disappear." ("Physicists Carve a Niche in Time" by Adam Piore – Discover, April 2012, p. 10) If every form of electromagnetism (plus gravity which is modified to create electromagnetism, and all waves) bends completely around an object, a Time Cloak that renders objects and events undetectable could be created. This would limit our physical senses to only perceiving a tiny amount of the sounds and sights that actually exist. This would save us from sensory overload and perceiving that everything in history, the present, and the future is happening all at once. Such a state of affairs would make present human life impossibly confusing – and if we cannot perceive the future, we can believe that it doesn't exist yet and that we have the free will to make it what we choose. (Our free will has some influence over our personal lives only.)

Cloaking an event in time by bending waves around it, or cancelling out the waves bouncing off it, creates a "bump" in time (think of a rock in a stream as a small, insignificant bump because it's only a few inches wide – that bump is magnified several times by waves bending around it and approaching a diameter of perhaps a foot). It would, of course, be possible to produce this perception-saving bump with the spacetime-generating binary digits in 5^{th}-dimensional hyperspace – and for that bump to instantly ripple back through time (like the accelerating expansion of space-time which results in a universe that has always been infinite), ensuring that every person and other thing throughout all history and prehistory is saved from sensory overload. It would also be possible to conceal that bump. This would be a future extension of work done by German researchers in 2010 where they used an invisibility cloak to hide a small bump on an otherwise flat surface (when infrared light strikes the cloak, it bounces back as

if the bump were not there).

As the 1965 song “Turn! Turn! Turn!” by the Byrds, and the 1967 cover by Australia’s Seekers, sings - and as Ecclesiastes 3:1 of your Bible states – there is a time to every purpose. So there’s undoubtedly a time for the world to start wondering about many pieces of information that couldn’t even be dreamed of before now. We’ll wonder if knowledge really has been sealed up until the end (knowledge that will turn the end into a new beginning for the whole world!!)
