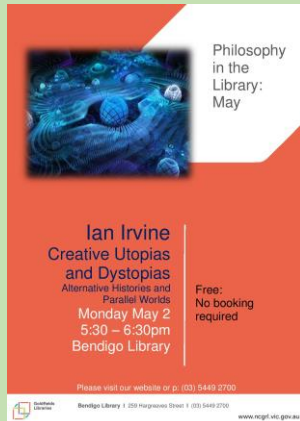


# 'Beautiful Hybrids: Alternative Histories and Parallel Worlds

Copyright, Dr. Ian Irvine, 2016 (and 2022), all rights reserved.



- 1. Introduction: Parallel Worlds and Selves, and Counterfactuals as Key 'Quantum Fiction' Tropes**
- 2. Pre-History of the Many Worlds/Many Selves Trope PLUS Four Discipline Areas Influenced by 'Many Worlds/Many Selves' Theories**
- 3. The Many Worlds of Physicists and Cosmologists**
- 4. 'Counterfactuals' Written by Historians and Writers of Historical Fiction**
- 5. New Age Speculations about Parallel Worlds**
- 6. Why are Many Postmodern Creatives Fascinated by the Many Worlds Trope?**

**Please note:** This article was originally delivered as a public talk entitled 'Creative Utopias and Dystopias: Alternative Histories and Parallel Worlds' on May 2<sup>nd</sup> (2016) for Bendigo's 'Philosophy in the Library' series of talks. Many thanks to both the *Bendigo Philosophical Society* and *Bendigo (Goldfields) Library* for the invitation to speak as part of the programme.

**A note about the images used in this article:** All of the images (except the one above) used in this article relate to key books, etc. involved in the development of the 'Many Worlds/Many Selves' concept/literary trope. Readers interested in the source texts associated with the history of this fascinating concept/literary trope are encouraged to purchase and read the books or go and watch the movies, TV shows etc. referred to. The images I have used are also in the public domain for promotional purposes, as far as can be ascertained.

In this article I want to look at the growth of 'Parallel or Alternative Worlds/Realities' and 'Parallel/Alternative Selves' tropes and themes, among physicists, historians, personal growth and alternative psychology gurus, and creative artists of all descriptions.

I've come to the topic gradually due to a series of magical realist novels I've been working on these past few years which explore these tropes among other things. The novels are part of a transmedia/multiplatform project emanating from an online hub, and thus I've also been working on music, poetry, art and non-fiction elements in the stories.

Now and then I will refer to the first novel of the series, *The City of Quartz*, which is partially set in an alternative Central Victoria where due to different historical circumstances unfolding in the 1830s-1850s Koori Australians, with foreign assistance, manage to unite and maintain a sustainable Aboriginal nation capable of warding off colonial aggression. The book also explores the 'parallel lives trope' with the main character, Rowan Sweeney, 'caught between worlds' to some extent.

## **1. INTRODUCTION: Parallel Worlds/Universes (and Selves) and Counterfactuals as Key 20<sup>th</sup> Century 'Quantum Fiction' Tropes**

In a 1967 episode of the original series of Star Trek called *Mirror, Mirror* Kirk and some crew members are being teleported up to the Enterprise – which is in orbit around an alien planet – when a severe ‘ion storm’ causes an inter-dimensional glitch. Kirk and his crew members swap places with alternative versions of themselves resident in a parallel reality – ‘Good’ Kirk finds himself in the role of the ‘Evil’ Kirk, and visa-versa. ‘Good’ Kirk is the first to work out what’s going on:

‘Not our universe ... not our ship ... something ... Parallel ... Parallel universe, Coexisting with ours on another dimensional plain. Everything’s duplicated. ... another Enterprise ... Spock with a beard!’

I loved the ‘Spock with a Beard’ comment – it’s a comment that suggests a personal dimension to the topic under exploration in this article. That episode was the first time I was exposed to the concept of Parallel Worlds – and I was very young at the time.

## **MORE THAN JUST A SCIENTIFIC THEORY: AN UNCANNY ARCHETYPE ADDRESSING FUNDAMENTAL HUMAN NEEDS**



The episode occurred 10 years after the Many Worlds Interpretation of Quantum Mechanics was formulated by US physicist Hugh Everett Jr. in 1957. His work was entitled ‘The Theory of the Universal Wave Function’ and it was more or less ignored at the time; leaving Everett free to go off and help the US and its allies protect themselves against nuclear attack. Interestingly, Everett didn’t initially use the term ‘many worlds’—Bryce Seligman DeWitt, a science popularizer, is usually credited with inventing the name some years later.

From the 1960s on the theory was championed by various physicists before it was adapted for use in numerous SF movies, TV shows, books, comics etc. It is currently so popular that it will be a great pity, indeed, if it turns out to be an erroneous description of the physical universe!

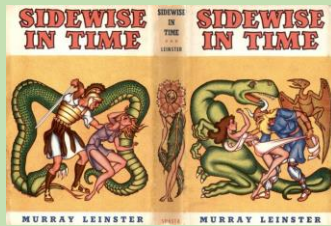
Given the theory has always existed on the fringes of provable science, it is well to assert here that the trope displays all the hall-marks of what we might call an archetypal imaginative narrative.

I became interested in the trope when I realised: a) that it represented a development of pre-20<sup>th</sup> century imaginative story archetypes/motifs; and b) is a key contributor to what literary theorist Brian McHale calls the ‘ontological turn in postmodernism’—put simply he’s talking about our postmodern obsession with—and anxiety about—‘hybrid identities’ as well as metaphysical questions such as: ‘What world is this?’

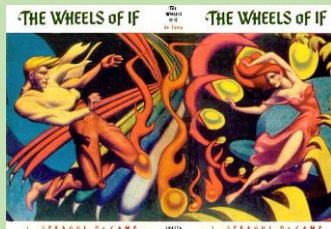
## **2. FIRST EMERGENCE AND PREHISTORY OF THE TROPE**

The trope first emerged in popular literature with ‘New Science/Quantum Mechanical’ connotations in the short story ‘Sideways in Time’ by Murray Leinster, written in 1934. This was

four years after Niels Bor, in *The Physical Principles of the Quantum Theory*, helped birth the Copenhagen Interpretation of Quantum Mechanics—which was not actually a Many-Worlds interpretation<sup>1</sup>.



In Leinster’s story a cataclysmic event occurs which causes localized ‘timeline’ shifts across planet earth—consequently, a Roman legion appears on the banks of 1930s St Louis; a salesman drifts into a part of America’s south in which the Confederate armies won the Civil War and so on.<sup>2</sup>



‘The Wheels of If’, by SF writer L Sprague de Camp (1940), followed a few years later. In this story the main character inexplicably finds himself travelling through a series of parallel lives in parallel universes. Some of the alternative realities/histories explored became staples of both later fictional parallel worlds stories and historical counterfactual studies, e.g. stories exploring America after The American Revolution fails, or what would have happened if

France had been victorious in the Napoleonic era. The highly popular movie *Ground Hog Day* reworked, to some extent, Sprague’s key innovations, whilst introducing an explicitly moral—almost Karmic—reason for the curse laid on the main character, i.e. the curse of reliving a single day repeatedly until he gets it right as an empathetic human being.



Another key moment in the history of the Many Worlds trope occurred in the story ‘Flash of Two Worlds’ (Sept. 1961) - which appeared as an episode of *The Flash* comic book series. It represents the first post-Everett fictional depiction of the ‘Many Worlds Theory’ and features a ‘quantum bleed’ (i.e. between parallel realities) as well as an alternative/doppelganger self linked to the main character. In Flash’s case, the act of ‘vibrating his molecules’ at a children’s party leads to a quantum level disturbance that sends him to Earth Two – a place where a ‘retired version of himself’ resides.

## PRE-HISTORY OF THE TROPE IN SPIRITUAL ALTERNATIVE UNIVERSES, UTOPIAS & DYSTOPIAS and IN THE DOPPELGANGER ARCHETYPE

We encounter precursors to this trope in a number of folk storytelling traditions and literary movements:

1) the ‘spiritual other worlds’ (that describe ‘parallel dimensions’ of sorts) of many of the world’s religious/spiritual traditions. In these stories the ‘universal constants’ (e.g. related to time, space, physics, etc.) of the alternative universe detailed are quite different to how they function in our mortal world.

---

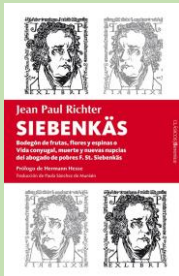
<sup>1</sup> This is because these thinkers saw ‘wave collapse’ (into one reality at a time), due to ‘observation’, as a real—if difficult to explain given then current thinking—phenomenon

<sup>2</sup> The ‘Sideways award for Alternate History’ inaugurated in 1995 acknowledges this story as the seminal in the genre since many explorations of this sub-genre of SF followed.

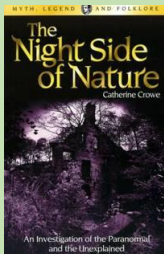


2) Utopian and Dystopian philosophic and literary descriptions of imagined ideal or worst case societies e.g. Plato's *Republic*, Thomas More's *Utopia*, and H.G. Wells' science-influenced utopian novel *A Modern Utopia* (1905), which is about a second version of earth existing somewhere out in space. As the quantum revolution was unfolding, of course, Huxley's *Brave New World* and—a little later, but still pre-Everett—Orwell's *1984*, built on the dystopian motif for the modernist literary era.

3) 'Doppelganger' and 'Evil Double' literary tropes and folk traditions such as the *Ka*, or soul double, of ancient Egyptian religion; the 'fetch' figure of early modern Europe; and the *Vardoger*, *etiainen* (or 'firstcomer') and *Anjou soul double* (or death) figures of Norse, Finnish and Bretonic mythologies respectively.



In literature, the novel *Siebenkas*, by German writer Jean Paul (1796), in which the main character gets advice from his 'second self', is one of the earliest literary treatments of the doppelganger motif. Romantic and Gothic-Romantic poets and writers—e.g. Poe, Shelley and Byron—also made use of this motif, as did the English novelist Catherine Crowe in *The Night Side of Nature* (1848), and the Russian author Fyodor Dostoyevsky in *The Double* (1846). In that novel a low level bureaucrat encounters an extrovert/confident version of himself during a breakdown.



Some of the uncanny, paranormal dimensions to the doppelganger trope were transferred, though perhaps unconsciously, into the modern 'Parallel Selves' quantum fiction trope. Interestingly, the same uncanny aura permeates many modern stories featuring clones, as well as many time travel stories wherein a self from the past, or future, travels through time to confront another version of itself.

## UTOPIAN AND DYSTOPIAN DOPPELGANGERS LIVE ON IN PARALLEL WORLDS/SELVES LITERATURES

Despite the changes to the 'Utopia/Dystopia' and 'Doppelganger' imaginative tropes that took place after the advent of Quantum Mechanics, elements of these tropes—as well as the moral and spiritual problems they invited readers to ponder—became fundamental to the 'parallel worlds/universes/selves' trope.

Similarly, traditional religious and spiritual notions of other worlds in which the rules of physics operate differently to how they operate in our world—though usually rejected by most modern physicists and cosmologists—became subversively active in 20<sup>th</sup> century creative developments to the new trope, and, most interestingly, in a number of New Age psychologies and therapies influenced by Everett's Many Worlds Interpretation.

In short: the 'Many Selves in Many Worlds/Universes' trope is currently hopelessly entangled with pre-modern spiritual traditions that profess belief in some sort of human soul. This is one of the facts about its development that makes the trope so interesting to me. In my series of novels, parallels between New Physics understandings of reality and older, spiritual and philosophical, understandings are explored.

## **FOUR DISCIPLINES INFLUENCED BY ‘MANY WORLDS’ THEORIES PLUS FOUR KEY TROPES OF QUANTUM FICTION**

Having detailed the trope’s pre-Everett sources and mid-20<sup>th</sup> century developments, let’s briefly summarise some key arts and knowledge fields in which ‘alternative world/selves’ tropes feature: 1) contemporary Physics and Cosmology—especially the sub-disciplines of physics related to Quantum Mechanics and Digital Physics; 2) Counterfactual Histories; 3) New Age psychologies, pop-psychologies and therapies; 4) contemporary Speculative Fiction genres (e.g. Science Fiction, Fantasy, Horror and Magical Realism).

Before we proceed any further, it is also important to note that the Many Worlds/Many Selves trope is a key trope associated with the literary genre known as Quantum Fiction. A number of other tropes are fundamental to this genre: 1) the Simulated Universe/Reality trope (which sometimes incorporates versions of Science Fiction’s Artificial Intelligence – or A.I. – trope); 2) the Time Traveler trope;<sup>3</sup> and 3) the Paranormal is Normal (in the quantum technology era) trope.<sup>4</sup> I’ve discussed some of these tropes as they pertain, in particular, to the development of the Quantum Fiction genre from the middle of the 20<sup>th</sup> century, in other articles and essays, so I won’t be going into any depth about them here.

### **3. THE MANY WORLDS OF PHYSICISTS AND COSMOLOGISTS**

#### **SAVING MATERIALISM AFTER THE QUANTUM REVOLUTION BY THEORISING ‘MANY WORLDS’ (INTRODUCING ‘THE UNIVERSAL WAVE FUNCTION’)**

Hugh Everett (in 1957), in *The Theory of the Universal Wave Function*, launched the Many Worlds Interpretation as a solution to the measurement problem at the heart of quantum mechanics. Everett’s approach deeply influenced materialist interpretations of Quantum Mechanics, but other materialist interpretations also fed the ‘parallel universes/selves’ trope. Materialist approaches aimed to move beyond the Copenhagen Interpretation because it was felt that this interpretation undermined the hard-fought victories of 18<sup>th</sup> and 19<sup>th</sup> century classical (‘materialist’) scientific perspectives on the nature and functioning of the cosmos. However, to save key elements of classical scientific materialism and place them within a new ‘quantum’ framework, various 20<sup>th</sup> century materialist approaches—including the approach forwarded by Everett—had to theorise a (materialist) multiverse, instead of a universe.<sup>5</sup>

---

<sup>3</sup> Although most often found in Speculative Fiction genres, these tropes have recently found their way into Thrillers, Romances, Westerns, etc. Interestingly, many literary writers have also been using the tropes in “Quantum Fiction” contexts, e.g. Thomas Pynchon, Don DeLillo, Kate Atkinson and Joyce Carol Oates.

<sup>4</sup> This strand to Quantum Fiction is less often associated with hard core Science Fiction; rather, it is more often associated with subgenres like ‘Science Fantasy’, ‘Gothic Sci Fi’ and ‘Paranormal Sci Fi’ - which have long explored supernatural/paranormal themes. In particular, the line between ‘science’ and ‘magic’ is often blurred in these genres, and traditional Fantasy tropes are imported and explained scientifically – e.g. vampires as experiments in genetic engineering. Science Fantasy stories are particularly prone to exaggerating (often to the point of distorting) the real science associated with the New Physics.

<sup>5</sup> H Dieter Zeh in *The Problem of Conscious Observation in Quantum Mechanical Description* (June 2000), and Albert and Lower (1988). A variation on Everett’s approach, is the Many Minds perspective. It arises, in part, out of the notion that mind (in the form of an observer observing a measuring device) is fundamental to the apparent

Everett was a hard-nosed materialist desperate to formulate a solution to the measurement/observation problem that would be capable of insulating matter from the influences of mind/consciousness. The Copenhagen Interpretation of Quantum Mechanics explained the tendency of quantum objects to remain in ‘superposition’ (i.e. in multiple places at once, somewhat like a ‘wave’) until observed—at which point they adopt a definite ‘state’ i.e. become ‘particles’—by arguing that ‘observation/measurement’ *causes* the ‘wave function’ to ‘collapse’.

However, although only observable at the subatomic level, anything that made matter dependant on observation (i.e. the mind of a living observer) disturbed Everett. He decided to formulate a materialist explanation for this quantum weirdness out of fear that theories arguing that ‘wave collapse’, due to ‘observation/mind’, would see mankind slip back into Idealist—i.e. ‘anti-materialist’—philosophical perspectives that he felt had more in common with religion than true science. For Everett, the facts of ‘Quantum Weirdness’—if not explained—threatened the entire program of post-Newtonian science.

For Everett, the Wave Function of subatomic matter doesn’t collapse into a specific ‘particle based’ reality *due to the ‘observer effect’*, it only ‘*appears*’ to collapse—rather, according to Everett, all the other possible realities exist as branching outcomes—i.e. self-contained realities/worlds/universes—still working within the *Universal Wave Function* that contains all possible branches/outcomes.

## **WHERE ARE THE BRANCHING UNIVERSES AND CAN WE COMMUNICATE WITH THEM?**

How many branching/split off realities the multiverse can accommodate is open to debate. Recently, however, physicists moved the goalposts somewhat by positing a vast domain called ‘Hilbert Space’, that would, apparently, be up to the job of housing all the branches/parallel realities.

Many questions arise from Everett’s thinking, most obviously: can the ‘parallel realities’ interact with each other at all, and if so, under what circumstances? The ‘Many Worlds Interpretation’, however, argues that at macro levels, at least, communication cannot take place between the various branches.

More recently, however, some physicists have speculated that at quantum levels the myriad ‘branched worlds’ may indeed be able to communicate with each—especially if physicists can *impede* the phenomenon known as ‘decoherence’ and somehow maintain ‘superpositional’ states. According to some physicists, the physics of new technologies, e.g. quantum computers, is based upon the existence of myriad ‘branched worlds/universes’. We also note the remarkable

---

‘collapse of the wave function’ discussed above. However, unlike Everett who argued that both mind and body split/migrate to non-communicating sub-realities of the Universal Wave Function, Zeh argued that Mind is, in fact, always already both ‘infinite’ and ‘distinct’ as it observes the world (many minds in one?). Whereas Everett’s Universal Wave Function implies many physical worlds coexisting, Zeh’s formulation argues that the multivariant properties of an observer’s Mind accounts for the apparent sense of wave function collapse.

findings of the so-called ‘Quantum Paddle Experiment’ where-in a macro scale object was successfully placed in ‘quantum superposition’ for a period of time after the experimenters successfully eliminated decoherence effects (i.e. effects associated with ‘observation’) usually at play in the environment. Remarkable video of the experiment appears to show the ‘quantum paddle’ vibrate in and out of existence (between realities?) after being successfully placed in ‘superposition’.

## **DID EVERETT SAVE MATERIALISM? SHORT ANSWER – Not Really**

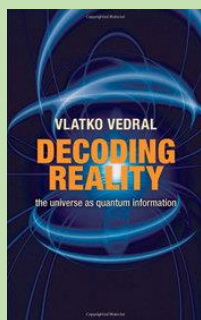
The idea of a Universal Wave Function turned out to be something of a Pandora’s Box for New Physics materialists like Everett. Why? Because if all possible worlds/universes exist together under its metaphorical *cosmic umbrella*, then worlds in which minds influence the forms that matter takes also theoretically exist. Likewise, universes ruled over by gods (as per polytheism) or a god (as per monotheism) may also exist. Similarly, universes may exist where the ‘universal constants’ (e.g. the speed of light, etc.)—set in motion prior to, or at the time of, a Big Bang/Crunch etc.—are set to different numbers (thus altering literally everything that could exist in a universe).<sup>6</sup>

Everett’s theory birthed what we might call ‘Many World’ sub-models—i.e. Limited Branchings models, the Many Minds model and an Expanded model, which theorized that the Universal Wave Function might encompass universes with different universal constants.

We note that though Everett’s Many Worlds Interpretation was the first ‘Multiversal’ interpretation of Quantum Mechanics, it is listed at Number 4 in Max Tegmark’s widely circulated list of Multiverses.

## **ADDITIONAL COSMOLOGICAL THEORIES THAT FEED INTO THE ‘PARALLEL WORLDS’ TROPE**

I want to briefly mention Brane and Bubble Universes cosmological theories, as well as the Simulated Universe theories linked to ‘digital physics’.

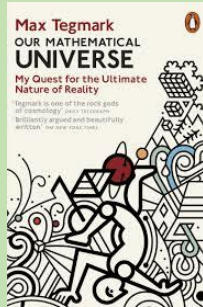


Tegmark’s list of physics-based Multiverse theories describes a Class/Level 2 Multiverse in terms of ‘Brane or Bubble Parallel Universes’. In such models an infinite number of universes exist side by side with ours but with different Universal Constants that make them difficult to observe/detect. Some physicists and cosmologists ascribing to such theories argue that there are 11 dimensions to the universe we know. 7 of those dimensions are difficult to detect but are evident in the mathematics. Since no one knows what these other Bubble Universes look like, or even what the 11 dimensions of our universe look like, these approaches have had minimal impact on the Many Worlds/Many Selves trope to date.

---

<sup>6</sup> We can understand these crucial constants as inputs for a kind of ‘universal program’ capable of determining the ways in which matter/energy/time etc. interact with each other at various stages of universe evolution.

Brian Greene gives us another source for parallel worlds theorizing that Matrix fans will immediately recognize: i.e. The Simulated Multiverse we encounter under the banner of ‘Digital Physics’. Some physicists analyzing the fundamental building blocks of our universe via mathematics, believe that it is generated by a super advanced ‘quantum computer’. Everett’s ‘Universal Wave Function’ is actually part of a ‘Multiversal Quantum Computer Program’—a kind of vast ‘digital information wave’.



According to this theory, all matter is really information communicating with other information. Consequently, there may exist a large-to-infinite number of ‘quantum computer’ generated parallel universes/realities constructed out of: a) the universal constants of our reality/universe, or b) out of different mixtures of universal constants. This scenario also offers the possibility of dimensions to the multiverse that stand outside of all the in-world ‘simulation’ (i.e. digital Worlds/Universes) options that could be experienced by in-world ‘avatars’ that are, in truth, inhabited by consciousness from somewhere else.

## BEYOND DIGITAL PHYSICS: PERSONAL IDENTITY AND THE SUPERCOMPUTER

The most intriguing consequences of the Simulated Universe Theory emerge when we assess personal identity and the nature of consciousness in the light of such approaches. In terms of metaphysics, ontology and ethics, we note that the questions we find ourselves asking have also been pondered and answered by thinkers attached to myriad religious and philosophical systems down the ages:

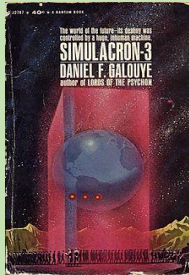
- \*Does some part of each of us reside elsewhere—i.e. outside our particular ‘universe’—even though we are apparently ‘super-immersed’ in our own ‘time and space bound’ universe most of the time? [Do we have two (or more) ‘bodies’? e.g. one (or more) in the origin/real world and one in this world?]
- \*As consciousnesses do we ‘download’—in a manner of speaking—into a given body (‘avatar’) at ‘conception’ or there-about?
- \*Do our own actions, thoughts etc. determine the ‘world/game/story branchings’ available to us throughout our lives or are our ‘in world’ experiences completely or partially ‘pre-determined’?
- \*Are we being tested in some way during our presence in this particular ‘simulated universe’?
- \*Did we come here to learn something or are we here for other reasons (e.g. entertainment, historical tourism, imprisonment, etc.)?
- \*Did we come here of our own free will or were we forced to come here?
- \*In the ‘meta-reality’ (i.e. a proposed ‘real world/universe’ outside our digital simulation) are we members of a future human society of some sort? Or are we perhaps members of an alien civilization seeking ‘entertainment’, a ‘holiday’, ‘knowledge about human life on earth in particular eras’?
- \*Is some kind of reincarnation (repeated download?)/Ground Hog Day scenario unfolding for each of us—i.e. do we relive life scenarios repeatedly for any number of reasons?
- \*Can the various ‘life/game options’ (i.e. ‘parallel simulated reality worlds’) communicate with each other within the multiversal program?<sup>7</sup>

---

<sup>7</sup> Communications between ‘digitised’ ‘parallel worlds’ might occur for a range of reasons:

\*Was our simulated universe/multiverse program created (and perhaps overseen) by ‘Chaotic Experimentation’, leading to ‘Impersonal Rules’ for our universe, or was it engineered by skilled ‘cosmos programme designers’? [We note here that Digital Physics models suggests either: a) a chaotic, rudderless set of natural laws and universal constants that only coincidentally lead to a functioning cosmos or, b) a designer consciousness (or consciousnesses) of some sort responsible for the ‘just so’ rules that govern our universe as well as our ‘super-immersion’ in it.

\*Given the ‘observer effect’ discussed earlier, however, we also have to ask: Is each of us a ‘world making consciousness’ in some way?<sup>8</sup> This theory gets extremely disorienting rather quickly. As we look around us we might also ask: are some of the people, or even animals, etc., in our universe fellow downloaded consciousnesses (maybe even Universe Designers) inhabiting avatars? A more disturbing question must also be asked: are other people, animals, etc. simply entities generated by the multiversal super-computer—i.e. something like ‘non-player characters’ in video games?



Many of these questions have been explored by 20<sup>th</sup> and early 21<sup>st</sup> century SF writers— e.g. in Daniel Galouye’s groundbreaking novel *Simulacron-3* (1964); also in *The Matrix* movies; and in books like *Permutation City* (by Greg Egan, 1994) and *Snow Crash* (by Neal Stephenson, 1992). It is fascinating, and perhaps a little unnerving, that modern science has reached a point where its own theorizing leads us to ask such bizarre questions. I will not be addressing and answering these particular questions in this work, but for deeper reading on the topic readers are directed to my essay entitled: *Are You Living Inside a 23rd*

*Century Literary Masterpiece?*

## SUMMARY: THREE PHYSICS THEORIES FEEDING THE ‘MANY WORLDS’ TROPE

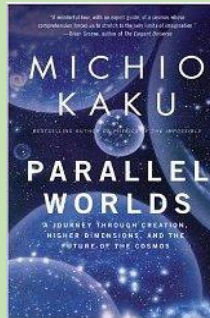
We’ve explored how—to save the philosophical materialism of classical science—Everett and other physicists had to invent ‘many worlds’, ‘extra dimensions’, myriad ‘digital realities’ and possibly even millions of sterile ‘bubble or brane universes’ in order to block traditional notions of ‘mind’ (or ‘god’ or ‘the gods’) or other ‘transcendent observers’, from assuming a role in ‘collapsing the wave function’ from a supernatural location outside our known universe.

We have also seen that modern physics has fed the ‘Parallel Realities/Universes’ trope by way of three major models that attempt to solve the measurement problem of Quantum Mechanics: 1)

- 
- The programmers (or ‘maintenance crew’ appointed by the programmers☺), or the part of a consciousness ‘super-immersed’ in an avatar, might communicate with a ‘super- immersed being (i.e. one of us in this universe) whilst the beings life unfolds—and for any number of reasons. This would constitute a ‘meta-world/program’ communication.
  - Death, near death experiences, drug experiences, transpersonal experiences, illnesses etc. may temporarily loosen a super-immersed being’s consciousness from its simulated world’s ‘avatar’, allowing for an awareness of both what stands outside the life-program AND all the other ‘in-world’ life options available.
  - The non-immersed part of a consciousness might be able to sense ‘alternative presents, pasts and futures that are part of the ‘digital ‘universal wave function’ and might transmit information about those reality options to the super-immersed part of its consciousness during sleep, extreme life situations, or through ‘programming glitches’ etc. – perhaps as warnings related to particular actions/choices.

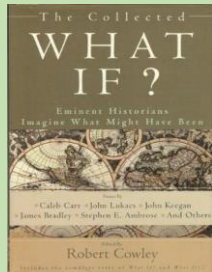
<sup>8</sup> Paralleling, to some extent, the Gnostic Christian take on humanity’s ‘fall’ into an inferior universe.

Everett's 'Many Worlds' approach; 2) String and M Theory approaches; and 3) the Simulated Universe approach. In all three approaches, our access to other universes, and/or parallel universes, is deemed to be more or less impossible (given current scientific knowledge).

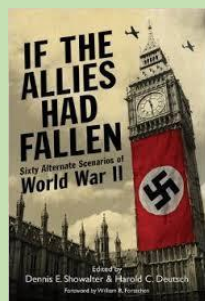


Nevertheless, for many, the fact that so many physicists are suggesting that Parallel Worlds may actually exist has acted as a powerful stimulus to the imagination. The experiments mentioned earlier, i.e. that appeared to limit or completely neutralize quantum decoherence, have led some thinker, artists, and even some physicists and quantum and digital biologists, to speculate that in the future we may well develop technologies capable of amplifying quantum-level phenomena (e.g. by amplifying superpositional access to adjacent, nominally stable, 'parallel worlds') to macro-scale levels. However, although the various adjacent dimensions/realities may one day become accessible to us through the development of advanced technologies, few physicists argue that we might be able to access such dimensions via 'mental', 'religious' or 'creative' pursuits/techniques. This party-pooping stance, however, has not stopped SF, Fantasy, Horror, Magical Realist and Quantum Fiction writers, as well as New Age thinkers and the like, from speculating about psychobiological/ genetic/ psycho-spiritual, etc. abilities and techniques that might facilitate communication between worlds. Similarly, the idea that the Universal Wave Function might harbor 'perfect'—i.e. 'utopian'—universes as well as 'dystopian' universes, has fueled the speculations of creative thinkers of all persuasions.

#### 4. 'Counterfactuals' written by Historians



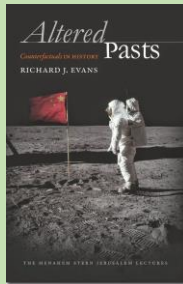
Let us now look at the least speculative and least radical perspective on our trope i.e. that of the secular/realist academic historian. These scholars usually remain untouched by the New Physics and tend to set themselves apart from the imaginative speculations of fiction writers of all descriptions. They also rarely have time for New Age thinkers advocating quantum-influenced psychologies and approaches to personal well-being and self-development.



The origins of modern counterfactual historiography began with a whimsical little collection called *If it had Happened Otherwise* written in 1931—coincidentally, it was published around the time of the formulation of the Copenhagen Interpretation of Quantum Mechanics. At the time, the collection was not seen as a serious historical work (although it featured a short piece by Winston Churchill), unlike counterfactual works written by modern academic historians. The first serious historical counterfactual speculation piece was not published until 1964. The author was Robert Fogel and the book was *Railroads and American Economic Growth*.

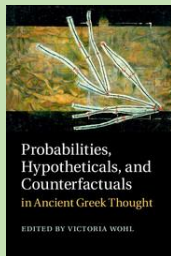
The academic methodology adopted by historians like Fogel, usually involves a Realist/Materialist ontology designed to assess historical cause and effect processes. Consequently, 'counterfactual' stories emerge when certain causes, or historical inputs, are altered. For these academic historians, 'counterfactuals' (they eschew the term 'alternative realities') assist us to better understand both major and minor historical events. Counterfactuals

also help us understand the relative influence of culture, religion, ‘great figures’, economics, scientific and technological developments, social forces, etc. on historical events. Usually counterfactual historians try to be methodical and cautious in their depictions of key ‘branching moments’ in history – i.e. moments of choice or chance where different ‘worlds’ might have been launched due to slightly different input factors.



Counterfactual historians also tend to be quite scrupulous about assessing alternative events that might have flowed from altered ‘branching moments’. The parallel worlds/histories they create are usually quite Newtonian—that is old-style ‘materialistic’—creations. Crucially, they do not usually believe that their counterfactual histories actually exist as parallel realities, somewhere (e.g. at the super-positional, sub-atomic level)—indeed, counterfactual historians rarely, if ever, engage with the findings of the New Physics. Also, they do not speculate about ‘structural changes to reality’ in their counterfactual worlds (i.e. changes to the universal constants that fine-tune our universe). Likewise, the Programmed Universes and M and String Theory Universes discussed by Tegmark and Greene are irrelevant to their goals, as is any discussion of the spookier implications of quantum mechanics (including the validity or otherwise of the Many Worlds Interpretation). Clearly—at least from the perspective of creative writers and quantum influenced New Age thinkers—academic historians are the ‘anti-fun police’ parked outside multiverse enthusiasts party!

One of my favourite counterfactual anthologies, entitled *What If? Australian History as it Might Have Been* (edited by Stuart Macintyre and Sean Scalmer) contains a fascinating collection of counterfactuals about Australian history. Wonderful as it is—with essays concerning the French colonization of Tasmania in the late 18<sup>th</sup> century; Gough Whitlam’s re-election immediately after “The Dismissal”; the failure of Federation in 1900; and so on—I was a little disappointed not to come across any essays that played with the fine tuning of the Universal Constants of our universe ... an essay on magical dragons over the Snowy Mountains would have added extra imaginative flare to the collection!

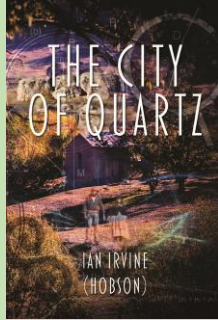


Counterfactual historians are, nevertheless, frequently controversial. Some people see no value in looking at the ‘what ifs’ of history—even though it has been a pastime for thinkers since the time of the Ancient Greeks. Others, however, become disturbed by some of the counterfactuals outlined by historians, and seek to ridicule the discipline, thus, paradoxically, acknowledging the revolutionary potential implicit to this kind of historical analysis. We may pose some questions:

- What are the consequences for societies that seek to establish only the facts of history, whilst ignoring the ‘counterfactual’ possibilities (i.e. possible pasts, presents and futures) that were eliminated by the path that history actually took?
- What are the consequences when we theorise and explore, negative counterfactual outcomes for apparently positive branching events that didn’t actually occur in real history? Likewise, what is the value of assessing the likely ‘positive counterfactual outcomes’ that may have occurred had negative counterfactual branching scenarios unfolded (i.e. instead of the positive branching events that occurred in ‘real’ history)?

- What might we learn from speculation about lost historical ‘pathways’ by following them scrupulously to a different present?

## COUNTERFACTUAL INSPIRATION FOR *The City of Quartz* (novel)



One of my biggest reasons for writing *The City of Quartz* was to explore Australian history, particularly the treatment of indigenous Australians by the invading European culture, from a counterfactual perspective. My question was as follows: Could it have been different? Could the suffering of indigenous Australians as they encountered global modernity have been significantly lessened? What historical conditions could have lessened or even eliminated that suffering? The book attempts an admittedly flawed ‘counterfactual’ history affirming, ultimately, that Indigenous suffering due to colonization was not inevitable ... things could have gone differently.

Oppressors of all ages have attempted to enforce what I’d call the ‘it could only have happened this (i.e. our) way’ ideology over the people they oppress and control. I found that by writing the novel I ‘tweaked the dragon’s tale’ of our basically Imperialist national paradigms. I found this Imperialist dragon still presiding over the imaginations of many Australian fiction readers, and even some writers. If things could have gone differently—historically speaking—for Indigenous Australians, we must surely ask: how might things also be different now? How many of us are prepared to commit to a ‘new now’ that involves less (or no) suffering for Indigenous Australians? Well, firstly writers and thinkers have to attempt to formulate what a new and better now might look like ...

## 5. New Age Speculations about Parallel Worlds

### DIFFERENCES BETWEEN VARIOUS ‘MANY WORLDS/SELVES’ INFLUENCED PSYCHOLOGIES: CHOOSE YOUR IDEAL PARALLEL REALITY

of the various psychologies and self-help approaches associated with Quantum Mechanics, the most controversial seems to be the pop psychology associated with *The Secret*. So far as I can tell, this approach accepts something like the Copenhagen Interpretation of Quantum Mechanics, then suggests that individuals have the power to ‘collapse’ the infinite ‘wavelike’ futures available to them into a wished for paradisiacal future ‘world and self’ by way of mental exercises.

Everett’s Many Worlds theory implies, of course, *many selves* in *many worlds*, so, in a sense, one needs to sort through a range of possible futures in order to settle on, and then manifest, a particular future personal utopia. If *alternative selves* living in *alternative universes* are real, then they offer limitless opportunities for change, self-development, etc. since somewhere a part of us is living a life in which we possess what we lack in this universe with this version of ourselves. Setting aside for a moment the scientific limitations outlined previously, a range of New Age gurus argue that we can contact our doppelgangers in alternative universes—i.e. according to the gurus there can indeed be ‘communications’ between parallel worlds/parallel selves.

Quantum Jumping’, for example, involves merging an ‘inefficient/incomplete’ i.e. sick, poor, unattractive, unmotivated, un-athletic, etc. self – with ‘utopian’ selves currently living real lives in parallel universes.<sup>9</sup> A hybrid more capable and desirable self slowly emerges through visualized meetings/discussions etc. with our friendly (rather than evil) other world doppelgangers.

For many Quantum Jumpers, the consequences flowing from personal errors in the past are believed to be somehow reversible in the present—i.e. they use the theory to heal and manage remorse, guilt, lost opportunity, etc. The idea that the various selves can communicate with each other through meditations/visualizations etc. is advanced as a ‘scientific fact’. Everett would, no doubt, be turning in multiple graves—in multiple worlds—after reading such unscientific theorizing.

### **ADAPTING EMERGING PSYCHOBIOLOGICAL EVIDENCE FOR QUANTUM PROCESSES IN ORGANISMS**

Some of the quantum-influenced New Age psychologies discussed above co-opt recent research from the biological sciences to argue that the human brain and nervous system are quantum--influenced organs that routinely select and amplify quantum level inputs to the macro-level in order to influence macro-level decision-making processes. This would imply that the quantum level to macro-level amplification process evolved as a biological faculty capable of enhancing human survival chances. Fantastically, there is some evidence to suggest that quantum processes are fundamental to brain functioning; so who knows, maybe the Quantum Jumpers are on to something.

### **Summary of Quantum-Influenced Psychologies Based Upon Many Worlds/Selves Theorising**

‘Many Worlds’—and other quantum-influenced—psychological theories offer people a supposedly science-based re-enchantment of their lives, since they represent an escape from disenchanted and deterministic classical scientific modes of being/thinking. Evolving Quantum approaches to self-making/identity usually explore and highlight possibilities for personal growth arising out of multiverse understandings of reality. Such goals are, of course, irrelevant to the more academic goals of physicists and counterfactual historians.

Despite the apparent bizarreness of some of this thinking, the perspectives on the psyche offered-up do undermine the—as it turned out ‘incorrect’—classical scientific/materialist assumptions of almost all of the major 20<sup>th</sup> century psychologies. The powerlessness and disenchantment experienced by many who have been subjected to modern psychological systems may even be

---

<sup>9</sup> A quote from a Quantum Jumping website (viewed May 2016) is relevant here: “Burt Goldman (the founder of Q Jumping) begins by guiding his students into an alternate state of mind known as the ‘Alpha Level’. The student is then instructed to visualize him or herself stepping through a doorway into an alternate dimension of their choice, where they can then meet and converse with one of their alternate selves. The nature of this alternate self is completely dependent on the student’s objectives. If the student wishes to master a new discipline like playing the guitar, they may choose to visit an alternate self who is already an accomplished guitarist. If they wish to find a suitable life partner, they may call upon an alternate self who has already found the right person.”

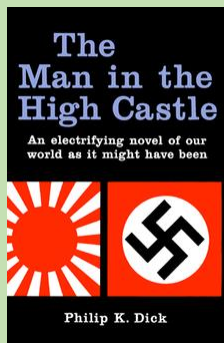
transcended via quantum influenced psychologies, and some people may sense the world to be re-animated, more alive, more meaningful and more full of possibility after exposure to New Science psychologies, even though such psychologies are still in their infancy at the moment.

The same sense of discontent with the dominant Western philosophies and psychologies (i.e. paradigms) of our time, seems to have made Parallel Reality stories hugely popular with audiences engaged with a range of popular fiction genres.

When we watch a well-constructed alternative reality show or movie, are we perhaps seeking liberation from lifelong conditioning associated with psychologies, philosophies, theories of economics and sociology etc. founded on the dictates of an outdated classical scientific materialism?

Although I am very skeptical about the psychological benefits of some of these new psychologies, I've had fun exploring some of the therapeutic possibilities by way of characters in my novel series. In *The City of Quartz*, for example, something is resolved for my main character after he is forced to inhabit, for a time, a different version of himself. I also feel that the imaginative liberation associated with this trope could itself be therapeutic for people enslaved to dysfunctional and disenchanted ideologies and paradigms of various descriptions. The Many Selves aspect to the Many Worlds trope, is also a way to assist us to come to terms with the 'hybrid identity' phenomenon underpinning postmodern society. These days, we are constantly being asked to be 'many selves' for the many different institutions and people we come into contact with.

## 6. Why are Postmodern Creatives Fascinated by the Many Worlds Trope?



Many creatives love writing alternative reality stories because the imaginative process itself routinely sees them engaged—and both intellectually and emotionally—with possible pasts, presents and futures. Most writers play with, rewrite, re-examine, etc. the past constantly, and for a range of purposes. Although the 'alternative futures, presents and pasts' historically explored in countless poems, novels, plays, movies, etc. were, in the past, rarely believed to be real, the advent of the Many Worlds/Universal Wave Function understanding of physical reality has suggested to some artists that their own 'fictional other worlds' may indeed exist, somewhere. Philip K. Dick certainly believed this to be the case for some of his story worlds.

Particularly interesting is the covert appearance of Many Worlds theorising in Fantasy and Horror genres, where we frequently encounter fictional worlds in which the 'universal constants' are slightly different to those we encounter in our world. For example, 'universal constants' may be set such that the magic of, say, *The Lord of the Rings* or Harry Potter universes become possible. Though the creators of these fictional worlds never argued that their stories unfold in actual 'parallel worlds', some physicists would argue that the Many Worlds Interpretation implies that *any and every* conceivable universe is possible, including universes with altered 'universal constants'. This insight represents a fascinating challenge for modern writers, and consequently, some have worked to visualize alternative worlds/realities with different universal constants to our own.

## ULTIMATE CREATIVITY IN A COSMOS OF PRE-PROGRAMMED SUFFERING/EXPLOITATION

Traditional spiritual systems and religions appear to have done as good a job at developing stories of ‘alternative worlds/realities/universes’ as modern writers of fantastic literature. *The Matrix*, for example—one of the most popular Simulated Universe stories—outlined a dystopian second order ‘alternative reality’ for humans prepared to live outside the Matrix programme, i.e. a nightmare ‘reality’ where rebels fought night and day to free mankind from aliens hell-bent on farming human life energies.

Imaginative creations that explore alternative universes free of certain forms of suffering, are perhaps the ultimate ‘creative challenge’—given the monolithic ‘massiveness’ of the cosmos and its apparently ‘everywhere’ structuring laws. To date, Speculative Fiction writers, though prepared to play around with some ‘universal constants’, seem unwilling to challenge, the ‘Darwinian’ assumptions that underpin social and inter-species interactions in our universe. To free ourselves from a universe (i.e. our universe) in which a key ‘constant’ seems to be that ‘the strong shall devour the weak’ we still have to turn to religion, rather than to speculative fiction. However, aren’t we all in rebellion—aren’t we all Promethean—in some way, against some of the fundamental structuring laws/universal constants we are forced to live by? For example, don’t we all object in a fundamental way to the everywhere suffering associated with organic beings, that seems to be structured into our cosmos—even if we only really think about this problem deeply when we are facing such suffering ourselves?

I suppose in writing the series of novels that began with *The City of Quartz*, I’m both rebelling against a number of the ‘universal constants’ evident in colonialist stories about our history, in particular, but I’m also seeking to understand and rebel against the ‘flaw in the fabric of the cosmos’ itself. Any attempt to understand and rebel begins, I believe, with the faculty in us that is capable of imagining and formulating alternative—in a word ‘better’—universes, i.e. better futures with less or no suffering.

**REFERENCES** (also relevant to the 3 other articles in this series concerned with Quantum Fiction tropes)

### Scientific/Academic References:

Aguirre, Foster and Merali (editors). *It from Bit or Bit from It?: On Physics and Information*, Springer, 2015.

Alberts, Crystal. ‘Freud is Finished, Einstein’s Next’: Don DeLillo’s *Cosmopolis*, Chaos Theory, and Quantum Entanglement’, *Orbit: Writing Around Pynchon*, 4(2): 7, pp. 1-28, May 2016

Andrade, Eugenio. ‘The Organization of Nature: Semiotic Agents as Intermediaries between Digital and Informational Spaces’, *SEED Journal* p.56-84, 2007.

D’Ariano, Giacomo Mauro. ‘A Quantum-Digital Universe’, *Advanced Science Letters*, Vol. 17 pp; 130-135 (October 2012).

Barad, Karen. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, Duke university Press, 2007.

Jeffrey A. Barrett and Peter Byrne (editors) and Hugh Everett. *The Everett Interpretation of Quantum Mechanics: Collected Works (1955-1980) with Commentary*, Princeton University Press, 2012.

- Jonathon Barrett, Simon Saunders, Adrian Kent and David Wallace (editors). *Many Worlds? Everett, Quantum Theory and Reality*, OUP, 2010.
- Barrow, John D. 'Living in a Simulated Universe', in *Universe or Multiverse?* Bernard Carr, Ed. Cambridge University Press: pp. 481-486, 2007.
- Silas Beane, Zohreh Davoudi and Martin Savage. 'Constraints on the Universe as a Numerical Simulation' *The Physics arXiv Blog* (October 10, 2012).
- Black, Jeremy. *Other Pasts, Different Presents, Alternative Futures*, Indiana University Press, 2015.
- Jim Blascovich and Jeremy Bailenson. *Infinite Reality: Avatars, Eternal life, New Worlds, and the Dawn of the Virtual Revolution*, Harper Collins e-books, Feb 2011.
- Bostrom, Nick. 'Are you Living in a Computer Simulation?' *Philosophical Quarterly*, Vol. 53, No 211, pp: 243-255 (2003, first version 2001).
- Bostrom, Nick. 'The Simulation Argument FAQ', 2011. Accessed via Nick Bostrom's website: May 6, 2017 [www.simulation-argument.com](http://www.simulation-argument.com)
- Bostrom, Nick. 'The Simulation Argument: Reply to Weatherson', *Philosophical Quarterly*, Vol. 55, no. 218, pp.90-97, 2005.
- Bostrom, Nick. 'The Simulation Argument: Some Explanations', *Analysis*, Vol. 69, No. 3 pp. 458-261, 2009.
- Bostrom, Nick & Kulczski, Marcin. 'A Patch for the Simulation Argument', *Analysis*, Vol. 71, No. 1, pp54-61, 2011.
- Dirk Bouwmeester, Artur Ekert and Anton Zeilinger (editors). *The Physics of Quantum Information*, Springer, 2001, 2<sup>nd</sup> edition.
- Braidotti, Rosi. *The Posthuman*, Polity Press, 2013.
- J. R. Brown and P.C.W. Davies. *The Ghost in the Atom: A Discussion of the Mysteries of Quantum Physics*, Cambridge University Press, 2000. [First published 1986]
- Byrne, Peter. *The Many Worlds of Hugh Everett III: Multiple Universes, Mutual Assured Destruction and the Meltdown of a Nuclear Family*, Oxford University Press, 2010.
- Calude, C.S. 'Dialogues in Quantum Computing', *CDMTCS Research Reports Series*, June 2003.
- Chaitin, Gregory. 'Epistemology as Information Theory: From Leibniz to  $\Omega$ ', *arXiv:math*, June 2005.
- Chalmers, David. 'The Matrix as Metaphysics', in *Philosophers Explore the Matrix*, C. Grau Ed. OUP, 2005.
- Christiansen, Peder Voetmann. 'The Semiotic Flora of Elementary Particles', *Roskilde*: Roskilde Universitet, 2003.
- Coale, Samuel Chase. *Quirks of the Quantum: Postmodernism and Contemporary American Fiction*, University of Virginia Press, 2012.
- Cottam, Ron and Taborsky, Edwina. 'A Dialogue on Causality, Relations and Other Things', *SEED Journal*, Vol. 4, No. 2, pp. 61-80, 2004.
- Currian, Jude. *The Cosmic Hologram: Information at the Center of Creation*, Inner Traditions, 2017.
- Dainton, Barry. 'Innocence Lost - Simulation Scenarios: Prospects and Consequences' (2002).
- Davies, Paul and Gregersen, Niels Henrik (editors). *Information and the Nature of Reality: From Physics to Metaphysics*, Cambridge University Press, 2014.
- DeBerry, Stephen. *Quantum Psychology: Steps to a Postmodern Ecology of Being*, Praeger Publishers, 1993.
- Deutsche, David. *The Beginning of Infinity*, Allen Lane (Penguin), 2011.
- Deutsche, David. *The Fabric of Reality*, Penguin, 1998.
- Deutsche, David. 'Quantum Theory, the Church-Turing Principle and the Universal Quantum Computer', *Proceedings of the Royal Society of London. Series A. Mathematical and Physical Sciences*, Vol. 400, No. 1818 pp: 97-117, July 8. 1985.
- Gordana Dovic-Crnkovic and Vincent C. Muller. 'A Dialogue Concerning Two World Systems: Info-Computational vs. Mechanistic', 33 pages, 2009.
- Elvidge, Jim. 'The Singularity, Infomania and Programmed Reality', *Graham Hancock Blog* Nov. 15, 2010. Accessed 6.4.2017 via: <https://grahamhancock.com/elvidgej5/>

Elvidge, Jim. *The Universe Solved*, A.T. Press, 2008.

Emspak, Jesse (and other editors of *Scientific American*). *Seeking the Multiverse: Possibilities in Parallel*, Scientific American, 2013.

Evans, Richard J. *Altered Pasts: Counterfactuals in History*, Brandeis University Press, 2013.

Fontana, Giorgio. 'Why we Live in a Computational Universe', *The Physics arXiv Blog*, 2005.

Francis, Matthew. 'Is this Life Real?', *Aeon* (online) Jan. 2014. Accessed 6/4/17 via: <https://aeon.co/essays/is-reality-a-computer-simulation-does-it-matter>

Gibbs, Philip. 'A Universe Programmed with Strings of Qubits', *The Physics arXiv Blog* (June 2011).

Gilder, Louisa. *The Age of Entanglement: When Quantum Physics was Reborn*, Alfred A. Knopf, 2008.

Goswami, Amit. *Quantum Creativity: Think Quantum, Be Creative*, Hay House Inc. 2014.

Green, Michael. *Quantum Physics and Ultimate Reality: Mystical Writings of the Great Physicists*, Amazon Kindle Direct Publishing, 2013.

Gribbin, John and Mary. *In Search of the Multiverse*, Allen Lane (Penguin Books), 2009.

Kevin R. Grazier and Stephen Cass (editors). *Hollyweird Science: From Quantum Quirks to the Multiverse*, Springer, 2015.

Haisch, Bernard. *The Purpose-Guided Universe: Believing in Einstein, Darwin and God*, New Page ebooks, 2010.

S. Hameroff, S. Kak, R. Penrose and R. Schild (editors). *Cosmology of Consciousness: Quantum Physics and Neuroscience of Mind*, Vol. 3 (papers from *Journal of Cosmology* Vols. 3, 13 and 14). Cosmology Science Publishers, 2011.

S. Hameroff, S. Kak and R. Penrose (editors). *Quantum Physics of Consciousness* (papers selected from *Journal of Cosmology* Vols. 3 and 14) Cosmology Science Publishers, 2011.

Hammarstrom, Anders.: 'I Sim: an Exploration of the Simulation Argument', 2008. As accessed from Nick Bostrom's website April 2017: [www.simulation-argument.com](http://www.simulation-argument.com)

Hanson, Robin. 'How to Live in a Simulation', *Journal of Evolution and Technology*, Vol. 7, 2001.

Hanson, Robin. *The Age of Em: Work, Love and Life When Robots Rule the Earth*, OUP, 2016.

Hayes, Brian. 'Debugging the Universe', *International Journal of Theoretical Physics*, Vol. 42, Issue 2, pp 277–295, Feb. 2003.

Hayles, Katherine N. 'Unfinished Work: From Cyborg to Cognisphere', *Theory, Culture and Society*, 23 (7-8): p. 159-166, 2006

Hellehson, Karen. *The Alternate History: Refiguring Historical Time*, The Kent State University Press, 2001.

Jarrell, Donald, W. *At the Edge of Time: Reality, Time and Meaning in a Virtual World*, Create Space Independent Publishing, 2012 and 2014.

Jenkins, Peter S. 'Historical Simulations – Motivational, Ethical and Legal Issues' *Journal of Futures Studies*, Vol. 11, No. 1, pp. 23-42, 2006.

Johnson, David Kyle. 'Natural Evil and the Simulation Hypothesis', *Philo*, Fall-Winter Issue, Vol. 14, no. 2, 2011.

Jones, Andrew Zimmerman, 'Are We Living in a Computer Simulation?', Posted 8<sup>th</sup> July 2015 to PBS.org, accessed: 6 April 2017. <http://www.pbs.org/wgbh/nova/blogs/physics/2015/07/are-we-living-in-a-computer-simulation/>

Kafatos, Menas and Nadeau, Robert. *The Non-Local Universe: The New Physics and Matters of the Mind*, OUP paperback, 2001.

Kaku, Michio. *Hyperspace: A Scientific Odyssey through Parallel Universes, Time Warps and the Tenth Dimension*, OUP, 1994.

Kaku, Michio. *Physics of the Impossible: A Scientific Exploration into the World of Phasers, Force Fields, Teleportation and Time Travel*, Doubleday 2008.

Kauffman, Stuart. *Humanity in a Creative Universe*, Oxford University Press, 2016.

Kirby, Vicki. *Quantum Anthropologies: Life at Large*, Duke University Press, 2011.

Kurzweil, Ray. *The Singularity is Near: When Humans Transcend Biology*, Duckworth Overlook, 2008 impression.

Lewis, Peter J. *Quantum Ontology: A Guide to the Metaphysics of Quantum Mechanics*, OUP, 2016.

Lloyd, Seth. *Programming the Universe*, Vintage Books, 2007.

Lloyd, Seth. 'The Computational Universe', *The Physics arXiv Blog* v5, 2005-6. Accessed 6/4/17 via: <http://arxiv.org/abs/quant-ph/0501135>

Lloyd, Seth. 'The Universe as Quantum Computer'. Chapter in *A Computable Universe: Understanding and Exploring Nature as Computation*, H. Zenil ed., World Scientific, 2012.

Manly, Steven, Dr. *Visions of the Multiverse*, New Page Books, 2010.

Mayfield, John, E. *The Engine of Complexity: Evolution as Computation*, Columbia University Press, 2013.

Moskowitz, Clara. 'Are We Living in a Computer Simulation?', *Scientific American - Physics* (online), April 7, 2016. Accessed April 6<sup>th</sup> 2017. <https://www.scientificamerican.com/article/are-we-living-in-a-computer-simulation/>

Nishida, yohei. 'The Relationship Between Autopoiesis Theory and Biosemiotics: On Philosophical Suppositions as Bases for a New Information Theory', *Triple C* 9 (2) p. 424-433, 2011.

Nite, Sky. *Virtual Reality Insider*, New Dimension Entertainment, Inc. Version 2.1, July 2015.

Noth, Wilfred (editor). *Semiotic Bodies, Aesthetic Embodiments and Cyberbodies*, Kassel University Press, 2006.

O'Neill, Rob. 'This Virtual World', *Computerworld New Zealand*, p.10-11, Jan 21<sup>st</sup> 2008.

Oppermann, Serpil. 'Quantum Physics and Literature,' *Anglia Journal of English*, 'Special Issue: Literature and Science', 133(1) pp: 87-104, 2015.

Jane Prophet and Helen Prichard. 'Performative Apparatus and Diffractive Practices: An Account of Artificial Life Art', *Artificial Life* 21: p:332-343, 2015.

Radin, Dean. *Entangled Minds: Extrasensory Experiences in a Quantum Reality*, Paraview Pocket Books, 2006.

Rubenstein, Mary-Jane. *Worlds Without End: The Many Lives of the Multiverse*, Columbia University Press, 2014.

Scoble, Robert. And Israel, Shel. *The Fourth Transformation: How Augmented Reality and Artificial Intelligence Will Change Everything*, Patrick Brewster Press, 2017.

Smart, John M. 'The Transcension Hypothesis'. *Acta Astronautica*, 16 Dec 2011, updated 2012 and accessed 6.4.2017 via: <http://accelerating.org/articles/transcensionhypothesis.html>

Solomon, Mark. *On Computer Simulated Universes*, Lithp Preth, 2013.

Solomon, Mark. *The Evolution of Simulated Universes*, Lithp Preth, 2013.

Stapp, Henry P. *The Mindful Universe: Quantum Mechanics and the Participating Observer*, Springer, 2007.

Steinhart, Eric. *Your Digital Afterlives: Computational Theories of Life after Death*, Palgrave Macmillan, 2014.

Strehle, Susan. *Fiction in the Quantum Universe*, University of North Carolina Press, 1992.

Susskind, L. 'The World as a Hologram,' *J. Math. Phys.*, 36, 6377- 6396 (1995).

Taborsky, Edwina. 'The Methodology of Semiotic Morphology: An Introduction', *SEED Journal*, Vol. 5, No. 2, pp: 5-26, December 2005.

Tegmark, Max. *Our Mathematical Universe*, Penguin (Vintage), 2015.

Theiss, Derek J. *Relativism, Alternate History and the Forgetful Reader: Reading Science Fiction and Historiography*, Lexington Books, 2015.

Vedral, Vlatko. *Decoding Reality: the Universe as Quantum Information*, OUP, 2010.

Vidal, Clement. 'Computational and Biological Analogies for Understanding Fine-Tuned Parameters in Physics, *Foundations of Science*, Volume 15, Issue 4, pp 375–393, November 2010.

Weatherson, Brian. 'Are You a Sim?' *Philosophical Quarterly*, Vol. 53: 425-31, 2003.

Wendt, Alexander. *Quantum Mind and Social Science: Unifying Physical and Social Ontology*, Cambridge University Press, 2015.

Whitworth, Brian. 'The Physical World as Virtual Reality', *CDMTCS*-316, December 2007.

Whitworth, Brian. 'Exploring the Virtual Reality Conjecture', (latest version accessed April 2017 via: <http://brianwhitworth.com> )

Whitworth, Brian. 'Simulating Space and Time', *Prespacetime Journal* 1(2) p.218-243, 2010 (latest version accessed April 2017: via <http://brianwhitworth.com/BW-VRT2.pdf> )

Whitworth, Brian. 'The Emergence of the Physical World from Information Processing', *Quantum Biosystems*, 2(1), p.221-249.

Whitworth, Brian. 'What is Reality?' (Version 2, of the draft 7<sup>th</sup> chapter of a book on Quantum Realism. Accessed April 2017 via: <http://brianwhitworth.com/WhatIsRealityVersion2.pdf>

Whitworth, Brian. 'Quantum Realism: Chapter 3 – The Light of Existence', 2012 V2. Accessed April 2017 via: <https://arxiv.org/abs/1011.5705>

Whitworth, Brian. 'Quantum Realism – Chapter 4 - The Matter Glitch: An Alternative to the Standard Model' (latest version 2014). Accessed April 2017 via: <http://brianwhitworth.com/BW-VRT4.pdf>

Williams, Conrad, B. *What is the Matrix? Jean Baudrillard and Simulation in the Wachowski Brothers' Matrix Series*, 2010.

Wiseman, H.M. 'From Einstein's Theorem to Bell's Theorem: A History of Quantum Nonlocality', *Contemporary Physics* 47(2) · March 2006.

Witzany, Guenther. 'Natural History of Life: History of Communication Logics and Dynamics', *SEED Journal*, Vol. 5, No. 1, pp. 30-59, 2005.

Wolfram, Stephen. *Computation and the Future of the Human Condition*. Based on a talk given by Wolfram at *H+ Summit @ Harvard*, June 12<sup>th</sup> 2010. This ebook version accessed via Kindle Store, April 2017.

Zenil, Hector. *A Computable Universe*, World Scientific, 2013.

Danah Zohar and Ian Marshall, *The Quantum Society: Mind, Physics and a New Social Vision*, Quill/William Morrow, 1994.

Zohar, Danah (in collaboration with Ian Marshall). *The Quantum Self: Human Nature and Consciousness Defined by the New Physics*, William Morrow Press, 1990.

#### **ALSO ...**

Contributor: 'The Measurement That Would Reveal the World as a Computer Simulation' *MIT Technology Review*, Oct. 2012. Accessed 6.4.2017 via: <https://www.technologyreview.com/s/429561/the-measurement-that-would-reveal-the-universe-as-a-computer-simulation/>

Editors/contributors. *How Consciousness Became the Universe: Quantum Physics, Cosmology, Evolution, Neuroscience and Parallel Universes*. Cosmology Science Publishers, 2015 and 2016.

Editors/contributors (R. Joseph ed?). *Quantum Physics of the Paranormal: Premonitions, Precognition, Death, Altered States of Consciousness*, Cosmology Science Publishers, Cambridge 2014.

Editors/contributors. *Quantum Physics of God: Neuroscience of Spirits, Souls, Dreams, Prophecy, Paranormal, Near Death*, Cosmology Science Publishers, 2015.

Webre, Alfred Lambremont. *The Dimensional Ecology of the Omniverse*, Universe Books, 2014.

Editors/contributors. *Possibilities in Parallel: Seeking the Multiverse*, Scientific American (Eds.), 2013.

#### **Literature References:**

Egan, Greg. *Permutation City*, (1994) Gollancz eBook (and Orion Publishing), 2010.

Galouye, Daniel F. *Simulacron-3* (novel), 1964.

Irvine (Hobson), Ian. *The City of Quartz* (novel), 2016.

Stephensen, Neil. *Snow Crash* (novel), 1992.

#### **Film, Television, Youtube and Podcast References:**

*The Matrix* (series, 1993-2003)

*The Thirteenth Floor* (1999)

*Total Recall* (1990)

*Tron* (1982)

*World on a Wire* (1973)

#### SEE ALSO

'Rebooting the Universe' MODERATOR: John Hockenberry PARTICIPANTS: Edward Fredkin, Fotini Markopoulou-Kalamara, Jürgen Schmidhuber and Seth Lloyd. (youtube copy of a conversation held at *World Science Festival* June 2011, Accessed 4.10.17 Via: <https://www.youtube.com/watch?v=atMuFCpxnUQ> )

'2016 Isaac Asimov Memorial Debate: Is the Universe a Simulation?' Participants: Neil deGrasse Tyson, David Chalmers, Zohreh Davoudi, James Gates, Lisa Randall and Max Tegmark. (youtube copy of a conversation held in April 2016. Accessed 10th April 2017 via <https://www.youtube.com/watch?v=wgSZA3NPpBs> )

Brian Whitworth and Jeff Young. 'Imagining Our World as a Virtual Reality', *The Chronicle of Higher Education*, April 1<sup>st</sup> 2008, Podcast/Interview. Accessed April 2017, via: <http://www.chronicle.com/article/Audio-Imagining-Our-World-as/63403/>

#### Author Bio (as at November 2022)

Dr. Ian Irvine (Hobson) is an Australian-based poet, lyricist-musician, fiction writer, non-fiction writer, editor and creative arts and humanities lecturer. His work has featured in publications as diverse as *Humanitas* (USA), *The Antigoniish Review* (Canada), *Tears in the Fence* (UK), *Linq* (Australia) and *Takahe* (NZ), as well as in a number of Australian national poetry anthologies: *Best Australian Poems 2005* (Black Ink Books) and *Agenda: 'Australian Edition'*. He is the author of four books and co-editor of three journals and currently teaches in the Professional Writing and Editing program at Bendigo Kangan Institute (Bendigo, Australia). Between 2012 and 2018 he taught in the same program at Victoria University, Melbourne. He has also taught Medieval and Early Modern history, as well as Contemporary Social Theory at La Trobe University (Bendigo, Australia) in the 1990s and holds a PhD for his work on creative, normative and dysfunctional forms of alienation and morbid ennui. Between 2018 and 2022, almost 100 of his songs (totalling 9 studio albums) were professionally produced and distributed through international Indie music networks. Many of the songs were played on underground, Indie, Alternative Rock, community and commercial radio stations in numerous countries, and a significant number charted.