

TIME TRAVEL TESTIMONY AND THE 'JOHN TITOR' FIASCO

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Things to Come?

Around 1998, internet postings began appearing under the alias '*Timetravel_0*'. This alias was later replaced by 'John Titor', and it's as such I'll designate the posts' author(s). Remarkably, Titor claimed to have time-travelled from 2036 on a mission to retrieve an IBM 5100 in 1975. Titor refrained from public appearances and any evidence for his story remains web-bound but before closing shop c. March 24th 2001, he described various future events, e.g.:

Y2K is a disaster. Many people die on the highways when they freeze to death trying to get to warmer weather.

Cancellation of the Olympics after 2004 due to world conflict.

America will soon be engaged in civil war with itself; a civil war that we'll see the beginnings of during 2004 and 2005, escalating until it is indisputable by 2008.

(Y2K predictions diminished after 1st Jan 2000. One wonders how America could suffer civil war *other* than with itself or do so disputably for three years. Titorists still found signs of civil war in 2008.) This equivocal civil war fizzles until global nuclear war kills three billion people in 2015. (On the plus side, hats are popular in 2036.)

Q&A with Titor yielded more stonewalling than information, e.g.:

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Q: Who won the Super Bowl in 2001?

A: I do not answer questions like this. Although I don't really know the motivation for the question. I can guess. If a time traveler had knowledge of your future, and you could only ask one question, would this be it? Besides, can you tell me if it rained in New York on June 4th 1932? [Original punctuation]

Anyone from 2010 landing in 1931 may well not know the weather for June 4th 1932. However, inability to answer all questions neither explains nor excuses attackers' motivations. Stonewalling also sits ill with Titor's earlier predictions.

Titor was no great prognosticator, but more famous seers had similar strike-rates. Consult any 'Nostradamus' volume printed some years ago and you'll find its predictions for the recent past are wrong. (An example: in 1980, I read Nostradamus predicted war in 1999 between China and a Soviet-American alliance.) You'll also find no Nostradamus predictions of (e.g.) 9/11 or Princess Diana's death *that predate those tragedies*. Only after the facts did Nostradamus 'predict' them, usually disguised under anagrams. In my youth, claims of UFO abduction were popular. Being a UFO-abductee has advantages over being from, or having seen, the future, because in the latter cases you'll be asked what the future is like. Perhaps time travellers should come from futures that lack historical records.

Prediction-failures notwithstanding, some bloggers apparently believed both Titor's predictions and that he came from 2036. If challenged on Titor's predictions, Titorists invoked a 'many-worlds' defence, i.e. many branching realities exist and time travellers move between branches. Thus, Titor's timeline is not ours and is roughly '2% divergent' from ours, (whatever that means). 'Many-worlds' hypotheses in quantum physics offer eminently falsifiable claims, (see e.g. David Deutsch, *The Fabric of Reality*, 1997). However, while Titor's individual predictions were

clearly false in our history, the way Titorists used many-worlds made his story unfalsifiable. (Heads: John described our timeline; tails: he described another one. Better: our history didn't resemble Titor's predictions because his efforts ensured the above disasters didn't happen here.) But why stonewall questions if you're from another world? Why scruple about telling 1998 who won an *alternative* 2001 Super Bowl? It's tempting to infer Titorists invoked many-worlds in order to insulate Titor's predictions from falsification. Many-worlds or not, evasiveness on Titor's part seems hard to justify, especially if (e.g.) Titor's native September 11th 2001 was sufficiently like ours that preventive action was possible here. If history branches, otherwise impending disasters can be prevented. Even if history doesn't branch, time travellers can still issue warnings and non-paradoxically affect events. Someone who travels from 2010 to 2000 might save some people who would otherwise (counterfactually) have died on 9/11 had they not been warned. (For more on non-paradoxically affecting versus paradoxically changing the past, see my 'Tom Baker: His Part in My Downfall', *THINK*, June 2008.)

With predictions, true but imprecise cuts no ice: I bet rain falls in Scotland in 2012 but I'll get no credit when it happens. Equally, precise but false doesn't impress: witness Titor's 'indisputable' civil war by 2008. Precise and true however is impressive – witness Einstein's prediction of time-dilation at high relative velocities. (Should this sound somewhat Popperian: guilty as charged.) Vague, false predictions are easy to make, hence we set store by precision and truth. It's not enough that unfalsifiable hypotheses 'might still be true' – *infinitely* many hypotheses might be true. My favourite unfalsifiable hypothesis comes from Bertrand Russell's *The Problems of Philosophy* (1912): maybe the world began five minutes ago, complete with all physical traces of a longer past. Titor's story is scarcely (if at all) more falsifiable than Russell's. Unfalsifiability is not a virtue.

All Titor-evidence being web-bound is scarcely encouraging. Suppose you arrived in 1998 on a vital mission and could prevent global war. Why approach a major government when you could make pseudonymous, readily-deniable blogs? Imagine 1998 had contained one 'Janet Titor', who:

- made contact with a host of federal and government authorities, and
- left sealed depositions with banks under instructions that they not be opened until certain assigned dates in the presence of independent witnesses.

Janet's depositions offered detailed, successful predictions of otherwise unforeseen events. (E.g. Janet predicted 9/11 and President Obama's inauguration on January 20th 2009, etc.) While time travel or precognition might not be irresistible explanations even for Janet, Janet would be far more sceptic-proof than John.

Titorists use other manoeuvres besides 'many-worlds', e.g. Titor didn't want to reveal anything which might benefit someone financially. This seems implausibly self-denying if three billion lives are at stake, and doesn't fit all the evidence one might offer. (Were fortunes to be made leaving archived proof in 1998 that Pluto would be reclassified as a dwarf planet in 2006?) It's also unclear how Titor could return home with a retrieved IBM 5100 if (as Titorists maintain) infinitely many worlds exist and (especially if) each time-journey creates its destination.

Beliefs and Actions

Titorist beliefs are puzzling in more ways than simply being based on seemingly slight evidence. Suppose you believe a traveller from a post-nuclear future timeline had visited your time. Would you:

- a) Build shelters?
- b) Proclaim the danger so your future and the traveller's diverged?
- c) Seek time travel technology so you could escape the coming deluge?
- d) Blog about how the traveller's story might be true and criticise any doubters?

Were I a Titorist, I'd try a) and/or b), with perhaps c) a distant third. However, most Titorists seemingly chose d). It seems as if even Titorists don't *believe* Titor. (They may want to believe but that's not the same thing.) Some bloggers claim Titor changed their lives but nobody seems to have tried preventing Titor's wars. Titorists must have reposed great confidence in John. Even if many worlds exist, our history and Titor's might be significantly similar. (Many worlds offer small consolation if all Titor's predictions apply here except the 'hats' one.) Even without many-worlds, Titor-belief and inaction are hard to reconcile. A single-world Titorist might choose inaction on the fatalistic grounds that the future wars were unstoppable. However, even if you think Titor truly described *the* future, your behaviour should presumably still change, e.g. you quit work, forgive your boss and smell all the flowers you can before 2015.

On a recent visit to a (herein nameless) historical site in Scotland, I watched a group of people join hands in order (they said) to open a portal to another dimension. I doubt Scotland offers such portals but at least these dimension-hoppers behaved consistently with their (supposed) beliefs. If I believed (which I don't) that inter-dimensional portals existed in my neighbourhood and inter-dimensional travel was a good thing then my beliefs and behaviour would be related correctly if I sought such portals out. Two norms matter here: 1) one about relating beliefs to evidence, and 2) one about relating behaviour to belief. I suspect my dimension-hoppers went astray over norm 1), i.e. not much

evidence-tracking was involved, but they were at least observing norm 2), i.e. their actions reflected their beliefs.

In 1938, Orson Welles masterminded a radio adaptation of H. G. Wells' *The War of the Worlds* to such effect that thousands of listeners fled from what they believed was a genuine Martian invasion. Although irrational in one sense (i.e. no Martians had landed), such flight seems rational in another, (i.e. run if you believe you're in danger). Some claim (although Welles himself denied) that Welles' broadcast was an experiment in psychological warfare, but then I'd tell myself something like that if I found I'd run away from a radio drama. (Brilliant though Welles' invasion 'news-flashes' were, only one station broadcast them. Likewise, Wells' novel had been internationally famous for decades by 1938.) Anyway, suppose your evidence somehow made it rational for you to believe Martians had invaded, as per norm 1. How might you obey norm 2? By running away perhaps. However, if you sit staring out the window then you and norm 2 have parted company. Your evidence/belief link may be functioning, but your belief/behaviour link is not. What with Orson Welles and sundry Cold War scares, we know what people do when they think the world is ending, and Titorists don't really show the signs. Titorists don't seem to obey either norm. However, had they built fall-out shelters, hoarded supplies, petitioned Congress for better international understanding, or tried making their own time-machines, their beliefs might still be curious but their beliefs would link better with their behaviour.

What might time-travel believers look like? The best example I know is fictitious: Sarah Connor in the *Terminator* franchises acts like a believer, but then she's fought android assassins from the future and didn't acquire her beliefs from blogs. (So Sarah's evidential basis is presumably not ours.) Considered as time-travel fiction, Titor's saga seems threadbare next to (e.g.) Terry Gilliam's 1995 film *Twelve Monkeys* or Wilson Tucker's 1973 novel *Year of the Quiet Sun*. It's easy to picture Titor's 2036: skies heavy

with oil-smoke, shotguns festooned with half-melted dog-tags, decorated skulls piled by road-sides, heroic survivors in torn plastic leisure-wear who achieve time travel despite having almost no infrastructure, etc. Titorists often say that if the story's a hoax, it's an amazingly well-constructed one. (Presumably so they can think 'Only a genius can fool me'.) Actually, if Titor's saga is a hoax, it's a feeble one. Various authors have been speculatively identified as masterminding the Titor saga but I suspect all of those nominated could have thought up a better backstory in five minutes. (And no, imaginative poverty does *not* make Titor's story more plausible.) It's a sad indictment if Titor's saga is 'one of the best hoaxes of the information age', (<http://community.livejournal.com/hoaxes/90359.html>).

However, setting aside evidence for Titor's claims, one can also acquire beliefs on voluntarist, prudential or other non-evidential grounds. Imagine a Pascalian wager for Titorists: if Titor predicted correctly, we face terrible dangers that concerted action might avert; if falsely, it's business as usual. Risking looking foolish predicting non-existent dangers is a small price to pay for averting nuclear war even if that war has low probability. *Ergo*, strive to make our future diverge from Titor's *even if* you think it exceedingly unlikely that he was a time-traveller. Alas, 'Titor's Wager' inherits the 'Many Theologies' problem oft urged against Pascal's Wager, i.e. modern wagerers face more live options than Catholicism or atheism. Perhaps anyone who acquires theistic beliefs on voluntarist grounds is damned. Maybe only apostates are damned, so acquiring beliefs you cannot sustain is actively dangerous. (Although 'Many Theologies' objections to Pascal have their limitations. Pascal did not claim to offer a universal solvent for theological decision-problems. See Bas van Fraassen's *The Empirical Stance*, 2002.) Titorists might fear their blogs: i) raise international tensions and make war more likely, or ii) reveal time travel is possible and hence provoke war when different countries vie to send agents back in time. A 'Titorist Wagerer' might rationally combine belief

and inaction but risk decision-making paralysis: risk of war might increase if you speak out or stay silent. So it's not clear that there's a direct voluntarist path to Titor belief either.

Titor Science

Unlike some prognosticators, Titor invoked science on his behalf, not supernatural powers. Criticising Titor's science feels like taking bolt-cutters to blancmange but, since Titorists claim science supports his story, this alleged science needs scrutiny. Among Titor posts are alleged pages from his time machine's manual, depicting a 'Tipler sinusoid field'. In 1974, physicist Frank Tipler described a way of curving spacetime to generate closed timelike curves ('CTC's'), paths that return to the place *and time* whence they began. (See 'Rotating Cylinders and the Possibility of Global Causality Violation', *Physical Review D*, 9, 1974.) Does this vindicate Titor? No: Titor-science uses only Tipler's name. Tipler's 'time machine' is an ultra-dense cylinder which rotates at more than half lightspeed and has *infinite length* along its axis of rotation. Some speculate CTC's could be created by spinning a column of half-a-dozen hefty pulsars but there's no reason to think *any* finite cylinder can generate CTC's. Tipler's cylinder is not a blueprint for a working time machine but a theoretical model of what (general) relativity may permit granted unlimited resources. Such idealised models can help test the limits of theories. (We can't construct frictionless planes, perfect spheres or infinite-tape Turing machines but they're useful idealisations.) Certain infinities of idealisation can be relaxed as theories mature. (Newton initially treated the Sun's mass as infinite when calculating how gravity governed the solar system but later derived a more realistic mass.) However, a Tipler cylinder's infinite length seems necessary for generating CTC's and hence a non-removable idealisation.

It pains me to say this but if considering time travel realistically, forget *Doctor Who* and H. G. Wells. Fictional time travel can go anywhere; realistic time travel is more restricted. (Titor-science seems more informed by fiction than physics.) Scientific interest in time travel essentially started when Kurt Gödel described a relativistic universe that allows travel between any points in spacetime. (See 'An Example of a New Type of Cosmological Solutions of Einstein's Field Equations of Gravitation', *Reviews of Modern Physics*, 21, 1949.) Gödel spacetime boasts CTC's through every point. Alas, Gödel's universe has infinite extent and all its matter undergoes absolute rotation. Our finite, non-rotating universe is not, *and cannot become*, Gödelian. Finite Gödelian universes might yield CTC's but they still require that all matter in existence rotates. Even given enough matter and the ability to re-arrange it all to make our universe a Gödel time-machine, any CTC's formed would only extend back to the first moment this Gödelian state was achieved. So if our universe is not Gödelian now, nobody from the future can travel back this far.

Tipler cylinders don't so much travel through time themselves as facilitate time travel for other objects by curving spacetime. Like any other CTC-generators, Tipler cylinders afford access to the past only from the moment they first form CTC's. If the first Tipler cylinder forms its first CTC at midnight on May 17th 2093, no future traveller can travel back before then. Furthermore, any CTC-generator must exist throughout the period traversed, hence any Titor CTC-machine must exist between 1998 and 2036. Even given finite Tipler cylinders, problems remain. Despite Titorist talk of 'microsingularities', any traversable relativistic CTC-generator would create a colossal and highly noticeable gravitational field. The Earth's surface could not host such a thing without catastrophic consequences.

Some wormholes might theoretically yield CTC's without huge gravitational effects. However, making a wormhole traversable by human bodies is generally thought impossible

by physicists. Amongst other stumbling-blocks, keeping a traversable wormhole open requires large quantities of gravitationally-repulsive ('exotic') matter. Exotic matter has negative energy-density and thus violates several plausible energy-conditions. (Tipler cylinders and other localised CTC-mechanisms also require exotic matter.) All non-exotic materials, however strong, would hasten a wormhole's collapse. Stephen Hawking also thinks energy feedback through large wormholes may destroy them before any CTC's can be traversed, even given sufficient exotic matter. (See Kip S. Thorne's *Black Holes and Time Warps*, 1994.)

Time Travel Misconceptions

In conclusion, let me offer a plea for responsible time travel discussion. Some years ago, I received an anonymous email seemingly from a recently bereaved person who wanted to know if someone could time travel to change the past and restore a lost loved one. I normally answer any queries as best I can but I'm afraid this one defeated me. I couldn't decide if the request was genuine or not. If hoax, no reply was indicated. If genuine, replying still wasn't indicated because I suspect my views on replacing past events (i.e. it's impossible) weren't what my correspondent wanted.

My correspondent's email directed readers to a website which outlined the bereavement's (genuinely tragic-sounding) circumstances and listed several past junctures where time travellers could retrospectively intervene to set matters right. Various respondents had offered observations. Some said changing the past wasn't possible but some did. Both kinds of response seemed ill-timed but the latter especially so. If you believe people are recently bereaved, don't tell them the past can be changed. Even well-meaning advice on altering history risks stalling the grieving process with illusory hope and seems irresponsible to the point of cruelty. Where denial involves telling oneself some dreadful

occurrence has not actually occurred, I worried my correspondent might believe that the terrible outcome had occurred but yet could still be retrospectively made not to have occurred. So the thing denied would be not the *fact* of the death but that fact's subsequent *permanence*. The hope presumably being not that the deceased might be resurrected or met again in Heaven but the very different hope that the deceased could be made never to have been deceased in the first place. (If the email was genuine, I hope my correspondent has since achieved some ease of mind. Pardon a lurch into autobiography but lightning killed my father when I was twelve. Such a contingency might seem highly apt for retrospective change *if* retrospectively changing past events wasn't impossible. I'm profoundly glad no one tried telling me time-travel could ensure my dad was elsewhere when the lightning hit.) Just as unscrupulous pseudo-spiritualists defrauded bereaved people by faking contact with lost loved ones, no doubt someday we'll see vulnerable people bamboozled into funding alleged past-changing devices.

Despite anything you may have heard to the contrary, nothing can create contradictory states of affairs. The closest time travellers could come to replacing past events would be creating an alternative branching history, i.e. one which diverges from, and thereafter runs in parallel with, the original, *unchanged* history. Even if history branches, the original history remains just as real as ever it did. I suspect many-worlds time travel was not what my correspondent sought. Even if one could create an alternative branch in which (another version of) the loved one survived, the new branch would be an entire world in itself, including (presumably) an alternative, unbereaved version of oneself.

I find important disanalogies between Titorists and my correspondent. Titorists seemingly acquired unusual beliefs on slender grounds and then didn't act on them once acquired, whereas my correspondent was enquiring into grounds for belief. Titorists hedged predictive failures in a

way I find unconvincing but I think my correspondent's request was perfectly understandable *given some popular writings on time travel*. A colleague suggested to me that perhaps my correspondent had read something on time travel and run a Pascalian argument roughly thus:

P1: Some reputable scientists think time travel may be possible.

P2: If time travel is possible, so is changing past events.

P3: Changing past events would be incalculably valuable.

Therefore, even very tiny likelihood of changing the past makes seeking information about it worthwhile.

The above reconstruction can't pretend to be a syllogism but, given such premisses, I think my correspondent matched action to belief correctly: if you believe something has low probability but offers huge rewards, seek information about its feasibility. (Although over one point we may disagree: I think changing past events has precisely zero probability.) The above premises differ significantly. P1 is true, (see Deutsch 1997). P3 is well-nigh incomprehensible, (like 'Spherical cubes make great paperweights'). P2 is a mistaken inference, (i.e. time travel must allow changing the past). However, inferences almost identical to P2 recur, often unquestioned, in many writings about time travel. (To hammer the point: P2 is false – time travel needn't permit making what has happened not to have happened.) So it's maybe unsurprising if my correspondent thought physicists were setting up in the past-altering business. (A salutary reminder that remarks can resonate in ways unforeseen by their authors.)

The key philosophical work here is David Lewis' 'The Paradoxes of Time-travel', (*American Philosophical Quarterly*, 13, 1976). However, Lewis only argued that time

travel is *logically* possible and that time travel need not imply paradoxical changes to the past, (*en route* demolishing inferences like P2). When defending Lewis, I'm sometimes asked 'Where are the time travellers then?', but Lewis wasn't claiming that time travel occurs or that time travellers walk among us. To defend the logical possibility of time travel is not to defend its actuality. It's *logically* possible for me to throw all my pens in the air and see them form a perpetual-motion machine on hitting the ground, but it won't happen. Many logical possibilities may be metaphysically or physically impossible and hence never occur in this world.

Likewise, possibility within an idealised theoretical model need not imply actuality. A falsifiable prediction: the next article you see headlined (e.g.) 'Scientists invent time travel' will announce only the discovery of (yet another) highly theoretical CTC-mechanism and *not* a successful test of a time machine. The physical possibility of CTC's is currently an open question but thus far prospects for aspiring time-travellers are not encouraging. We still await the theory of 'quantum gravity' that will reconcile quantum mechanics and relativity. Pending such reconciliation, it's misleading to take highly idealised models from one version of either theory and announce that the possibility of CTC's therein proves time travel could occur in our world. For what it's worth, my (strictly amateur albeit falsifiable) prediction is: quantum gravity won't allow CTC's. However, even if that prediction proves entirely wrong and our space-time can, and does, boast CTC's, I suspect they intersect only with times later than any we've reached. If time travel ever will be, it is not yet, and no blog yet posted suggests otherwise. If John Titor existed, he almost certainly only travelled in time the way we all do, i.e. by persisting.

Why worry about blogs from alleged time travellers? Well, beliefs matter, actions matter and belief/action relations matter. Certain beliefs can be dangerous, and not just to their possessors. In one sense, I'm glad most Titorists seemingly don't act on their apparent beliefs, since

'Titor' predictions of famine and disaster strike an unpleasant note of survivalist gloating. One can imagine extremists of many varieties using supposed warrant from the future as a catalyst for atrocities. Alternatively, a sort of doom-fatigue could set in and people become so jaded with dubious apocalypses they discount real dangers. Sadly, a human-contrived near-extinction (or complete extinction) of humanity is possible. But this means we should be more critical of apocalyptic predictions, not less. (After all, a prediction of extinction only has to be right once but can only be right once.) It would be tragic if we missed real dangers through looking in the wrong places.

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