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***Does Anyone Have the Right Time Please?  
A New Perspective on Time Travel  
Narratives in the 1950s & 1960s***

**Sinead Boyd\***

\* Lancaster University

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*Sinead Boyd*

*Lancaster University*

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## **Introduction: Searching for science**

When considering the term science fiction some useful questions to ask are: what is the 'science' in science fiction? Is it a sort of science that as readers, we can trust? Are there any facts hidden behind the fiction? Also, what would the 'fiction' be without the science? It is a widely held belief that genre fiction (which is to include science fiction) occupies a separate cultural space to that of non-genre literature. Some for example, Patrick Parrinder, Darko Suvin, have tried to bridge the gap by performing literary analysis on certain authors, for example, J G Ballard and Kurt Vonnegut, who themselves choose to cross the invisible boundary between genre and mainstream. However, rather than applaud the 'literary' nature of science fiction texts in order to afford them a place in the canon, this essay will examine science fiction within the wider cultural space of intellectual understanding and speculation. Taking as its central theme the subject of time travel in both non-fiction and fiction, this essay aims to illustrate the interconnectedness of science, culture and literature. I will be developing an argument that, using time travel as a focus, places the 'science' of science fiction back under the spotlight.

Brian McHale, in his book, *Constructing Postmodernism*, introduces the phrase, 'Feedback in the Literary System' (McHale: 227) to explain his theory that cyberpunk science fiction has within it elements of postmodern mainstream fiction which in turn has already assimilated traits of science fiction. Many critics have suggested that the previously thick lines drawn between 'low' and 'high'

culture have become increasingly blurred, a feature of postmodernism. McHale instead suggests a kind of ‘trafficking of ideas’ between high and low culture, which has increased in speed through the technological advances made in recent years. He traces the chronology of science fiction texts and modernist to postmodernist (mainstream) texts in order to highlight the ‘cross-fertilization’ between the two:

A feedback loop begins to operate between SF [science fiction] and postmodernist fiction. That is, we find postmodernist texts absorbing materials from SF texts that have already been ‘postmodernized’ to some degree through contact with mainstream postmodernist poetics. Reciprocally, we find SF texts that incorporate models drawn from postmodernist fiction that has already been ‘science-fictionized’ to some degree through its contact with SF poetics. Thus, certain elements can be identified as having cycled from SF to mainstream postmodernism and back to SF again, or in the opposite direction, from mainstream fiction to SF and back to the mainstream again. (McHale: 228-9)

This theory can be examined in detail with reference to time travel narratives, particularly during the mid-twentieth century, specifically, 1950s and 1960s. At this time (from the perspective of mainstream literature) late modernism was fading and the postmodern era was beginning. McHale suggests, “modernists repudiated and sought to camouflage their reliance on popular art models”(McHale: 226), whereas postmodernist fiction tends not to hide the integration of such models into the text.

Taking popular science models in the same sense as popular art then, how did science fiction authors writing at this time assimilate popular science into their fiction? In his essay, ‘Science in Science Fiction’, Stanley Schmidt comes up with a constructive distinction between two speculative uses of science in science fiction, extrapolation and innovation. Extrapolation, he argues, happens when authors use known scientific principles in order to describe future human

societies, or alien worlds based on the same values on which our own world operates (Schmidt: 30). Innovation, however, according to Schmidt, is less likely to include any proven scientific theory and he gives time travel as one of the 'classic' examples of innovative science fiction speculation. "Innovative speculation cannot be proved possible. If it could, it would no longer be innovative, but would have been assimilated into the body of 'established...scientific knowledge'." (Schmidt: 31) Schmidt continues by stating that innovation plays an important role in science fiction; however, any new ideas must not contradict already accepted scientific fact. Schmidt's assessment of new ideas and his conception of science are only tenuously linked; he tends more towards a blunt distinction between the two. Another way of looking at science fiction, included by McHale in *Constructing Postmodernism*, is posited by Malmgren, in which he uses the term 'speculation' to mean, "an imaginative leap, positing one or more disjunctions with the empirical world, in particular the current state of the empirical world" (qtd. in McHale: 244). McHale's view of Malmgren's argument gives science a place in speculative or to use Schmidt's term, 'innovative' science fiction.

I would suggest, following McHale's argument, that a trafficking of ideas between popular science and science fiction takes place. Schmidt's argument is "There are some things which were once innovative, have not even remotely become part of accepted scientific knowledge, and yet are now readily accepted by readers without explanation." (Schmidt: 33) This statement, however, disregards the interconnectedness of popular science and science fiction and in doing so separates fiction from culture. Surprisingly, Schmidt appears to contradict himself when, later in the essay, he uses Isaac Asimov's three types of story (gadget, adventure, and sociological) to examine how science is used to make a story (Schmidt: 35). He uses the (fictional) example of the 'innovation' of the automobile by an author writing three centuries ago and describes, using the above three categories, how each plot may read. However, to conceive of the automobile three centuries ago would depend on the (fictional) author having

some knowledge of, for example, how a wheel works on an axle system, and, where the power may come from. Indeed there are many other implicit scientific principles that seep into a story that we take completely for granted. In the same way many science fiction ‘innovations’ have found their way into the laboratories of the most famous scientists of the twentieth century. Less than thirty years after Schmidt wrote this essay, Richard Gott, an astrophysicist from Princeton, NJ, writes:

Time travel to the future is already known to be permitted, and physicists are investigating time travel to the past as well. To appreciate what scientists are studying now, an excellent first step is to explore major time-travel themes in science fiction, where many ideas in this arena were first advanced. (Gott: 5)

Gott begins by looking at the way in which H G Wells introduced the idea of time as a fourth dimension, ten years before Albert Einstein used this idea in his theory of special relativity (Gott: 6). Even though, as Schmidt suggests, the concept of the time machine as a plot device is innovative, in other words, it has not been proven to work scientifically (although it has been theoretically), several basic scientific principles need to be accepted by both author and reader in order for the ‘innovative’ to happen. Gott links several films, novels and television series to the various imaginative ideas that scientists have been playing (in the serious sense of the word) with since Einstein (Gott: 3-32). Schmidt’s distinction between science and fiction does not take into account the ability of the creative imagination to grasp ideas from any source in order to produce a great story. It also disregards the nature of the scientific imagination and the fact that each new scientific principle started out as, a theory (or an idea), in the mind (or imagination) of the scientist.

Einstein famously said that he only ever had three good ideas (Gott: 85). Whilst this story may be more legend than factual it is known that Einstein valued imagination and creativity above academic learning and knowledge. It is possible,

as Gott shows in the first chapter of his book, to trace a chronology of connection between time travel theory in popular science writing and time travel theory in science fiction. Rather like the popular ‘which came first’ question, it is impossible to pinpoint an exact date or seminal text that begins this process. It is instead, more effective to produce examples of such ‘cross-fertilizations’. Rather than replicating Gott’s examples, I have chosen to examine Asimov’s two-volume work, *The Intelligent Man’s Guide to Science*, published in 1960 and, in more detail, the novels, *The End of Eternity* (Isaac Asimov, 1955), *Up the Line* (Robert Silverberg, 1969), and *Counter Clock World* (Philip K Dick, 1967). This also enables the discussion to move away from Gott’s (albeit very worthy and interesting) thesis on whether or not time travel is actually possible, to how fiction may express the implications of popular and contemporary scientific theories, focusing in particular on the subject of time travel.

### **The Non-Fiction: The Intelligent Man’s Guide to Science**

Asimov is perhaps best known for his science fiction *Foundation* and *Robot* series; however, he wrote numerous works of non-fiction. The way in which Asimov presents his non-fiction, in this instance *The Intelligent Man’s Guide to Science*, reflects the fact that he is a science fiction writer. It is possible to argue that, in writing popular science books, Asimov contributed to the imagination of a generation of readers, making previously incomprehensible theories and principles accessible by drawing the reader in, as an author would with a fictional plot. And, it is possible, as proved by Gott, that the reader may herself become a science fiction writer, or indeed a scientist. Although Asimov was by no means the first to break into the market for popular science books<sup>[1]</sup>, he was unique in that he was enormously successful in his career as writer of both fiction and non-fiction.

It is useful to examine in more detail, the way in which Asimov exercises his skills as a writer of fiction, and how he uses his literary imagination to bring to life the account of scientific development. The following section considers, in the main, the following two questions. In what way does a writer like Asimov

‘popularise’ science? And, is it possible to see a connection between his style of writing non-fiction and fiction?

Asimov opens the first volume of *The Intelligent Man’s Guide to Science*, with a chapter entitled ‘What is Science?’ It is clear from the first sentence that this is to be no dull textbook. Asimov begins with a nod to biblical language, “Almost in the beginning was curiosity” (*Asimov Guide*: 3), placing his intentions for this work clearly with the ‘intelligent’ public, and not exclusively with the scientific community. He narrates the journey of ‘curiosity’ using metaphors drawn from nature to lure the reader into believing that a story will follow. And that is exactly what does happen. Asimov, cleverly and succinctly, sketches the history of scientific thought from “the one-celled paramecium” (*Asimov Guide*: 4) through Greek philosophy to Isaac Newton in less than twenty pages. He speaks of myths and legend, desire and success. At this point, as is the case with many of Asimov’s works of fiction, the reader is eager to know ‘what happens next?’ Asimov’s work is complete; he has made science popular and accessible in one single chapter. In addition to the metaphorical language and easy narrative, the content of this chapter invites the reader to become part of those ‘in the know’ about science:

Yet modern science need not be so complete a mystery to non-scientists...To gain a satisfactory appreciation of the developments in a field of science, it is not essential to have a total understanding of the science...no one can really feel at home in the modern world unless he has some intelligent notion of what science is up to. (*Asimov Guide*: 20)

These words are a gentle challenge to the layperson to become involved in the world of science. The title of the book is suggestive. It says, “If you read (or even buy!) this book you are an intelligent ‘man’” (the publication predates the successful attempt by women to initiate the use of patriarchal language). There is a sense of pride, underneath the narrative, that this author is already in that world, and of course, as Asimov was a biochemist, this is hardly surprising. However,

there is also awareness in the text of the wonder and power of science. This volume was published in 1960 and Asimov was commissioned to write it in 1959. (Asimov *Guide*: x) Scientists and the new discoveries in science benefited from the general optimism of the nineteen fifties. The terrible consequences of atomic power had not yet been widely recognised and with the relatively good financial position, money was being poured into scientific research. NASA (National Aeronautics and Space Administration) was formed in 1958<sup>[2]</sup> and the ‘space race’ between the superpowers of the USA and the USSR had begun. Although the Cold War had been simmering since the end of the Second World War, it was not until the Cuban Missile Crisis of 1962 that the general public began to take a negative view of what Asimov described in 1960 as “the most terrible weapon of destruction ever devised” (Asimov *Guide*: 355). Despite this description, the first guide to science written by Asimov remains positive, expressing the view that science is good, fascinating, and not something to be afraid of.

However, in contrast, the fourth edition of the same guide, entitled *Asimov’s New Guide to Science*, contains in the first chapter a different and rather sobering summation of the previous twenty years in this author’s experience. He adds two paragraphs towards the end of the chapter which detail the negative effects that such rapid advances in science have brought: “our society finds it is plagued by undesirable side effects of [science’s] very success”(Asimov *New Guide*: 15). Asimov ends the chapter by adding to the sentence already quoted from the original edition in this essay “no one can really feel at home in the modern world *and judge the nature of its problems-and the possible solutions to those problems-unless one has some intelligent notion of what science is up to*”<sup>[3]</sup> (The italics identify the additional narrative in the later edition). Like any great author, Asimov not only edits the contents of the fourth edition to include recent scientific developments, but also reflects through the narrative, the changing attitudes towards science between the nineteen fifties and nineteen eighties.

Asimov does not use the phrase ‘time travel’ in either edition. However he carefully explains the ‘clock paradox’ that arises from Einstein’s theory of



relativity. In the first edition the narrative is made up mostly of questions, the explanations are brief, and it is clear that these theories are very much new to the scientific world. “This is the famous ‘clock paradox’. Theoretical physicists are still having serious fun with it today”(Asimov *Guide*: 286). Asimov carefully explains that the passing of time is relative to the person or thing experiencing it, hence the paradox of one person thinking their clock is correct and the other person claiming that theirs is right. Motion is also relative to the frame of reference. To use Asimov’s example, it would appear that a planet is moving quickly past our stationary planet. However, to the people on the other planet, it would appear that it was our planet that was moving quickly. In the fourth edition, Asimov expands on the theories, the narrative has a more confident edge to it and introduces the new concept that the paradox does not exist; presumably based on the discoveries made between the two editions. In the first edition he suggests a theoretical experiment that would solve the clock paradox. The section concludes with a speculative notion that is typical of Asimov’s writing style and could have been lifted from any of his fiction:

If time really slows in motion, a person might journey even to a distant star in his own life-time. But of course he would have to say goodbye to his own generation and the world he knew. He would return to a world of the future. (Asimov *Guide*: 287)

This conclusion is unchanged in the fourth edition, yet what precedes it is quite different in terms of Asimov’s approach to the topic. Where in the 1960 version he was suggestive, attempting to play with theories, here the style is serious and scholarly. Asimov builds on the speculations made in the first edition and challenges the reader to look more closely at the theory. It is useful to compare the two different styles which both follow the explanation of the clock paradox:

The theoretical arguments no doubt will rage on for a long time to come, but in the meantime the question as to whether a fast-moving clock

actually does slow down may be settled by experiment. (Asimov *Guide*: 286)

And:

Actually it is not a paradox at all. (Asimov *New Guide*: 358)

Clearly, the experiment (or something like it) suggested by Asimov in the first edition has taken place. However, it is important to note that, in the later edition, Asimov explains in detail the reasoning for this statement, ending with the conclusion from the first edition. This would suggest that, while there has obviously been a move forward in the way relativity is understood, the answer remains the same. And yet, Asimov spends at least one extra page explaining the theory. It is possible that the 'intelligent man' had become a reader with an even more voracious appetite for scientific theory, and Asimov, knowing his audience, responds to that in the fourth edition.

The gradual incorporation of what was previously speculative into more accepted theory is significant in the consideration of the theory of time travel. Despite Kurt Gödel's deduction that time travel is theoretically possible, (Hawking: 139) it may be that Asimov does not explicitly mention the phrase 'time travel' in this work of non fiction simply because the subject was regarded as unworthy of research by many in the scientific community. This is not surprising given that, as recently as 2001, it was suggested by Stephen Hawking, in his book *The Universe in a Nutshell*, that scientists still have to be careful when discussing time travel as a serious concept. (Hawking: 133) A review in *New Scientist* of Richard Gott's book, referred to earlier, implies that physicists working on time travel are somehow not doing 'worthy' research, but nonetheless having fun at the expense of the funding agencies and therefore need to be clandestine about their work. (Brooks: 48) The clock paradox inevitably leads to a theory of time travel, as explained by Stephen Hawking in his first popular science book, *A Brief History of Time*. He begins Chapter 9 'The Arrow of Time' by mentioning the clock paradox and then moves straight on to the concept of 'imaginary time':

This means that there can be no important difference between the forward and backward directions of imaginary time. On the other hand, when one looks at “real” time, there’s a very big difference between the forward and backward directions, as we all know. Where does this difference between the past and the future come from? Why do we remember the past but not the future? (Hawking: 143-44)

In this quotation, Hawking is merely suggesting the possibility of time travel; he states that his colleague and friend Kip Thorne is the one who develops these theories. (Hawking: 133) In the fourth edition Asimov does mention that scientists were having ‘fun’ with the clock paradox, and by a change in style and content hints at a theory of time travel; but just as Schmidt suggests for science fiction, Asimov does not discuss that which is still regarded as innovative. As a scientist, Asimov needed to command a level of respect amongst his non-fiction audience that would not lead critics into suggesting that he should be pigeonholed into fiction or non-fiction.

### **The Fiction: The End of Eternity, Up the Line and Counter-Clock World**

In the introduction it was proposed that science must make room for the use of creativity and imaginative play in order to develop new theories and speculate about the universe. A theory was posited, based on McHale’s work, of a ‘trafficking of ideas’ or cross-fertilization between popular science and science fiction. It was suggested that, when dealing with that which Schmidt terms as ‘innovative’ in science fiction (for example, time travel) the cross-fertilization can be spotted in terms of scientific principles seeping into a story. This section will highlight some of those principles as points of departure for time travel as a narrative device. The author’s attempt to imagine time travel as an actuality is not put to the test here; rather, it is the underlying concepts and how they are expressed that is of more interest to the cross-fertilization debate.

Behind most popular science references to Einstein’s theory of relativity is the story of the clock paradox clearly articulated in both of Asimov’s *Guides to*

*Science*. In the opening two paragraphs of *The End of Eternity*, Asimov fictionalises this theory exactly:

Harlan set the controls and moved the smoothly working starting lever.

The kettle did not move.

Harlan did not expect it to. He expected no movement... Yet the spaces between the rods had melted into a grey blankness which was solid to the touch... And there *was* the little stir in his stomach... that told him that all the kettle contained, including himself, was rushing upwhenthrough Eternity. (Asimov *Eternity*: 7)

There is much to say about this short extract. The novel was published in 1955, five years before the *Guide to Science* was published. Here, Asimov shows both knowledge of relativity and a desire to incorporate it into fiction. It is clear from the language used that a machine is described here; there are controls, a lever, rods, and an experienced operator in Harlan. The theme of paradox that is to run throughout the novel is present immediately in the way Harlan feels no movement, but knows (and therefore so does the reader) that he is moving. This is the part that is embedded in science. By exercising the theory of relativity at the beginning of the book Asimov is claiming some measure of authenticity for this machine. Yet the author chooses to call the machine a 'kettle'. An everyday object such as this evokes an image in the reader's mind of something attainable; that can be visualised. A clue to this choice can be found several paragraphs on. Harlan has arrived at his destination and steps out of the kettle:

The kettle he left, of course, was not the same as the one he had boarded, in the sense that it was not composed of the same atoms. He did not worry about that any more than any Eternal would. To concern oneself with the *mystique* of Time-travel, rather than with the simple fact of it, was the mark of the cub and newcomer to Eternity. (Asimov *Eternity*: 8)

Apart from occasional and brief explanations of scientific theory, which are meant to satisfy the amateur scientist, Asimov does not want the reader to become overly concerned with the 'how and why' of the time machine in this novel. This would deflect the reader from the important themes that thread their way through the narrative. This, as Schmidt would suggest, is a sociological novel in which the machine is not the focus. On further inspection of the first quotation, the word 'Eternity' is given with a capital, implying the idea of an organisation rather than a concept. The use of the word 'upwhen' is a style of language that has a sense of the biblical, a suggestion that translates into a theme as the novel moves forward.

That is not to say that Asimov was not interested in the science in his fiction. James Gunn, in his book, *Isaac Asimov: The Foundations of Science Fiction*, tells how Robert Silverberg, in discussion with Lester Del Rey, championed the "human aspects of a science-fiction story over the scientific detail", mentioning as an example the insignificance of plutonium-186, which of course doesn't exist. Asimov, who was listening to this discussion reportedly pointed out this error to Silverberg, who was unconcerned. Asimov said, "to show you what a real science fiction writer can do, I'll write a story about plutonium-186" (Gunn: 186). The story became the novel *The Gods Themselves*, and Gunn later mentions that in writing this novel, Asimov meant the science in it to be "at least as important as the characters, a story which could not happen without the scientific content." (Gunn: 190) The novel is complex and requires a certain level of understanding on the part of the reader, knowledge that is not required for a reading of *The End of Eternity*. Nonetheless, there are explanations in the latter that, given the style of the narration, could have been reprinted in the *Guide To Science*. For example, Asimov explains the passage of time for the human operating in Eternity:

In Eternity there was no Time as one ordinarily thought of Time in the universe outside, but men's bodies grew older and that was the

unavoidable measure of Time even in the absence of meaningful physical phenomena. Physiologically Time passed, and in a physioyear within Eternity a man grew as much older as he would have in an ordinary year in Time. (Asimov *Eternity*: 39)

As far as science theory is concerned, this passage is ambiguous. It suggests that time is relative to the body: in other words, a person living in Eternity experiences 'time' through their body, not relative to the space they occupy three-dimensionally (otherwise they would age at a different speed to those living in the 'normal' universe). Asimov has combined relativity with a new concept that suggests a place where Einstein's theory is not totally applicable. Hence, as any great science fiction writer would, Asimov takes from science what he wants, and then builds on those foundations to produce a new line of thought. The reader does not need to know about the 'Theory of Special Relativity' in order to understand the concept Asimov presents in this passage. By keeping the same passage of time whether one operates in Eternity or not, Asimov puts all the focus onto this new and mysterious place; the scientific questions raised by the keen reader are answered in one straightforward passage. This leaves the reader to begin to question the nature of Eternity, and perhaps also by doing so, the nature of eternity as a metaphysical concept.

If Asimov is an author who takes science theory as his starting point, Robert Silverberg writes from an historical perspective. Like Asimov, Silverberg has also written many works of non-fiction, but these are to be concerned with history and philosophy, rather than science. That is not to say, however, that science does not have a place in Silverberg's fiction. *Up the Line*, published in 1969 is, as John Clute and Peter Nicholls state, "a clever time-paradox story". (Clute & Nicholls: 1106) Somewhat confusingly, the phrase 'up the line' in this novel refers to time travelling into the past, unlike Asimov's 'upwhen' which refers to travelling into the future. In Chapter Nine Silverberg approaches the subject of time paradoxes, although without the clarity of Asimov. It may be suggested that the complicated nature of time paradoxes are emphasised by the complicated explanations given

here. The plot is kept simple; the protagonist, Judson Elliot, is a drifter who wishes to take the easy way through life. Through a chance meeting with Sam who works for the Time Service, he becomes a Time Courier, shipping tourists up and down the timeline. Unfortunately he meets the woman of his dreams, Pulcheria, who turns out to be in his family line. He cannot stay away from her and meets himself, thus creating a paradox that is not allowed by the Time Patrol who remove him from the timeline altogether, in effect killing him. Through an uncomplicated plot, Silverberg is able to offer the reader many more snippets of science theory, without ever resolving any of them:

‘I spoke the other day of cumulative audience paradox. This is a severe philosophical problem which has not yet been resolved, and which I will present to you now purely as a philosophical exercise...as commercial time-travel progresses, it must inevitably smother every event in a horde of spectators, yet at the original occurrence of these events, no such hordes were present! How is this paradox to be resolved? ...It stretches the intellect to revolve such thoughts.’ (Silverberg: 30-31)

This is a playful approach to the scientific theory that underpins any attempt by an author to fictionalise time travel. Although the theme of paradox is repeated throughout the narrative, Silverberg does not explicate the paradox theory further than the passage quoted. For the purposes of this novel, it is enough that it exists, for it ultimately leads to the downfall of the protagonist. He refers to the paradox as a philosophical question, raising the issue of the place of philosophy in scientific thought. Obviously, the ‘Benchley Effect’ (Silverberg: 27), Silverberg’s name for the way time travel works in *Up the Line*, is a scientific process, an actuality; however the problems raised by the physical act of travelling in time can create philosophical issues such as the one in the passage quoted.

In this light-hearted, satirical novel, it is not clear whether Silverberg intended to raise issues of philosophy in scientific thought; nevertheless this is a good

example of the cross-fertilizations that occur between science fiction and popular science. In *Philosophy of Science in the Twentieth Century*, Donald Gillies explores what he terms as, the question of demarcation between metaphysical theory and scientific theory. (Gillies: 153) He examines Karl Popper's thesis that, rather than trying to 'verify' a statement to confirm it as a truth, it is more logical to think in terms of the 'falsifiability' of metaphysical statements. (Gillies: 180) Gillies states "Popper holds that theories may start life as metaphysical, but then come gradually to be transformed into scientific hypotheses." (Gillies: 189) Once a theory is offered as falsifiable, in other words, if it can be tested against another theory, then it becomes scientific. Popper uses the example of atomism to explain the relationship between metaphysics and science and Gillies suggests, "Without the metaphysical ideas of atomism to guide their research programmes, it is very doubtful whether Dalton or Maxwell could have devised their specific scientific hypotheses" (Gillies: 191).

Two separate points may be made here. First, in *Up the Line*, the narrative suggests a demarcation between science and metaphysics. For example, the Time Service use the Benchley Effect in order to travel in time, whilst ignoring – and encouraging the recruits to do the same – the resulting paradoxes that occur. In Chapter Twelve, a Time Patrolman arrives to lecture the new recruits on the "perils of daring to meddle with the fixity of past time" (Silverberg: 32-33). Despite lengthy attempts to explain the paradoxes that can occur, including the 'Ultimate Paradox' (in which the era that produced time travel is wiped out), neither the Time Patrolman or Mr Dajani, the teacher, are entirely convincing in their explanations of the subject. It may be that this is a deliberate attempt by Silverberg to satirise the notion of travel to the past, which remains less possible than travel to the future. He takes what is a generally held belief about time travel and turns it into fiction, in other words he makes it work scientifically. Consequently, the plot relies heavily on the characters taking what the reader would regard as the metaphysical option; that is, blindly leaping into the past, without considering the empirical data. It is suggested through the narrative, in the



character of Mr Dajani, for example, that even those members of the Time Service who teach others do not really know how it all works but are not going to miss out on what looks like an exciting opportunity:

‘You can be sure,’ he said, ‘that the past *is* restored whenever it is changed. The hypothetical worlds created by unlawful change cease retroactively to exist the moment the changer is apprehended. Q.E.D.’

That didn’t explain a damned thing. But it was the best explanation we ever got. (Silverberg: 38)

Q.E.D. suggests both an end to discussion, and also that the facts will prove the theory, in this instance a prophetic statement to make, given the novel’s outcome. The protagonist falls prey to the ‘Ultimate Paradox’, and is deleted from existence by the Time Patrol. The characters in this novel do not really care about ‘scientific truth’, they want to be part of the experience whatever the consequences.

The second point to make concerns the way in which this novel reproduces the discussion in the real world on the role of metaphysics and scientific thought. The section in Donald Gillies’ book entitled ‘Science and Metaphysics’ concludes that whilst metaphysics is meaningful, it cannot be tested, and cannot therefore be regarded as ‘knowledge’. It would appear that, in the post-modernist era (and I use the hyphen purposely here) that we are experiencing, no-one, scientists included, can lay claim to truth, only knowledge. In this respect, Gillies’ distinction between metaphysics and science is appropriate to this argument. *Up the Line* has been overlooked by Silverberg’s critics who give it only the briefest of mentions as an amusing anecdote on the treatment of history, which it most certainly is. (Chapman: 97) However, it also satirically reflects the debate that continues over the place of metaphysics in science and the question of truth when it comes to life-changing developments in science (consider the present debate concerning genetics).

If it is possible for a writer of science fiction to take a metaphysical premise and make it ‘work’ as a fictional scientific theory, how does Philip K Dick, author of the third time travel novel in this paper explain time travel without using science as a narrative device?

*Counter-Clock World* is not a typical time travel novel, in the sense that a character, or characters, builds a machine and travels back and forth along the timeline. In this novel, time itself has begun to move backwards:

Those who were presently being old-born had been the last to die: final mortalities before June of 1986. But, according to Alex Hobart, the reversal of time would continue to move backwards, continually sweeping out a great span; earlier and still earlier deaths would be reversed...everyone else alive would have dwindled back into waiting wombs...assuming of course that Hobart was right. That the phase was not temporary, short in duration, but rather one of the most vast of sidereal processes, occurring every few billion years. (Dick: 14)

Many questions may arise in the mind of the reader following this passage. However, Dick gives little away, preferring to provide the reader clues and hints as to the narrative’s purpose. Unlike Martin Amis’ brilliantly structured *Time’s Arrow*, in which the narrator experiences everything flowing backwards, for example, refuse ‘collectors’ dump rubbish outside houses every week, there are large gaps in the structure of *Counter Clock World*. Dick focuses completely on the plot, throwing in the occasional detail to flesh out the story. The population has learnt to say ‘goodbye’ when answering the telephone, and, ‘hello’ when finishing the call (Dick: 32). Food is regurgitated, and this is embarrassing to everyone (as it perhaps would be to be seen using the toilet in real time) (Dick: 21). Sogum is ‘imbibed’ which is Dick’s own invention of the way food gets into the body in the first place, and this can be a social, shared event (rather like going to a restaurant in real time): “‘I’ve just got to get some sogum into me,’ she said. ‘I’m about to faint. Is there a good sogum palace near here?’” (Dick: 109) Dick

does not go into specific detail about any of these occurrences, choosing instead to incite the imagination of the reader.

Leaving the narrative open to interpretation in this way suggests that Dick is primarily concerned with getting to the larger issues that he wishes to examine in this novel, namely, what happens if time starts to go backwards. As an author, Dick would always begin with the founding question of science fiction, 'what if?'. Although his line of questioning changed in connection with his interests throughout his life, his fiction in the main seeks to answer in some form the issues that disturbed or excited him. In *Counter-Clock World* he focuses in particular on the issue of eternity and God. Despite the lack of explicit scientific detail in the passage quoted, there is, nonetheless, an important connection with popular science that should be highlighted here. Dick creates the character of Alex Hobart, presumably a scientist, who predicted a phase of time when everything, down to the sub-atomic level, would move backwards. Schimdt intimated that he would regard any sort of time travel as innovative, in his words; it is not based on real scientific theory. However, Stephen Hawking in, *A Brief History of Time*, states that the 'arrow of time' (thermodynamics) has been understood for over a century. Hawking goes on to ask:

What would happen if and when the universe stopped expanding and started to contract? Would the thermodynamic arrow reverse and disorder begin to decrease with time?... This would mean that the contracting phase would be like the time reverse of the expanding phase. People in the contracting phase would live their lives backward: they would die before they were born and get younger as the universe contracted. (Hawking: 149-50)

It should be pointed out that Hawking answers the question he poses here and concludes that the disorder would not decrease if the universe began to contract. The fictional account of this theory in *Counter-Clock World* is identical to Hawking's explanation to the general reader. The use and style of language is

different, Dick uses terms that would perhaps become part of general use in this situation, for example, “old-born”. He describes time in romantic terms, “continually sweeping out a great span” and connects the phenomenon to religion, something that a scientist would avoid doing, “In two thousand years from now, Paul himself would no longer ‘sleep’”. (Dick: 14) It is interesting to note how the same scientific concept may be explained using a completely different mode of expression.

On the part of the characters in the novel, there is still inevitable confusion about the science of the Hobart Phase. Reflecting the concern of the part the media play in disseminating scientific information to the general population, Dick’s novel introduces several characters that have failed to comprehend just what is occurring in their world. One such person is Officer Tinbane, a policeman. Dick’s mistrust of those in authority is highlighted as this character is shown to be lacking in both judgement and understanding of the difficulties the world faces:

Tinbane said... ‘I thought you had to be already dead and be reborn to get younger.’

‘Christ,’ R.C. said, ‘don’t you understand anti-time at all? ... You’ve got a mental block against facing it.’

He felt terrible anger... ‘Maybe anti-time affects you a little if you haven’t died, maybe sort of stabilizing you...’ (Dick: 51)

Hawking states that he does not know when and if the universe will begin to contract but he believes it to be billions of years from now. Some people that have read his work may believe this. Dick portrays the difficulty in conveying scientific ‘facts’ well in the absent character of Alex Hobart who, it is mentioned several times, had a difficult job to convince the world of the events of June 1986. When the grave of the Anarch Thomas Peak is discovered, Lotta suggests that those

who buried him in 1971 must have had ‘faith’ in Hobart’s predictions, which implies that even then the world was having difficulty coming to terms with the phenomenon.

### **Conclusions**

My aim in this paper has been to explore some of the ways in which science fiction is connected to the wider scientific, cultural and literary issues of its time. In comparison with Asimov’s fiction and his non-fiction, Dick endeavours to avoid the use of scientific language. Despite the philosophical nature of the narrative this does not mean that Dick was not interested in science. The phenomenon affecting humanity in this novel, is, after all, based on the laws of thermodynamics. Silverberg’s method combines science and philosophy, although it seems his particular interest in this novel is to satirise the function of society using the device of time travel. In *Up The Line*, the language used is not particularly scientific but Silverberg makes suggestions in the narrative that rely on what we as readers already know about popular science and some use of innovation. In contrast, *The End of Eternity* makes good use of the scientific language available at the time of writing. It may be that the assumption of popular scientific knowledge on behalf of these authors leads readers to become interested in popular science. Or, it may be that popular science has fostered a liking for the type of science fiction that draws on already popular aspects of science and interprets them into a vision of the future. Whether the former or the latter may be true, this further emphasises the argument that cross-fertilization has taken place between popular science and science fiction.

This essay is interested in finding the place of science in science fiction. Using McHale’s theory of a ‘trafficking of ideas’ a new way of reading early time travel narratives has been suggested, where popular science writing and popular fiction are interconnected, each having an influence on the other. This may be an important starting point in the quest to understand the vital role science fiction has to play in predicting, absorbing, and commenting upon cultural change.

**Endnotes**

[1] For example, see George Gamov's extremely readable *One Two Three Infinity...* New York: Dover, 1988

[2] For further information see *History of NASA*. URL< <http://history.nasa.gov/>>

[3] See the original *Guide to Science*, p.3

**Works Cited**

Asimov, Isaac. *The End of Eternity*. London: Voyager, 2000.

Asimov, Isaac. *Asimov's New Guide to Science*, 4th edition, London: Penguin, 1987

Asimov, Isaac. *The Intelligent Man's Guide to Science. Volume One: The Physical Sciences*. New York: Basic Books, 1960.

Brooks, Michael. 'I'll Be Back.' *New Scientist*. 170 (2291) 19<sup>th</sup> May 2001, p.48.

Chapman, Edgar. *The Road To Castle Mount: The Science Fiction of Robert Silverberg* Westport: Greenwood Press, 1999

Clareson, Thomas. D.,ed., *Many Futures, Many Worlds: Theme and Form in Science Fiction* Kent State University Press, 1977

Clute, John & Nicholls, Peter.,eds., *The Encyclopedia of Science Fiction* London: Orbit, 1999

Dick, Philip, K. *Counter-Clock World*. London: Voyager Classics, 2002.

Gamov, George. *One, Two, Three...Infinity: Facts and Speculations of Science* New York: Dover Publications, 1988

Gillies, Donald. *Philosophy of Science in the Twentieth Century: Four central themes* Oxford: Blackwell Publishers, 1993

Gott, J.Richard. *Time Travel in Einstein's Universe* London: Weidenfeld & Nicholson, 2001

Gunn, James. *Isaac Asimov: The Foundations of Science Fiction* Oxford: Oxford University Press, 1982

Hawking, Stephen. *A Brief History of Time: From the Big Bang to Black Holes* London: Bantam Press, 1988

Hawking, Stephen. *The Universe In a Nutshell* London: Bantam Press, 2001

McHale, Brian. *Constructing Postmodernism* London: Routledge, 1992

Silverberg, Robert. *Up the Line*. London: Sphere Books, 1975.

*The History of NASA* URL <http://history.nasa.gov/> (23<sup>rd</sup> December 2003)

### **First Response**

This is an interesting essay, intelligently addressing the complex issue posited by the heterogeneity of discourses moulding and produced by a cultural system. Following Brian McHale's lead on the "trafficking of ideas" between postmodernist poetics and science fiction, the author reads some key time travel narratives – by Asimov, Silverberg and Dick – from the golden age of SF to articulate on both the fictional status and scientific imbrications of SF. Science fiction is certainly among the most significant sites for cultural analysis of the dialogues and shifts between reality/knowledge and creativity/innovation. It only seems appropriate that the exploration of "fields of possibility" represented by science fiction should be addressed via an analysis of the fourth dimension, time. By focussing on the cross-fertilizations between popular science (in itself, an exercise in popular narrative) and SF speculation, and through an attentive reading of both fiction and non-fiction writings, this essay – while not breaking new grounds – certainly contributes to bring new salience to the by-now-largely-outworn critical statement of the crisis of the modernist divides in postmodernist theory and practice.

