Foundation
The International Review of Science Fiction
129

In this issue:

Stephanie Saulter in conversation with Sarah Brown
Iren Boyarkina looks to the future with Olaf Stapledon and H.G. Wells
Christopher Cokinos goes into space with *Gattaca*
Victor Grech de-zombifies Data
Elizabeth Chapman Hoult investigates aliens and alienation behind bars
Polina Levontin on the representation of scientists in Nigerian science fiction
Seyedhamed Moosavi explores cognitive dissonance in Philip K. Dick

Conference reports by Eloise Faichney and Laura-Jane Maher, Thomas Knowles and Maureen Kincaid Speller
David Ketterer notes the influence of D.H. Lawrence on John Wyndham

In addition, there are reviews by:

Andrew M. Butler, Molly Cobb, Thomas Connolly, Andy Hedgecock, Rachel Hill, Paul Kincaid, Paul March-Russell, Andy Sawyer and Will Slocombe

Of books by:

Charlie Jane Anders, Mike Ashley, Emma Geen, Rob Latham, Anna Leahy and Douglas R. Dechow, Alastair Reynolds, John Rieder, Darko Suvin and Catherynne M. Valente

Foundation
Foundation vol. 47.1 No. 129 2018

Foundation
The International Review of Science Fiction

Ursula K. Le Guin (1929-2018)
Writer, activist, patron

Foundation is published three times a year by the Science Fiction Foundation (Registered Charity no. 1041052). It is typeset and printed by The Lavenham Press Ltd., 47 Water Street, Lavenham, Suffolk, CO10 9RD.

Foundation is a peer-reviewed journal

Subscription rates for 2018

Individuals (three numbers)

United Kingdom	£23.00
Europe (inc. Eire)	£25.00
Rest of the world	£29.00 / $44.00 (U.S.A.)
Student discount	£15.00 / $23.00 (U.S.A.)

Institutions (three numbers)

Anywhere	£47.00 / $77.00 (U.S.A.)
Airmail surcharge	£8.00 / $13.00 (U.S.A.)

Single issues of ***Foundation*** can also be bought for £8.00 / $13.00 (U.S.A.).

All cheques should be made payable to **The Science Fiction Foundation**. All subscriptions are for one calendar year; please specify year of commencement.

Address for subscriptions/back copies:
The Science Fiction Foundation, c/o 75 Rosslyn Avenue, Harold Wood, Essex, RM3 0RG, UK.
Email: Roger Robinson at sff@beccon.org. All messages should include 'SFF' in the subject line.

Editorial address (for submissions, correspondence, advertising):

Dr Paul March-Russell – journaleditor@sf-foundation.org

Articles should be approx. 6000 words in length, double-spaced and written in accordance with the style sheet available at the SF Foundation website (www.sf-foundation.org).

Books for review:
UK/Europe – please send to Dr Will Slocombe, Department of English, University of Liverpool, Liverpool, L69 3BX, UK.

USA – please send to Sean Guynes, Department of English, Wells Hall C614, 619 Red Cedar Road, Michigan State University, East Lansing, MI 48824, USA.

Reviews (up to 1500 words in length) should be sent to either guynesse@msu.edu or W.Slocombe@liverpool.ac.uk

ISSN 0306-4964258

Foundation

The International Review of Science Fiction

Contents

Volume 47.1, number 129, 2018

Conference Reports

Book Reviews

Editorial

Paul March-Russell

Just as we were beginning to copy-edit this issue, we heard of the death of Ursula K. Le Guin. Following upon the loss last year of Brian Aldiss, another one of the pillars of post-war science fiction has gone. And yet, for all of his good-natured rebarbativeness, Aldiss's death was, perhaps, not felt so keenly by so many. Like Aldiss, Le Guin was one of the few genre writers of that era to achieve mainstream literary recognition, as well as a fearsome reputation for putting down interlopers into the sf/fantasy genres; Zadie Smith has admitted to putting aside a speculative fiction for fear of what Le Guin might say. Yet, like Aldiss, she was also supportive of younger writers and was an important figure in ushering in the US equivalents to the British New Wave. Although Aldiss frequently crossed between sf and fantasy, it was Le Guin who achieved international fame through her Earthsea stories. More so than any of her sf, Earthsea – comparable in its own way to Tolkien's Middle Earth – has been her calling card for new readers and its canonical status will only surely grow. Whereas Aldiss was by instinct a clubbable man, and around such journals as *New Worlds* and *Science Fantasy*, he found (male-dominated) clubs that were relatively easy to join, Le Guin appears to have been more solitary. But this was as much due to the lack of any female network in sf as it was to her temperament or academic upbringing. With the notable exception of Judith Merril, Le Guin was almost unique when she appeared at the start of the 1960s. As she was acutely aware, Le Guin was sf's Virginia Woolf (she even titled one of her most important essays 'Science Fiction and Mrs Brown' in deference to Woolf), the token woman whose very exceptionality guarantees her a place on otherwise male-only reading lists.

But Le Guin was also critical of such tokenism. Although she was conspicuous by her absence from the *Khatru* symposium on women and sf, a discussion that forty years later still frames many of the questions that underline that relationship, Le Guin helped to initiate that debate. Her breakthrough sf novel, *The Left Hand of Darkness* (1969), although criticised by successive critics for not going far enough, critiqued the conventions that had constrained her earlier novels, in particular, the silent convention that readers – whether male or female – read from the point of view of the male gaze. Both the popular and critical success of Le Guin's novel made it possible for the formally more radical experiments of Joanna Russ (*The Female Man*, begun in 1969 but not published until 1975), as well as Russ's criticism such as the pioneering 'The Images of Women in Science Fiction' (1971). Although Le Guin's handling of

hermaphroditism may now seem dated in the light of more recent trans debates, it nevertheless remains a cornerstone for contemporary sf, most notably Ann Leckie's *Ancillary Justice* (2013).

However, as Adam Roberts has noted, the theme of sexuality is only one aspect of Le Guin's novel and is framed by the dialectical critique of power that underwrites her other, most canonical sf novel, *The Dispossessed* (1974). The intersectionality of Le Guin's work, prefiguring the preoccupations of Fourth Wave Feminism, is perhaps her most important feature. As Russ herself acknowledged, she only came to appreciate the importance of class and race to a fuller understanding of feminism in the course of the 1980s. Perhaps because of her background in anthropology, perhaps because of her study of medieval romance, perhaps because of an anarchic politics steeped in the influence of Henry David Thoreau, Le Guin took a more all-encompassing view. This comprehensiveness led to criticism – her writing could be too slow, too authoritative, too risk-averse – but, at a time when leading feminists such as Kate Millett were branding psychoanalysis tout court, Le Guin was making use of Freudian symbolism and Jungian archetypes so as to build and to critique the patriarchal structures of her imagined societies.

This critique cannot be fully understood without reference to the political context of the late 1960s and early 1970s. The Vietnam war polarised the sf community. In a virtual rerun of Nancy Cunard's *Authors Take Sides on the Spanish Civil War* (1937), magazines such as *Analog* and *New Worlds* ran declarations of support both for and against the war in Vietnam. Le Guin, an increasingly committed anti-capitalist, sided against, and used the fourth of the Hainish novels, *The Word for World is Forest* (1972), as a powerful allegory about the war. Yet, what lifted this novel above both allegory and didacticism, was the way in which Le Guin linked the threat of military invasion to concerns of ecological destruction and interspecies cohabitation. As the subtitle to *The Dispossessed* indicated, Le Guin's commitment was to utopianism but her solutions were to be 'ambiguous'. This ambiguity, arising from the intersectionality of her beliefs, resisted the simplistic answers sometimes afforded by utopian fiction. In both her writing and political activism, issues of race, class, ecology, gender and sexuality were intersected, the irresolution of which combined paradoxically to produce her most radical literary experiment, the collage of *Always Coming Home* (1985), as well as a late masterpiece, *The Telling* (2000). Like Philip K. Dick, with whom she coincidentally graduated from the same high school, Le Guin questioned the nature of reality as so many competing simulacra, an interrogation that underwrote not only her finest standalone sf novel, *The Lathe of Heaven* (1971), but also a brilliant short story cycle, *Changing Planes* (2003). Like Ray Bradbury, Le Guin was rare as a practitioner of sf and fantasy for being

feted as one of the US's finest contemporary short storywriters.

Although Stephanie Saulter does not mention Le Guin by name in her interview with Sarah Brown, much of what she says would have resonated with Le Guin. Equally, the articles are suitably diverse ranging from utopia in Stapledon and Wells to anti-capitalist critique in *Gattaca*, from neuroscience in *Star Trek* to cognitive dissonance in *A Scanner Darkly*, and from the representation of scientists in Nigerian sf to a study of the social uses of sf film in a men's prison. Sadly, after an extraordinary twenty-two years as Book Reviews Editor, we bid a fond farewell to Andy Sawyer who is also due to retire from his post as Librarian of the SFF Collection at the University of Liverpool. We are in a period of transition and we have split the role of Reviews Editor between Will Slocombe who, as Lecturer in American Literature continues the link with Liverpool, and Sean Guynes, who is currently a PhD student working on pulp sf at Michigan State University. Both their contact details are given on the inside cover of this issue, and UK/Europe presses are advised to contact Will and US presses to contact Sean. (Presses from elsewhere may want to contact both.)

I am hoping that Andy will contribute a retrospect of his time as Reviews Editor for the summer issue. Paul Kincaid, who contributes here a long review of Rob Latham's *Science Fiction Criticism*, will be starting an occasional feature on the art of criticism, partly inspired by his time as a Shadow Clarke juror. The summer issue will also feature our commemoration of the bicentennial of Mary Shelley's *Frankenstein,* as well as Emily Cox's prize-winning essay on Alex Garland's *Ex Machina* (2015). Lastly, please note that the SFF urgently needs two new voluntary positions to support the work of the Memberships Secretary and the Treasurer – an advert with further details can be found within these pages.

Utopia in the Future Histories of H.G. Wells and Olaf Stapledon

Iren Boyarkina (University of Rome Tor Vergata)

Utopian studies are increasingly moving towards a pragmatic definition of the concept. For example, if we abide by the original meaning of Sir Thomas More's 1516 work as both *eutopia* (good society) and *utopia* (non-existing society), we should include myths, secular and religious paradises, political programmes and theories, literary fictions, fantasy, satire, science fiction, etc. The various attempts at definition can be roughly divided into three categories and their possible combinations, based on the form, content and function of utopia. Each of these definitions, however, relies on a necessarily selective approach to the field of utopia and so cannot be universally accepted. In the attempt to find an invariable, constant element in utopia, Ruth Levitas proposes 'desire' as a common denominator: 'desire for a better way of being and living' (Levitas 2011: 4). To explore how this definition can be applied effectively to both utopian fiction and sf, this article will focus upon Olaf Stapledon's *Last and First Men* (1930) and H.G. Wells' *The Shape of Things to Come* (1933).

In his study of Stapledon, Leslie Fiedler argues that science fiction fulfils a metaphysical need within modern society. Faced with 'the hole left in man's mythological universe by the Death-of-God philosophers from the French Encyclopedists of the eighteenth century to Friedrich Nietzsche', it has 'been one of the chief functions of [...] science fiction to create such a new mytho-cosmology in place of the defunct Judeo-Christian one' (Fiedler 1983: 133). According to Fiedler, science fiction also satisfies two further psychological needs: 'the need to be assured that the universe is not empty of all sentient life but us; and [...] the need to be persuaded that the Others who seem to "possess" us are not merely fragments of our own psyches' (Fiedler 1983: 142). Fiedler continues by arguing that 'modern science – in its assault on the traditional boundaries of the cosmos and the ego – has greatly exacerbated' these metaphysical and psychological anxieties, and that by contrast Stapledon's Star Maker (1937) is 'a paradigm of all that science fiction does best in this regard' by remaining 'faithful to the terror that alienation and insecurity beget' (Fiedler 1983: 133).

Fiedler emphasizes more than once the great contribution of Wells and Stapledon to science fiction as well as their lasting influence on sf writers and the genre in general. He admits:

> It is hard, indeed, to think of anyone, with the possible exception of Wells himself, who has inspired so many later authors to the supreme tribute of imitation. Stapledon's vast cosmological point of

> view widened once and for all the scale and scope of science fiction, opening up for the imagination unlimited time and space [...] and his unflagging invention created, in passing, plot material which has since been mined by writers, who turn episodes he dismisses in a paragraph or a phrase into whole novel or series of novels. (Fiedler 1983: 134)

Other prominent critics, amongst them John Bailey, Robert Crossley and Patrick Parrinder, underline the importance of Wells and Stapledon upon sf. Robert Scholes speaks for many when he writes: 'if his [Stapledon's] books could be combined with those of his great contemporary, H.G. Wells, the composite might indeed be said to contain most of the potentiality of the genre' (Scholes 1975: 62). Wells, however, was not only a profound influence on Stapledon and subsequent sf; his utopian vision also exerted a deep influence upon the immediate post-WW2 period.

Wells' concept of the World State foreshadowed the beginnings of globalization in its political, as opposed to economic, guise. For example, the ideas expressed in *The Rights of Man* (1942) greatly influenced the Universal Declaration of Human Rights in 1948. Stapledon, in his turn, projected Wells' ideas of state socialism not only into the far future but also onto a vast cosmic scale, as witnessed in *Star Maker* (1937). Both authors frequently thought about the destiny and evolution of society, shaping their ideas into the form of utopias and dystopias, and manifesting their political positions in both fiction and non-fiction. They were, however, accused by some of their modernist contemporaries of using their novels to promote their socialist views. For example, in 1923, Virginia Woolf observed of Wells that 'a young novelist became a reformer' (Woolf 1975: 117). The same author wrote to Stapledon on 8th July 1937: 'Sometimes it seems to me that you are grasping ideas that I have tried to express, much more fumblingly, in fiction. But you have gone much further and I can't help envying you – as one does those who reach what one has aimed at' (qtd Crossley 1994: 249). As the political and economic situation deteriorated after the Wall Street Crash in 1929, followed by the consolidation of Nazi Germany in 1933, so modernists such as Woolf's husband, Leonard, the author and publisher Nancy Cunard, writers such as Aldous Huxley, Naomi Mitchison and Rebecca West, and the philosopher Bertrand Russell increasingly subscribed to the position of Stapledon and Wells that intellectuals not only had a social duty to promote knowledge but to also act as political figures (cf. March-Russell 2015: 60–62).

Careful analysis of *Last and First Men* and *The Shape of Things to Come* reveals that they are in dialogue with each other. Contemplating the nature and future history of humankind, Stapledon and Wells agree with each other on some issues but disagree on others. In narrative terms, both texts

employ a frame structure. In *Last and First Men*, the story of humanity's future development through eighteen human species is related by a representative of the Last Men to the frame-narrator, a denizen of the twentieth century. In *The Shape of Things to Come* there is a double frame: Dr Philip Raven dreams of a history book printed in the year 2106 and proceeds to relate the future of mankind contained within its pages. His fragmented notes are then arranged into a coherent narrative – in effect, the book that we read – by his friend, who acts as the frame-narrator.

Last and First Men describes the evolution of different human species from Homo sapiens (the First Men) to the Eighteenth Men (the Last Men) and humankind's striving for survival to make the best of itself. This goal involves attaining the highest kind of fulfilment possible for the human species, that is, the cosmic ideal of mankind's self-realization of its place within the universe and the supreme awakening of all the spirits. The main narrative may be divided into three distinct episodes: the life of humankind on Earth (the first five species), the life on Venus (the next three species) and the life on Neptune (the Ninth Men onwards). The paradigm of *The Shape of Things to Come* is the evolution of mankind from the twentieth century, the Age of Frustration, to the establishment of the Modern World State. Like *Last and First Men* the narrative can be divided into four parts: The Age of Frustration; the birth of the Modern State; the Modern State Militant; and the Modern State in control of Life.

Northrop Frye in his *Anatomy of Criticism* (1957) proposes a taxonomy of fictional genres, which comprises the novel, romance, confession and satire, and their six possible combinations (Frye 1957: 303–14). As much as *Last and First Men* was admired by its first readers, so they were also baffled by its anti-novelistic features: the literary critic John Dover Wilson averred that Stapledon had 'invented a new kind of book' (qtd Crossley 1994: 191), one designed for the space-time physics of Albert Einstein and James Jeans. Its erudition though, following Frye, can be compared with the classical Menippean satires of the Greek author, Lucian (best known for his proto-science fictional work, 'A True History'), and the Roman author, Varro, as well as his successors Apuleius and Petronius. Frye writes that 'the Menippean satire deals less with people as such than with mental attitudes': 'evil and folly' are seen 'as diseases of the intellect […] a kind of maddened pedantry' (Frye 1957: 309) which are then inscribed in the rhetorical excesses of the narrative.

By this token, the single characteristic feature of *Last and First Men* is the absence of any individual protagonist. Indeed, there is no real protagonist in the book, or rather, humankind itself is the collective protagonist. Instead of dwelling upon heroic exploits or social structures, the novel – like the Menippean satire – offers 'a vision of the world in terms of a single intellectual pattern' (Frye

1957: 310). As already noted, both *Last and First Men* and *The Shape of Things to Come* are structured in terms of a frame-narration, a literary equivalent to the dialogic structure that Frye sees as characteristic of the Menippean satire. In regarding Robert Burton's *Anatomy of Melancholy* (1621) as the high point of Menippean satire in English, prior to Jonathan Swift's *Gulliver's Travels* (1726), Frye notes that Burton not only uses melancholy as an intellectual lens through which to observe human society but that he also anatomizes (analyses by dissection) his own singular vision. Consequently, Frye proposes the word 'anatomy' as a more appropriate modern-day synonym for Menippean satire (Frye 1957: 311–12).

In his anatomy, then, Stapledon uses satire to reveal and ridicule social, economic and political vices, for example, the global power of the United States, idolization of money and business, aggression, unwillingness to resolve conflicts peacefully, and overestimation of the roles of science and the intellect. Like Swift, Stapledon uses different species (of men) to make his satirical and allegorical points, whilst his use of successive technological, biological and environmental changes amounts to the same kind of encyclopaedic form to be found in Gulliver's descriptions of fantastical voyages and imaginary, exotic lands.

Nevertheless, there are some outstanding figures in the narrative, such as the Divine Boy of Patagonia or the young musical prophet among the Third Men (see below), yet their function is mainly allegorical; their lives can be viewed as parables or symbols for what it means to be 'human'. Since they are also microcosms of the one collective protagonist, humankind, the text itself must also be analyzed as a parable in order to understand its message. This parabolic structure is also true of *The Shape of Things to Come*. Although more names are mentioned in passing, such as Marx, Lenin, De Windt and Essenden, there is no individual protagonist. This point is made even clearer in the 1936 film adaptation, scripted by Wells, and the ringing question that closes the film, 'Which shall it be, Passworthy?' That is to say, the collective vision embodied by humanity's progress into outer space or the Romantic individualism embodied by the dissident Theotocopulos (Cedric Hardwicke) and the tribalism, figured in the film by The Boss (Ralph Richardson), which brought about humanity's destruction in the first place. Instead, in both the novel and its film version, humanity is the collective protagonist so that the reader is encouraged to read the narrative as an anatomy of one all-encompassing intellectual pattern.

One of the most striking differences lies, however, in the two time spans: *The Shape of Things to Come* barely covers a period of two hundred years (from World War One to 2106) while the narrative of *Last and First Men* embraces two billion years. This huge disparity reflects the time necessary to construct

an ideal human society and manifests the ideological differences between the two authors. According to Wells, two hundred years – aided by war, famine, plague and the breakdown of capitalist society – will suffice while Stapledon is more cautious. For Wells, it is possible – facilitated by a global cleansing of the human population – to overcome all the negative aspects of human nature and the factors which led to the collapse of bourgeois society, such as greed, power, property, aggression, inertia, and so on. Wells believes that it is possible to create utopia with the present species of Homo sapiens (once undesirables have been removed) while Stapledon maintains that at least eighteen different species will be necessary to eliminate all the negative characteristics in human nature so as to construct utopia. Even Stalin observed in 1934 that 'You, Mr Wells, evidently start out with the assumption that all men are good' (Anon 1947). Wells, by contrast, argued that 'There is no need to disorganize the old system because it's disorganising itself enough as it is. That is why it seems to me insurrection against the old order, against the law, is obsolete, old-fashioned. […] The collapse is not a simple one: it is the outbreak of reactionary violence, which is degenerating to gangsterism' (Anon 1947).

This violence is manifested in the novel via a Second World War, followed by a plague, and then a descent into barbarism. This chain of events embodies several landmarks in the construction of utopia. First, it exemplifies the outbreak of violence as predicted by Wells in passing to the World State. Second, it is a logical consequence of entropy, as first described by Wells in *The Time Machine* (1895), whereby current law and order deteriorates into chaos. As Wells later remarked: 'I attack the present system in so far as it cannot assure order' (Anon 1947). Third, taking into consideration not only Wells' debt to Darwinism but also the social theorist Thomas Malthus, as seen in *Mankind in the Making* (1906), the halving of the world's population is due not only to the plague and maculated fever but also the destruction of all socio-economic infrastructures, including healthcare and sanitation. Thus, if war is a driver for social change, plague and the collapse of civilization are a driver for natural selection and population control, in which only the fittest survive.

The World State that emerges from this cleansing of humanity supersedes class conflict by means of education and economic planning. As Wells later stated: 'If a country as a whole adopts the principle of planned economy, if the government gradually, step by step, begins consistently to apply this principle, the financial oligarchy will at last be abolished, and socialism, in the Anglo-Saxon meaning of the word, will be brought about' (Anon 1947). In this way, a desirable ideal society is achieved without a revolution by means of reforms and reorganization. As Wells' narrator affirms:

> With sound education of mind and body and a rigorous and exact protection of property from dishonourable impulses, we have found that it is possible to give every human being such a liberty of movement and general behaviour as would have seemed incredible to some militant socialists who ruled the world during the earlier decades of the last century. But it is because of their stern and thorough cleansing of human life that we can now live in freedom. We may go anywhere in the world now, we may do practically anything that we can possibly desire to do. (Wells 2005: 326)

The institution of a New World Government and proclamation of international human rights manifest Wells' conviction that the residual ideology of the class system can be counteracted by a new-found appeal to law and order. This appeal, though, is not only to reformist socialism rather than revolutionary Marxism but also to the scientific reason of the self-imposed intellectual elites that navigate the progress of the World State: the novel's futuristic equivalent to the 'Samurai' described in *A Modern Utopia* (1908). By comparison, in Stapledon's utopia of the Last Men there are no government, police or laws. His utopia is self-governed through the telepathic sessions and discussions of the whole population.

Whereas Wells places an emphasis upon education and state planning, in *Last and First Men*, Stapledon suggests that these alone will not be sufficient to improve human nature. Instead, whilst Wells merely halves the current population, Stapledon's First Men (which is to say, us) are completely destroyed. More radical measures, such as the genetic re-engineering of humankind, marking Stapledon's debt to the evolutionary biologist J.B.S. Haldane, prove to be necessary. By contrast, despite his equal commitment to eugenics, Wells is more cautious in his novel. His narrator discusses various genes-modifying gases:

> Their general effect is to produce mutations of various types. They bring about, abundantly and controllably, a variability in life which has hitherto been caused only with comparative rarity by cosmic radiations. By 2050 the biological world was confronted by a score of absolutely new species of plants and – queer first-fruits in the animal world – by two new and very destructive species of rodent. The artificial evolution of new creatures had come within the range of human possibility. (Wells 2005: 317)

But Wells is notably more suspect about the application of eugenics to human beings:

> Even the human type, it realized, was threatened. [...] A general plan

> for the directed evolution of life upon the planet was drawn up. [...] The particular field in which we propose a continuation of restraint is in the application of the rapidly advancing science of genetics to the increase of variability so far as human beings [...] are concerned. We believe that the general feeling of the race is against any such experimentation at present. [...] For an age or so we can be content with humanity as it now is. (319)

Similarly, in *Last and First Men*, the combination of human qualities needed for the construction of the ideal society is treated with caution. Stapledon offers a history not of eighteen generations but of eighteen completely different human species. Whereas Wells discounted revolutionary change, Stapledon's history is narrated according to Marxist principles, whereby successive socio-historical conditions form the sound material base for the next stage of development. Stapledon takes into consideration all the possible conditions to the best of his knowledge, including the latest scientific discoveries, such as radioactivity, nebulas, white dwarfs, star evolution, the expanding universe and general relativity. He shares with his predecessor, however, the common theme of entropy. Although the Last Men learn to travel in deep space, they are ultimately doomed by the quickly expanding Sun. Eventually, Wells came to agree with Stapledon's post-human future. He wrote that 'Homo sapiens has to give place to some other animal better adapted to face the fate that closes in more and more swiftly upon mankind. [...] This new animal may be an entirely alien strain, or it may arise as a new modification of the hominidæ [...], but it will certainly not be human' (Wells 1945: 18).

Despite the scientific and economic determinism of his approach, Stapledon's central dilemma is spiritual rather than material. The stories of each of the different human species can be read as individual parables offering different solutions to the main problem of cosmic fulfilment. For example, Stapledon speculates on whether intelligence is the supreme quality for the species or if it only comes at the expense of other qualities. To test this hypothesis, Stapledon introduces in chapter 11 the parable of the Fourth Men, the so-called Great Brains. Artificially constructed by the Third Men, they appear to be the quintessence of humanity: 'What is most distinctive in man is intelligent manipulation, brain and hand. [...] we must breed strictly for brain, intelligent co-ordination of behaviour. [...] The whole vitality of the organism may be devoted to brain-building and brain-working. [...] We must produce a man who is nothing but man' (Stapledon 1999: 187).

The Great Brains are passionate researchers; they discover almost all the possible laws of the world but are still dissatisfied and unhappy: 'With painful clarity they realized that, in spite of their vast weight of neural tissue, in spite

of their knowledge and cunning they were practically no nearer the ultimate truth than their predecessors had been' (198). Finally, they realize that they miss something very important in life: emotions, social life, physical experience and love for the arts. Taking their own limitations into account, the Great Brains construct an even more perfect species, the Fifth Men, in whom they hope to 'attain the goal of perfect knowledge vicariously' (199).

The parable of the Great Brains contains the eternal dispute about the nature of man: What is more important in human beings, feelings or the intellect, the soul or the body? It demonstrates Stapledon's conviction that intellect is not the most essential aspect of the species; instead it only gains true significance in concert with other aspects so as to create a whole being and, consequently, a harmonious society. By means of the rule of contraries Stapledon shows that 'evidently something more than a mere bulk of brains was needed for the solving of the deeper intellectual problems' (198).

In particular, the Great Brains have no capacity for spirituality. The supremacy of the intellect makes them despise love, emotions, and the arts as useless activities stealing time from research. As a consequence, they are individualistic, egoistic, and indifferent to affection, compassion and respect: 'They cared no more for men and women than for material in a test-tube' (194). Furthermore, whereas Stapledon sees the development of telepathy as embodying his beliefs in the interconnectedness of individuals as part of an organic community, the Great Brains misuse the idea by developing telepathic communication not because they want to achieve a harmonious equilibrium between individuals and community but 'solely for the undertaking of more profound research' (193). Instead of awakening the spirit within a harmoniously developed society, the Great Brains' instrumental usage of telepathy only contributes to the ever-furthering alienation of their society. We can also see here a commentary upon Stapledon's contemporaries and his demand for intellectuals to not only be possessors of knowledge but also active participants in the great political movements of their time. By contrast, the ensuing parable of the Fifth Men, more artistically and spiritually enlightened than their predecessors, suggests that to attain the complete fulfilment of the species, cooperation and unification are necessary.

This parabolic storytelling structure remains embedded, however, in the Marxist schema that underlies Stapledon's future history. The ultimate goal lies not in a set of revised institutional arrangements but in the pursuit of another way of being, a radical and revolutionary departure from all previous social, historical and economic structures. Instead of being subject to blind fate, humanity's intervention into its own genetic make-up embodies not only the seizure of its future destiny but also the novel's main theme of self-realization,

ultimately at the cosmic level. As Fiedler contends, Stapledon's 'vision of the breadth of the physical universe and the depth of the human psyche' (Fiedler 1983: 142) contrasts with the Wellsian emphasis in *The Shape of Things to Come* upon material causes for the outbreak of World War II and the subsequent Age of Frustration. As a consequence, despite the Fifth Men's development of 'telepathic communication between many individuals, [there is] no super-individual, or group-mind' (Stapledon 1999: 272), the species is still in need of improvement. Although more spiritually-oriented than Wells, Stapledon's belief in utopia as something dynamic, long and hard fought-for is Wellsian in orientation, 'built on collisions, on conflict' (Zamyatin 1970: 288), as the Russian utopianist Yevgeny Zamyatin averred of Wells.

In the parable of the Last Men, all the most important ideas Stapledon had about the ideal society, spirit and its aspects, the realization of an individual's potential, the personality-in-community, the realization of the species' potential, the fulfilment of the cosmic ideal and the 'supreme awakening of all the spirits' (Stapledon 1999: 286) come together in the form of utopia. One of the most important features of the Last Men is their subordination of private cravings to the good of the species and society:

> As a human individual he or she is somewhat of the same type as a member of the Fifth species. As in the Fifth species, so in the Eighteenth, each individual has his private needs [...] but also, in both species, he subordinates these private cravings to the good of the race absolutely and without struggle. (274)

Unlike the Fifth Men, the Last Men have created a group-mind: 'By means of the harmonious activity of the special organs a true group-mind emerges, with experience far beyond the range of the individuals in isolation' (275). But there is even a higher mode of awakening than a group-mind, namely, a cultural awakening, which the Last Men are able to achieve:

> The system of radiation which embraces the whole planet, and includes the million brains of the race, becomes the physical basis of a racial self. The individual discovers himself to be embodied in all bodies of the race. [...] He now stands above the group minds as they above the individuals. [...] The racial mind transcends the minds of groups and individuals in philosophical insight into the true nature of space and time, mind and its objects, cosmical striving and cosmical perfection. (276–77)

These new possibilities available to the Last Men due to telepathy dramatically affect their societal structure. It was 'a society dominated, as no previous

society, by a single racial purpose, which is in a sense religious' (280). The society functions without the aid of armies or even a police force; it needs neither government nor laws. Suggestions about the improvement of the society's functioning are submitted directly to the whole population in 'telepathic conference', so that 'the only serious possibility of conflict lies now between the world population as individuals and the same individuals as group minds or racial mind' (285).

Both Stapledon and Wells agree that the creation of a better society necessitates a new means of communication. Wells suggests a modification of the already existing language through the adoption of Basic English. A simplified version of English aimed at facilitating international communication, it was the invention of Cambridge scholar C.K. Ogden. Wells summarizes Ogden's innovation in terms of a vocabulary 'of 850 words and a few rules of construction which would enable any foreigner to express practically any ordinary idea simply and clearly' (Wells 2005: 337). By 2020, in the novel, it has become the official mode of communication: 'It is from phonetically spelt Basic English as a new starting point that the language we write and speak to-day [in 2106] developed, chiefly by the gradual resumption of verbs and idioms from the mother tongue and by the assimilation of foreign terms and phrases. We speak a language of nearly two million words nowadays, a synthetic language in fact, into which roots, words and idioms from every speech in the world have been poured' (337). Stapledon, by contrast, abandons any hope of finding a suitable means of verbal communication due to the liability of misinterpretation. For this reason, he is in favour of telepathy as immediate and unfiltered access to another's thoughts. According to Stapledon, this is the only way to create a society free of social conflicts and misunderstandings. But it also indicates the spiritual and religious distinctions between Stapledon and Wells.

Whilst, in *The Shape of Things to Come*, Wells extrapolates from both the increasing secularism of his own time and his personal atheism to foresee a gradual disappearance of religion, Stapledon's beliefs were influenced, on the one hand, by the agnosticism of his father and grandfather, and on the other hand, by his mother's faith and ancestry; the Stapledons were remnants of an ecclesiastical family renowned in the Middle Ages. It is important to define what aspects of Christianity Stapledon was sceptical. According to Stapledon, 'the word "religion" seems to mean two very different things, namely: a) a system of doctrines (i.e. theories) about the underlying nature of the universe and b) an attitude to the universe, or to life' (Stapledon 1950: 1). It is the former component of religion, already greatly undermined by the biological and physical sciences, which seems unconvincing to Stapledon. He emphasizes that 'Positivism […] undermines not religion as a felt attitude to life but merely religion as a body of

theory about the universe' (6).

The position of Stapledon is that at the present level of development of science and human thought it is not possible to correctly formulate and answer the questions about the ultimate nature of the universe, the existence of spirit as a substance, and the existence of God: 'It is overwhelmingly probable that the questions whether there is God or not, and whether we have immortal souls or not, are even further from being answerable, because they are sheer false questions' (6). Speaking about the latter component of religion, the attitude to the universe and life, Stapledon distinguishes in it two aspects:

> This attitude itself has two aspects. One of them is concerned with something within the universe conceived as of supreme value. The other is concerned with the universe as a whole, which includes both value and all that is hostile or indifferent to it. The first is a moral attitude, an uncompromising loyalty to good against evil, or to the 'spirit'. The other, which is logically incompatible with the moral attitude, is an emotional acceptance of both good and evil as necessary factors in the whole. The one is worship of the spirit; the other is worship of the ultimate mystery. (Stapledon 1948: 9)

Stapledon is looking for this harmonious union but none of the existing religions satisfies the writer completely; hence, a new synthesis is necessary to create a better society. A first try at such a synthesis is evolutionary humanism, which Stapledon considers to be an attempt at constructing a purely scientific religion. He points out the drawbacks of evolutionary humanism and admits that 'evolutionary humanism has still much to learn from Christianity before it can be transformed into the gospel that we need' (Stapledon 1950: 1).

In his numerous articles, talks and lectures, Stapledon tries to sketch a view which to his mind may open up the possibility of a true synthesis, because he deeply realizes the importance and necessity of true religion for the society: 'Then what are we to do, we who recognize that what men need is religion of some kind?' (Stapledon 1947: 5). The quintessence of the synthesis that Stapledon proposes for the future society is the combination of complete and rigorous agnosticism about ultimate reality with a religious attitude to life and universe. Stapledon emphasizes that this 'rigorous agnosticism [...] need not be wistful and regretful. [...] On the contrary, since we have in our experience a supremely satisfying certainty we can combine agnosticism with the peace that passeth understanding and the joy that cannot be undermined by intellectual doubt' (4).

To illustrate his ideas about the role of religion in society, Stapledon introduces the parable of the Musical Prophet in chapter 10. He describes a remarkable musical culture of the Third Men 'in which music and religion

combined to form a tyranny no less rigid than that of religion and science in the remote past' (Stapledon 1999: 175) Indeed, the allusions to Christianity in this parable are rather obvious. Stapledon tells us about the origins of the religion of the Third Men in the following way:

> The prophet was born in a highland village [...]. Easily he persuaded men that music was the reality, and all else illusion, that the living spirit of the universe was pure music, and that each individual animal and man, though he had a body that must die and vanish forever, had also a soul that was music and eternal. (175)

Stapledon continues, explaining how the new doctrine spread all over the country and the new church and the new empire were formed on its basis:

> One day the sacred monarch himself, hitherto a prisoner within the conventions, declared half sincerely, half by policy, that he was converted to his people's faith. Bureaucracy gave place to an enlightened dictatorship, the monarch assumed the title of Supreme Melody and the whole social order was re-fashioned, more to the taste of peasants. The subtle prince, backed by the crusading zeal of his people, and favored by the quick spontaneous spread of the faith in all lands, conquered the whole world, and founded the Universal Church of Harmony. [...] Thus was founded the Holy Empire of Music, which gave order and purpose to the species for a thousand of years. The sayings of the prophet, interpreted by a series of able rulers, became the foundation of a great system of law which gradually supplanted all local codes by virtue of its divine authority. (176)

Stapledon emphasizes how the sincere postulates of the Musical Prophet are gradually misrepresented to suit the goals of the Church and Empire:

> The true spirit of the musical religion had been stifled by ecclesiasticism. The founder of the religion [Musical Prophet] had preached salvation by individual musical experience, by an intensely emotional communion with the Divine Music. But little by little [...] the church had lost sight of this central truth, and had substituted a barren interest in the objective forms and principles of melody and counterpoint. Salvation, in the official view, was not to be had by subjective experience, but by keeping the rules of an obscure musical technique. And what was this technique? Instead of making the social order the practical expression of the divine law of music, churchmen and statesmen had misinterpreted these divine laws to suit mere social convenience, until the true spirit of music had been lost. (178)

Stapledon demonstrates the disastrous consequences of the state religion on

the nation, race and humanity in general:

> An infatuated race gradually submitted itself to the whims of these creatures of human folly, until for a brief period they became the tyrannical ruling caste of a musical theocracy. Nor need we observe how they reduced society to chaos; and how at length an age of confusion and murder brought mankind once more to its senses, but also into so bitter a disillusionment. (179)

By contrast, in the parable of the Last Men, Stapledon demonstrates their almost religious loyalty to spirit as an innate good, as opposed to the inherent evil, the inevitable destruction of the species in the cosmic catastrophe. At the heart of their cosmology is their belief that 'Man himself, at the very least, is music, a brave theme that makes music also of its vast accompaniment, its matrix of storms and stars' (304). By his actions, man introduces order and harmony to the world, organizes it, and gives it new form and meaning, just as music does to sound. The responsibility of this action brings with it piety and the acceptance of both the good and the evil of the universe, and consequently, of humanity's extinction; the species' final self-realization and its attainment of the cosmic ideal:

> Man himself, in its degree is eternally a beauty in the eternal form of things. It is very good to have been man. And so we may go forward together with laughter in our hearts, and peace, thankful to the past, and for our own courage. For we shall make after all a fair conclusion to this brief music that is man. (305)

At the same time as the Last Men accept the necessity of both good and evil, they also accept the universal logic of their own demise. This acceptance of extinction is, however, the ultimate coming-to-terms with humanity's place in the universe; the species' final self-realization and, therefore, its attainment of the cosmic ideal.

Both *Last and First Men* and *The Shape of Things to Come* respond to the utopian desire, signalled by Levitas, in different ways despite their common ideological source in socialism. Wells builds his utopia within two-hundred years while Stapledon foresees millions of years for the same process. Wells predicts the disappearance of the financial oligarchy due to careful state control and planning of the economy, elimination of unemployment, and rule by a highly educated intellectual elite. Stapledon's utopia of the Last Men is self-governed by telepathic sessions of the whole race: there is no government, laws or police. While Wells' utopia is populated by our human species, though greatly improved through education of mind and body, Stapledon intends to improve

the human species by means of eugenics, however, only the last, eighteenth species possess all the necessary qualities for the creation of the ideal society. Both writers foresee the disappearance of all religions in the future, though for Stapledon this process is longer and the Last Men preserve the religious feelings of loyalty to the spirit and of acceptance of both good and evil in the Universe. Suffice to say, both texts remain important benchmarks for the discussion of utopia in contemporary sf.

Works Cited

Anon. 1947. *Joseph Stalin–H.G. Wells: Marxism vs Liberalism: An Interview*. New York: New Century Publishers.

Crossley, Robert. 1994. *Olaf Stapledon: Speaking for the Future*. Liverpool: Liverpool University Press.

Fiedler, Leslie. 1983. *Olaf Stapledon: A Man Divided*. Oxford: Oxford University Press.

Frye, Northrop. 1957. *Anatomy of Criticism: Four Essays*. Princeton: Princeton University Press.

Levitas, Ruth. 2011 (1990). *The Concept of Utopia*. Bern: Peter Lang.

March-Russell, Paul. 2015. *Modernism and Science Fiction*. Basingstoke: Palgrave Macmillan.

Menzies, William Cameron, dir. 2007 (1936). *Things to Come*. DVD: Network.

Scholes, Robert. 1975. *Structural Fabulation: An Essay on Fiction of the Future*. Notre Dame: Notre Dame University Press.

Stapledon, Olaf. 1947. 'The Religious Approach'. Typescript, Stapledon Archive, Sydney Jones Library, University of Liverpool, OS/B2/30/1.

----- 1948. SCEPTICISM AND THE MODERN WORLD. Typescript, Stapledon Archive, Sydney Jones Library, University of Liverpool, B2.32.2.

----- 1950. RELIGION TODAY, Typescript, Stapledon Archive, Sydney Jones Library, University of Liverpool, OS/B2.29.1.

----- 1999 (1930). *Last and First Men.* London: Victor Gollancz.

Suvin, Darko. 1979. *Metamorphosis of Science Fiction*. New Haven: Yale University Press.

Wells, H.G. 1945. *Mind at the End of its Tether*. London: Penguin.

----- 2005 (1933). *The Shape of Things to Come*. Ed. John Partington. London: Penguin.

Woolf, Virginia. 1975. 'Mr Bennett and Mrs Brown' (1923). In *Virginia Woolf: The Critical Heritage*. Eds. Robin Majumdar and Allen McLaurin. London: Routledge & Kegan Paul, 115–19.

Zamyatin, Yevgeny. 1970. *A Soviet Heretic: Essays*. Trans. Mirra Ginsburg. Chicago: University of Chicago Press.

Gattaca as a Space Flight Film

Christopher Cokinos (University of Arizona)

Gattaca (1997), written and directed by Andrew Niccol, explores what a genetically inferior human, or 'in-valid', can be or do in a society increasingly run by and tailored for the genetically engineered, the so-called 'valids'. Since its release, the film has 'become a common reference point in discussions about human-gene altering technologies' (Kirby 2004: 184). Although attacked early on as a broadside against all genetic research (Silver 1997: 260), it has been primarily seen as a dystopian extrapolation of elite eugenics. Sean Redmond, in comparing *Gattaca* with other pre-millennial sf films, has argued that it is motivated by 'an apocalypticism that suggest[s] that humankind [is] rapidly approaching its own termination point' (Redmond 2011: 137). What this 'termination point' might be is the subject of this article.

Despite being an important film on the social consequences of genetic engineering, *Gattaca* can also be read as a film about space flight and capitalism. Although the title comprises base code letters for DNA, this corporation name has at least an echo of the word 'galaxy'. To riff on Gary Westfahl's work on 'space suit' movies, I shall argue that *Gattaca* is a space/suit film, though what the explorers wear isn't life-preserving hardware. It's a dapper number perfectly at home at Zara. The spurning of bodily technology for a business suit is significant to the film's intentions. If space suits 'convey that [humans] have the capacity to conquer this daunting new territory' of space (Westfahl 2012: 4), then to travel there in terrestrial clothing suggests the conquest has already been completed. In contrast, then, with critics such as Jackie Stacy and Alan B. Wood, who regard the film's ending as 'victorious' (Wood 2003: para 3), I will argue that the film indicates that the novelty of outer space has been tamed and domesticated as just another extension of the corporate workplace.

Sampling various concepts from spatial, Marxist and fashion theories, I will explore the profound emptiness at the heart of the protagonist's quest to become an astronaut, an emptiness that is far from solely being a simple narrative triumph. For while in-valid Vincent (Ethan Hawke) masquerading as the valid Jerome (Jude Law) succeeds against all the odds, this culmination is, nonetheless, a final collapse into the very system he has only briefly subverted. As a genetic inferior, not engineered before birth for physical and intellectual acuities, he passes, using the real Jerome's exceptional genetic material as a 'borrowed ladder' pointed toward Titan, the goal of a corporate space mission. Vincent-as-Jerome (hereafter, Jerome, unless I am discussing Vincent's prior life) expresses regret at the finale as he is leaving a new love

behind, but he goes anyway, toward interplanetary emptiness and, surely, vast resources, graphed by the Gattaca Aerospace Corporation. Having cheated the system, Jerome becomes its collaborator, denying intimate connection with another person and working instead for the abstractions of corporate space exploitation. In presenting this traditional science-fictional quest for spaceflight in a conformist, policed, eugenic and capitalist future, the film suggests that the next frontier will not be about new knowledge or 'the human spirit' (Stacey 2005: 1873) but about balance sheets, those of DNA in service to those of return-on-investment. The film's apparent celebration of Jerome's space mission hides a critique of the leakiness of this genetically panoptic society, recasting the romance of spaceflight as something more vacuous and predatory. Stacey, in her otherwise compelling queer reading of the film, says that 'it is Vincent's highly conventional masculine drive and ambition that propel the narrative forward and his success that brings satisfactory narrative closure' (Stacey 2005: 1860). By contrast, the narrative closure is satisfactory only if one ignores the film's multiple connotations regarding corporately geometric space on Earth as fiscally translated to the solar system. The void isn't filled by the human spirit but by being employed.

Films from the 1950s, like George Pal's *Destination Moon* (1950), which *Gattaca* echoes in at least one respect – its depiction of space travel as corporate-sponsored – helped stoke popular interest in space flight. *Gattaca*, like a later and very different film, Alfonso Cuarón's *Gravity* (2013), ironizes it, as if irony is the only means by which the dream of space flight can be sustained following the abandonment in the 1970s of beyond Earth-orbit manned space exploration. The film thus critiques genetic engineering explicitly and space flight implicitly, trafficking in these hoary sf tropes even as it sheds them, in an analogous counterpart to how Jerome scrapes so many bits of skin from his body, so as to pass for the genuine article.

Jerome's desire to be accepted for what he is not reflects on how the libidinal economy operates within the film. The bland, homogenous appearance of the recruits suggests the depersonalized and machine-like stereotypes associated with the Aryan body. But this time, the dream of human perfectibility is not harnessed to a nationalist or racist vision of lebensraum, but to a quietly relentless corporation that, hidden from the viewer, seeks profit off-planet. Jerome sublimates his desire for genetic acceptance through his daily charade, but expresses it in his competitive swimming against his brother and in his sexual encounters with Irene (Uma Thurman), a valid and fellow space trainee.

I focus, first, upon scenes in which we are shown Jerome's passion for space flight and, in discussing this, I briefly historicize the film's seemingly nostalgic attitude toward space flight in the context of the low-earth orbit malaise

of the late 1990s when the film was released. Second, I examine scenes in which we see Jerome watching the launches from the Gattaca complex, both when he is Vincent, a janitor cleaning floors and instruments, then when he succeeds in passing as a valid and trainee astronaut. Next, I analyze scenes of Jerome's celestial mechanics training, concentrating on the connotative mise-en-scène of the company's hall of navigational simulation cubicles. I then discuss both the beauty and uniforms of the Gattaca flight candidates – itself an area worthy of extended analysis – before concluding with a discussion of ocean imagery as tied to outer space. In my exploratory reading of *Gattaca* as a space flight movie, I necessarily omit other elements of the film, many of which have already been discussed, such as its noir influences and aesthetics. I do not mean to dismiss these elements but, rather, move beyond them (or set them aside) to show aspects of the film that have received virtually no critical attention vis å vis space flight and, in doing so, to suggest that *Gattaca* can also be seen as a critique of that endeavour.

This reading may go against the grain, but I am taking as a given Brooks Landon's assertion that sf films originate primarily in image not idea (Landon 1992: 15). I suggest that Niccol, either intentionally or not, undercuts the very nostalgia for space flight that the film proffers on a narrative level. As Landon continues, 'the ideas and images we might abstract from a science fiction film are almost inevitably contradictory in some significant way' (20). The protagonist's narrative success and the spatial connotations in which he operates are at odds in *Gattaca*, and I think the latter subtly overpowers the former. The film's portrayal of space flight is evoked spatially on Earth, quietly, and this evocation is bound up in the desires of the corporation itself, and shown not only by narrative action and characterization but also by three things that Ethan Hawke, on the DVD commentary to the film, praises Niccol for: 'images and metaphor and allegory'.

Careers in Space

Historian Howard E. McCurdy has asserted that the idea of space travel appeals 'powerfully to human aspirations' (McCurdy 1997: 2) and that 'the public in general (along with many government officials) have refused to abandon the spacefaring dream' (7). Whatever the merits of this claim, by building its narrative around Vincent's obsession with space, *Gattaca* appeals to the residual fascination with space exploration as a sentimental lure to adventure and knowledge. In the late 1990s, however, space exploration was mired in the fallout from the 1986 Challenger disaster and the 1997 fire on the Russian space station Mir (which also suffered oxygen loss and other accidents). Robotic craft, such as the Mars Pathfinder, captured wider interest though this hardly translated into

an excited mandate for human expeditions, for the first time since Apollo 17 in 1972, beyond low-earth orbit.

It is important to note this, for *Gattaca* establishes Vincent's astronaut dream, and indeed dreaminess, in a way that partakes of four temporalities: the film is set in the future, though one that is an exquisite hybrid of 1930s Bauhaus and 1950s/early '60s Space-Age styling. The film was released in the present of the late '90s, an era of space ennui. And, finally, the scenes in which we learn about Vincent's ambition are solidly 1950s retrofuturist. This anachronism contrasts the romantic nostalgia of the early Space Age with both fictional dystopia (this Bauhaus is decidedly eugenic and moneyed) and real pessimism (the Space Shuttle isn't going anywhere). Unlike the obvious genetic critique that plays out in the film's narrative, these space-flight signifiers are subtle enough to appear to be uncomplicated. They are anything but.

An important context for our learning about and understanding Vincent's desire to be an astronaut is played out in his swimming competition – playing 'chicken' – with his genetically engineered brother Anton, who always wins, given that Vincent is smaller, weaker and suffers from poor health, including a likely heart condition and myopia. We see them as young boys thrashing in the water, with Anton calling Vincent a 'coward', although this humiliation is washed in one of the film's dominant modes, a soft-focus, diffuse golden light. Anton wins, and the shots – aerial and close-ups – emphasize both distance and helplessness on Vincent's part.

A voice-over accompanies the jump-cut to a young Vincent laying out a model solar system in a parking lot, using beach balls and fruit: 'Maybe it was a love of the planets. Maybe it was just my growing dislike of this one, but for as long as I could remember I have dreamed of going into space.' When Anton says that he could be an astronaut if he wished, and bites into an apple, Vincent admonishes him, 'Don't eat that. That's Pluto.'

Still bathed in the golden glow of diffuse and nostalgic sunlight of the past, the film jump-cuts to a meal years later, as we see s Vincent in his late teens or early twenties reading as he sits apart while his mother, father and brother are gathered at a dining table in the background. Here the retrofuturist look – clean-lined mid-century modern furniture, the father's thick glasses – continues to suggest a youthful identification with the excitement of the dawning of the Space Age. Vincent could just as easily be reading an issue of John W. Campbell's Astounding, but instead the book – which dominates the foreground in scale and colour – is called *Careers in Space: An Illustrated Guide*. The red and green cover echoes the colours of the family dining room, while large sans serif type announces the stark title. Due to his high probability of heart failure and a life expectancy announced at birth of some thirty years, his mother tells

him to be 'realistic' about his job prospects and his father finally says, 'Listen, for god's sake. You gotta understand something. The only way that you'll see the inside of a spaceship is if you're cleaning it.'

'My father,' Vincent says in the next scene, 'was right.' The film moves through a series of voice-over flashbacks demonstrating how Vincent and other 'god children' – those born without in-vitro enhancement – face routine 'genoism', regardless of gender or ethnicity, while they seek employment. His DNA is his 'real resumé', he says. Leaving home after one last game of chicken with Anton – one in which Vincent finally out-swims his brother and saves him from drowning ('the moment that made everything else possible') – he finds 'work where I could', eventually becoming a janitor at Gattaca Aerospace Corporation. On his off-time, he studies a book called *Celestial Navigation* and uses it to brace his head when he exercises.

There will be other signifiers for Vincent's desire to become an astronaut, but in this establishing sequence we have moved from contemplation to competition – both familial and economic. Reverie will beget revenue. This is no unvarnished duty to nation, no Space Race, no call for twelve good men to explore the unknown reaches. The film will oscillate between Vincent's childhood dreaminess/personal ambition and the competitive context in which that must play out. While establishing the latter, it's important to acknowledge the former. For example, once he has tricked his way into astronaut training, Jerome watches each and every launch. After his legs are broken to be extended to Eugene's height, he says he is 'two inches closer to the stars.' He twice tells Eugene that he wants to explore to know what mysteries are in the solar system and once invokes zero-gravity: 'They say when you are weightless, it's the closest thing to being in the womb.' Clearly, Jerome's psyche is attuned to exploration and to exploration-as-transformation, but as Arthur Schopenhauer says of 'cleverness' in Book 1 of *The World as Will and Representation* (1819): 'it may be applied […] to suitably arrange people and the motives they are susceptible to so that they can be set in motion like the levers and cogs of a machine, and steered towards some desired goal' (Schopenhauer 2010: 44).

Arc

The chronotope of the launch is here framed less as a matter of physics and more as social power – the corporate discipline of Gattaca's uber-space cadets – and, thus, as economics. We are not told why a private enterprise would be so interested in Titan or other heavenly bodies, but Gattaca's launch schedule is unusually, indeed fanatically busy – more than a dozen launches daily, which Jerome stoically observes, just as he tried to watch them all as a janitor, when, in those days, he smiled to see the rockets' fire, golden as his youth. The day

launch sky is now as blue as the shower in which Vincent scrubs himself before passing as Jerome.

There are seven launches seen in the film, all of which are long-shots with the arc of the rockets and their exhaust (until the conclusion which is a gantry close-up), requiring Jerome and the other spectators to look up. Such a gaze is longing, but it is overwhelmed by the corporation's multiple gazes under the regimen of discipline and the detectives' multiple gazes of investigation, as they try to solve the murder of one of the flight directors.

The launch is an sf chronotope because the movement of the rocket and its trailing exhaust is a constant becoming and letting go, a kind of thread stitching past, present and future. The launch is an active disappearance; a technological sublime whose victory is a recession out of sight. In the context of *Gattaca*, this makes metaphoric sense, for Vincent-as-Jerome is a constant becoming as well. The launch sequence – so prominent in sf films – is a means by which we see the technological embodiment of the hopes, aspirations and anxieties associated with the passing of time.

These launches are not only the literal narrative expression of corporate exploration and hidden exploitation, but also a partial arc, like the fingernails shed in the film's evocative opening or, later, a strand of hair plucked by a would-be lover to give to the other for genetic screening: another undoing of the space-flight nostalgia on the film's surface. In a thoughtful passage about *Gattaca*'s retrofuturism, Stacey writes that it is 'an all-too-familiar version of the future':

> Using clichéd fantasies of technoscientific endeavor from the 'not-too-distant' past (such as rocket science and space travel), *Gattaca* presents the masculine desire governing the hierarchies of a genetically determinist world as an ironic reflection on the modernist vision of the earlier period in which they are placed: the flashback to Vincent's childhood offers sepia scenes of stereotypical 1950s family life, together with retro-style furniture, cars, and clothes; the use of space exploration as the mise-en-scène of masculine ambition plays with the now-outmoded notion of space travel as the 'final frontier' for the progress of mankind. The image of the rocket launching into space (with which the film closes) to symbolize the final realization of Vincent's dream places the spectator in the paradoxical temporality of being transported back to the future. (Stacey 2005: 1861–2)

There is much to admire in this succinct discussion, but, despite the retrofuturist ironies, there are some central unironic facts. First, in this narrative, rocket science and space travel are not fantastic but mundane and so frequent that they must have reduced the cost of off-planet science, exploration, manufacture

and exploitation to levels where corporate profits are a given; second, in such a world where genetic engineering is presented as the norm, determinism is not merely genetic it is capitalist; finally, while the film may have a somewhat ludic sense of retrofuturism, Gattaca Aerospace Corporation does not: the final frontier is routine corporate exploitation of interplanetary resources. Indeed, the two most important clues as to Gattaca's dizzying capitalization are the incredible number of launches – 4380 per year – and the remarkably posh living that its astronaut-trainees enjoy. This is a very successful company, whatever its mix of private-enterprise, knowledge-production and space-settlement motives. Such a corporate endeavour is another sfnal dream and hardly outmoded, as Elon Musk might attest. Gattaca Aerospace is there to do its business in the sky, which a reading of its headquarters' geometry also makes clear.

Cubicle

The romance of spaceflight lies in part with its seeming to be, for the non-specialist, a smooth and untroubled space. But its exploration and certainly its exploitation requires striation, as we see in the relentless navigational training that Jerome undergoes. Before we turn to this iteration of the *Gattaca*'s regularized space – the training and, by connotation, what it says about the missions that Gattaca sponsors – let's briefly consider the overall *mise-en-scène* of the film.

'In *Gattaca*,' writes Sean Redmond, 'early twentieth-century Bauhaus is indicated in the clean and sparse lines of furniture, buildings, and clothing, its rationalist, high-modern aesthetic perfectly symbolizing its future of cold genetic rationalism' (Redmond 2011: 139). Piers D. Britton writes of 'the smooth and sweeping moderne forms' of Gattaca Corporation's building (Britton 2011: 349), whilst Paul Atkinson notes the 'long and extreme-long shots of both the corporation's interior and exterior' (Atkinson 2007: 10). These lines and shots enfold characters in vast settings that remind us of a kind of Machine Age/Space Age/Eugenic Age fusion, reducing employees in size and importance and thus, making them the worker ants of the Gattaca empire. As such, they are eminently replaceable, a hi-tech work force whose only job security is to be as perfect as their surroundings are rational. The film's location manager, Bob Craft, remarks in an interview for the DVD that 'Architecture really was a character in the film.'

There are only two navigation training scenes, though this part of the business complex is shown several times, especially during the police investigation. (It is worth noting that the murder victim was seeking to cut costs at the company by cancelling the Titan mission Jerome will join; the bottom line matters at Gattaca Aerospace.) The shots emphasize utter regularity: The work stations at times fill foreground, mid-ground and background. The need to

conform is also reinforced with the film's increasingly claustrophobic sense of surveillance: we see detectives in the area and above it, looking down. In the first conversation in the film, flight director Josef (Gore Vidal) says to Jerome: 'I reviewed your flight plan. Not one error in a million key strokes. Phenomenal.' Scrutiny is the norm, as Michel Foucault notes in *Discipline and Punish* (1974), 'Whenever one is dealing with a multiplicity of individuals on whom a task or particular form of behaviour must be imposed, the panoptic schema may be used' (Foucault 1991: 205). Even after being selected as navigator first-class to Titan, Jerome has to undergo a substance-abuse test.

The shots of Jerome's urine echo the gold light of Vincent's childhood scenes, but now the golden wash is to be tested, and in the headquarters there are golden railings, so the colour of a childhood dream has become his waste and an architectural feature in the place where the dreamy astronaut must comply. Gold light suffuses exterior shots of the apartment building he shares with Eugene, site of his daily transformations. Dream has become ritualized masking, and the sky itself is both a construction and excreta to be verified.

Atkinson notes that there are many low-angle shots of the interior and that there are certain repeated shapes of rectangles and hemispheres (Atkinson 2007: 10). The low angles evoke a helplessness in the face of the corporation's expansive rigidity and help reinforce our identity with Jerome's concern that this panopticon will show him for what he really is. The repeated shapes are yet another visual element emphasizing the predictable order of this world. As well, the many long shots of corridors or passageways suggest a subterranean journey and connote the birth canal, though we will see that Jerome is hardly born anew in his sojourn.

The training in *Gattaca* – with the exception of a gym scene where Jerome works out to near-collapse and other brief images of exercise on treadmills and human-size gyroscopes – is thus primarily a cerebral exercise. There is none of the madcap energy of, say, *The Right Stuff* (1983), no rocket sleds as in *On the Threshold of Space* (1956), no worried crew meetings as in the HBO drama-documentary series, *From the Earth to the Moon* (1998). We have no centrifuge. No neutral buoyancy pool. No survival outings in case of a landing mishap. Jerome sits at a cubicle where he competes against those at their cubicles wearing their suits competing against Jerome and everyone else. This is a Fordist production line, mapped onto the soulless office environments of films such as Billy Wilder's *The Apartment* (1960).

So Jerome's space is Gattaca's: an extension of the perfected (or wish-for-perfected) body as space. Jerome momentarily repudiates that extension, that helix-and-gridding, only after he is revealed to Irene and when they make love. But his decision to pursue his career in space reorders him, in-valid that

he is, to the cosmic capitalism of profit-driven navigations, which must be lined, sequenced and charted.

Although Atkinson sees the genetic future of *Gattaca* as the singular mode of 'social constraint' in the film and 'space travel [as] a metonym for the "human spirit"' (Atkinson 2007: 6), he also notes that 'the film is tied to late sixties America and the optimism of the space race. Vincent is conceived in the back of a 1973 Buick Rivera, a car whose curved styling is clearly influenced by rocket technology, and there are many shots of characters gazing toward the heavens' (19). Gilles Deleuze notes 'that images that are overly aestheticized turn inward to form closed sets [...] When they do gesture to the "out-of-field," the offscreen space conforms to the structural sameness' (Deleuze 1986: 11, emphasis added). Deleuze also writes that 'all framing determines an out-of-field' and, poetically, 'there is always a thread to link the glass of sugared water to the solar system, and any set whatever to a larger set' (16). The 'out-of-field' births 'a larger set which extends it, sometimes in the form of a whole into which it is integrated' (18). Read in this way, there is no room for optimism and human spirit in the interplanetary reaches that the film has charted for us, even though we never travel there. We don't have to. We've been inside the headquarters, which is ordered, fiscal space itself and where a giant orrery hangs in the foyer like a god, a visual echo of the one Jerome had when he was Vincent, only the former is massive and hovers over the employees like a sword of Damocles, and the latter was small enough for Vincent to touch and to move.

Suits

Umberto Eco writes of postmodern art that 'social coordinates [...] determine the way it is presented' (Eco 2004: 378). We can widen this to include *Gattaca*'s eugenic Bauhaus style and, notably under-discussed, its clothing. The employees not only compete in the space of the Gattaca headquarters – the Marin County Civic Center – they, in a sense, wear those lines: trim, streamlined, androgynous, a retrofuturism at once creepy and seductive, a spiffy Mao suit meets Saks 5th Avenue.

If Kant is right and beauty gives pleasure, what is either in this world of almost literal uniformity, this pipit-driven Machine Age? It certainly is harmonious. If there are lawns, they must be well-edged, like the lapels and all those strong chins and cheekbones. This is the moral beauty of a Space Age Speer, a next-gen Riefenstahl in which violent populist fashion has taken a cool and technocratic trajectory. What Edmund Burke, in his 1757 exploration of the sublime and the beautiful, referred to as a 'sudden protuberance' (Burke 1968: 115) is here meant to be lab-shaven, but because its grotesque possibility still haunts, the corporation and the state guard against it. Everyone looks good,

is smart and dresses the part in a vivid display of the uniformity of power. The clean lines of clothes and buildings in *Gattaca* are the precision of navigation, seams and escalators as trajectories, the body displaying a kind of Ptolemaic system in which humans are returned to the centre and in which disruption is not tolerated. Neither comets nor in-valids are wanted here. Clothes in *Gattaca* are the second skin of perfection, controlled as the people themselves. Clothing in *Gattaca* is the performance of an interplanetary eugenics and a statist capitalism.

The male suits at Gattaca are dark with faint pinstripes (more lines of enclosure) and double-breasted with white shirts and dark ties. The women wear lighter grey, stripe-less jackets with rounded lapels and a tapered waist, a silver-white blouse and slender trousers. The hair is either slicked or pulled back. The look is severe and contrasts with the baggy lighter grey janitor jumpsuits that are, ironically, more akin to flight suits than the fashionwear of the space corps. The dark/light palette emphasizes doubleness almost too readily, but the smooth, tight clothing recalls Gilles Deleuze and Félix Guattari's remark that 'the sea is a smooth space par excellence' (2003: 479), and so here the clothes are as well, a sexy smooth excellence that has been charted on Earth and sky. The clothing in *Gattaca* – as uniform as latitude and longitude, as declination and right ascension – vividly shows each body has having been navigated by corporate power.

If, as Roland Barthes says, 'the idea of democracy produced a form of clothing which was, in theory, uniform, no longer subject to the stated requirements of [class] appearances but to those of work and equality' (Barthes 2006: 65), then *Gattaca*'s techno-fascist fashion is another idea of uniformity in which 'superiority of status' (66) is a given enacting almost literally the maxim 'fashion is health [...] a moral code of which the unfashionable is nothing but illness or perversion' (68). This is not merely the external marker of genetic status, but a disciplinary signifier as well. If you work for Gattaca, this is what you wear. The visual regimentation of the flight training is remarkable. No trainee wears jump suits or plaid shirts, á la NASA. Certainly NASA and other agencies require types of conformity, discouraging flamboyance, but Gattaca takes this in the direction of Fritz Lang's *Metropolis* (1927). If, as Niccol has said, he wanted the Gattaca headquarters to be 'antiseptic' (qtd Atkinson 2007: 10), the clothes are the same, and the connotations could not be clearer: infections must be killed. Their suits are so trim, so flattering, so high-end business that we have another suggestion of what this kind of space suit is: the office-wear of luxury professionals. We never encounter truly outer space in the film, but we don't have to. The clothes striate space; the regularity of employees entering the workplace striate space; the computers they work on do the same. Are these

astronauts or financial consultants? Explorers or event planners? Their fate is not unlike the seventeenth-century *Costumes Grotesques* by Larmessin cited by Barthes 'in which the profession is represented by its imaginary essence: calm forms for the pastry-maker, serpentine for the apothecary, pointed for the fireworks manufacturer [...] clothing ends up absorbing Man completely' (Barthes 2006: 22).

Conclusion with Water

The ocean emphasizes archetypal boundlessness and rebirth, subtly reinforcing the notion of space as, in the common phrase, 'a new ocean'. Space is a place of infinite beginnings for its travellers. Tired of looking at floors and commodes, Vincent-as-Jerome seeks to swim in space. But his swimming is all about competition with his brother, who happens to be the lead detective in the murder for which Jerome is a prime suspect. In this respect, Jerome isn't seeking to transgress boundaries. He is, as ever, trapped by the familial. And in the post-coital dawn by the sea, after his encounter with Irene, Jerome scrubs off his skin with sand and beach rocks, only superficially another of his rebirths. This is a stripping away in order to obtain his mask again, a preparation to performance in the Gattaca panopticon. Before he rises from Irene's bed, we see them against the white sheets perched precariously in a glass room over a seething black/white sea: the oceans Jerome seeks are in fact places of turmoil. They are dangerous and doubled.

The ostensibly romantic link between ocean and space, so implicit in the film, is complicated by these readings, indeed, I think, is undone. Space as a new ocean = Jerome's competing to get there. Space as a rebirth = the ceaseless charade to be Jerome, a cover for Vincent's motivations. He has capitulated to the system he has cheated but whose profit motive he now serves. We could, in Deleuzian terms, say that Jerome is a nomad, a boundary crosser only insofar as he passes until the finale, when the doctor, who knows he is a 'borrowed ladder', lets him board the ship. This transgression only serves the ideology of Gattaca Aerospace.

The film's most telling final geometry is not the helix or the arc or the rectangle or the half-circle, it is the circle itself, the shape of a planet or of a sun or of a perfect orbit, as in coming full circle or perhaps going in circles. White light, from the capsule windows, move across the walls and the crew like prison searchlights. This shot is juxtaposed with the close-up of the rocket's exhaust, which echoes Eugene's self-immolation. Is there an equivalence there? Not rebirth, just a dying?

Deleuze and Guattari say of smooth spaces that they 'are not in themselves liberatory. But the struggle is changed or displaced in them, and life

reconstitutes its stakes, confronts new obstacles, invents new paces, switches adversaries. Never believe that smooth space will suffice to save us' (Deleuze and Guattari 2003: 500). The solar system in *Gattaca* is not smooth but Jerome believes it is. He sacrifices any agency in confronting new obstacles, namely the organizational apparatus in which he and others are trapped. He is not a nomad. He is a monad, a bipedal cell of unexamined yearning. At the end, if there is an adversary for him, it's internal: his regret at leaving behind Irene, which he pronounces in a voice-over but then seeks to rationalize far too easily. He says, 'Maybe I'm not leaving. Maybe I'm going home.'

He desires to be, and becomes, the performative passing of perfection for the corporation's own desires to striate and capitalize interplanetary space. He picks childhood revenge/dream-cum-adult-'purpose' over sexual and romantic passion, rebuking the old-fashioned sexual norms he himself was conceived in and, in this way, chooses the desires of the fiscal and spatial corporation over the desires of his corporeal self. Jerome gives into the calculation of personal victory as though he were still swimming against his brother, still trying to show his father that he measures up. He changes nothing outside of himself, except perhaps breaking Irene's heart. He wants to escape state surveillance and family constrictions to prove himself. But the only refuge he truly found is love and sexual companionship, which he repudiates. As Irene says to her myopic lover, in admiration, but which we might hear in irony, 'You couldn't see, could you? That night crossing the street. You crossed anyway.' There is much that Jerome has failed to see.

Works Cited

Atkinson, Paul. 2007. 'The Visualisation of Utopia in Recent Science Fiction Film'. *COLLOQUY* 14: 5–20.

Barthes, Roland. 2006. *The Language of Fashion*. Trans. Andy Safford. Oxford: Berg.

Britton, Piers D. 2011. 'Design for Screen SF'. In *The Routledge Companion to Science Fiction*. Eds. Mark Bould et al. London and New York: Routledge, pp. 341–9.

Burke, Edmund. 1968. *A Philosophical Enquiry into the Origin of Our Ideas of the Sublime*.South Bend: University of Notre Dame Press.

Deleuze, Gilles. 1986. *Cinema 1: The Movement-Image*. Trans. Hugh Tomlinson and Barbara Habberjam. Minneapolis: University of Minnesota Press.

----- and Félix Guattari. 2003. *A Thousand Plateaus: Capitalism and Schizophrenia*. Trans. Brian Massumi. New York and London:

Continuum.
Eco, Umberto. 2004. *History of Beauty*. Trans. Alastair McEwen. New York: Rizzoli.
Foucault, Michel. 1991. *Discipline and Punish: The Birth of the Prison*. Trans. Alan Sheridan. New York: Vintage.
Kirby, David. 2004. 'Extrapolating Race in *GATTACA*: Genetic Passing, Identity, and the Science of Race'. *Literature and Medicine* 23.1: 184–200.
Landon, Brooks. 1992. *The Aesthetics of Ambivalence: Rethinking Science Fiction Film in the Age of Electronic (Re)Production*. Westport: Greenwood Press.
McMurdy, Howard E. 1997. *Space and the American Imagination*. Washington: Smithsonian Institution Press.
Niccol, Andrew, dir. 1997. *Gattaca*. United States of America: Sony [106 mins].
Redmond, Sean. 2011. 'Film since 1980'. 2011. In *The Routledge Companion to Science Fiction*. Eds. Mark Bould et al. London and New York: Routledge, 134–43.
Schopenhauer, Arthur. 2010. *The World as Will and Representation*. Trans. Judith Norman et al. Cambridge: Cambridge University Press.
Silver, Lee M. 1997. 'Genetics goes to Hollywood'. *Nature Genetics* 17.3: 260.
Stacey, Jackie. 2005. 'Masculinity, Masquerade, and Genetic Impersonation: *Gattaca's* Queer Visions'. *Signs* 30.3: 1851–77.
Westfahl, Gary. 2012. *The Spacesuit Film: A History, 1918-1969*. Jefferson NC: McFarland.
Wood, Alan B. 2003. 'Genes and Human Potential: Bergsonian Readings of *Gattaca* and the Human Genome'. *Theory and Event* 7.1: n/p. URL: https://muse.jhu.edu/article/48666 (accessed 6 September 2016).

Qualia on a Chip: The De-Zombification of Data

Victor Grech (University of Malta)

Whilst acknowledging the bewildering plurality in definitions of consciousness, for the purpose of this article I will focus on *Star Trek*'s Lt. Cmdr. Data with the intention of proposing that he is not only potentially conscious but also constitutes a theoretical construct known as a philosophical (p-) zombie. The article will pragmatically adopt Occam's razor and attempt to utilise the simplest, most practical and most widely recognised possible explanation/s where multiple theories abound in order to gauge whether Data is conscious or not. Data's consciousness is never doubted by the *Enterprise* crew whilst, as Norman Lillegard has argued, 'advances in technology [...] have undoubtedly helped to create an atmosphere in which screen writers can imagine, and viewers can find plausible, such an android as Data' (Lillegard 1994: 35). While the prospect of non-human (alien biological or artificial computational) consciousness remains contentious, the fictive possibility of the latter is facilitated by Data's ardent desire to become more human, not least when he acquires the ability to feel phenomenal experiences.

While numerous scholars have examined Data's presumed humanity, this article will carry out a different investigation of Data's consciousness through what Ned Block terms the p-zombie (Block 1990: 596–8). This paper will argue that Data graduates from a p-zombie, bereft of qualia, into a fully conscious being. Data's quest over the course of the *Next Generation* series to prove his humanity echoes the robot stories of Isaac Asimov, which also raised questions pertaining to 'identity, permissible difference and choice', 'thereby extending Asimov's legacy into [Gene] Roddenberry's fictional 24th century and beyond' (Short 2003: 211). It is in light of this speculative legacy that a focused consideration via the shortest and simplest approach has been adopted since it may permit not only clarifications vis-à-vis Data's consciousness but also explores some of the philosophical implications of such beings, if their creation does indeed become possible.

Star Trek, Consciousness and the Brain

Commencing from first principles, the *Star Trek* storyworld accedes to the 'presumption among many psychologists that virtually all psychological functioning can ultimately be traced to underlying origins in the brain' (Gergen 2010: 796). Within the *Star Trek* canon consciousness resides within the physical brain. For example, when in the *Original Series* episode, 'Spock's Brain' (1968), the Vulcan's brain is surgically removed, 'the remaining physical husk is clearly

unconscious, while consciousness and self-awareness are retained within the relocated brain' (Grech 2013: 14). Beyond this simple binary opposition between mind and body, however, any attempt at explaining the phenomenon of consciousness is fraught with difficulty.

Subjectively, consciousness takes on the form of an internal soliloquy, a stream of consciousness that is only intermittently interrupted by sleep. This accedes to John Locke's contention that 'what gives me my personal identity, what makes me the same person over time to you, is what makes self to myself, and this is that I can remember, and therefore can be held responsible for my past actions' (Locke 1690: 448–9). Data is a unique exception – being a machine, he does not require sleep: 'he is driven by a steady flow of energy, which under normal operating parameters does not fluctuate as human energy would under the impulse of emotion and feeling' (Balinisteanu 2007: 410). It is these latter missing faculties that creates a lacuna for Data in the potential totality of consciousness that pertains to that of humanity.

The definition of consciousness is problematic: 'most of us take [...] consciousness of consciousness to be what is consciousness' (Jaynes 2000: 21), an inherently circular argument. In modern western philosophy, consciousness is described as the ability to experience sensations, equivalent to qualia in the philosophy of mind. This was famously described by Virginia Woolf as a 'sight, an emotion, creates this wave in the mind, long before it makes words to fit it' (Woolf 1980: 246–7). A practical definition, acknowledging the impossibility of non-circularity, was proposed by the philosopher John Searle:

> By consciousness I simply mean those subjective states of awareness or sentience that begin when one wakes in the morning and continue throughout the period that one is awake until one falls into a dreamless sleep, into a coma, or dies or is otherwise, as they say, unconscious. (Searle 1990: 635)

Data clings to an identical viewpoint with regard to his artificial brain: 'he is sure that the silicon, bioplastic, molybdenum, and other materials in which his memories are instantiated are inseparable from his posthuman being' (Relke 2006: 88). Consciousness constitutes an emergent property and is not merely a functional property of brain, whether it be biological or artificial.

The simplest way to continue this analysis would be by route of the mind-body dualism noted above whereby, as René Descartes proposed in 1641, consciousness resides within an immaterial domain, the *res cogitans* (the realm of thought), and anything outside consciousness resides in *res extensa* (a realm of extension). However, other biological beings bereft of qualia (see below) and emotions are often witnessed in *Star Trek: The Next Generation:* the Borg,

humanoids assimilated by cybernetic technology to serve a hive mind. The Borg counterpoint Data's quest to prove his humanity by introducing the notion that biological beings may not necessarily experience qualia, becoming therefore zombies. This dichotomy also introduces a lacuna within the mind-body dualism that otherwise characterises *Star Trek*'s view of consciousness, a hole which is in turn explored by Data's personal narrative.

Gene Roddenberry fleshed out Data in his writers' guide, stating that 'Data has a memory capacity of phenomenal size [...] a "walking library", his reading speed, manual dexterity, strength and vision are also superior to those of humans' (Roddenberry 1987: 26). Data's putative consciousness (or lack thereof) is inextricably intertwined with his desire to become human, 'the Pinocchio syndrome' (Grech 2012: 11–15), which is both a common trope in science fiction and a feature that imputes intentionality. His Pinocchio complex is outlined in the writers' guide: he has the 'impossible dream of somehow, someday, becoming human' (Roddenberry 1987: 6). Roddenberry continues: 'What is most appealing about Data is not that he is a machine, but that he is a machine who is eager and enthusiastic about the adventure of life. To that end, he is an enquiry into the question, "what does it mean to be a human being?"' (26). Data's inability, however, to experience emotion makes him a supremely useful adjunct to the Enterprise bridge crew since he is 'a unique exception to the failure of traditional males to make real the illusion of themselves as "the rational sex"' (Relke 2006: 47). He is the unfailing and ultimate embodiment of rational thought, albeit the creation of technology and a human craftsman.

Qualia

The philosopher, logician, and founder of conceptual pragmatism, Clarence Irving Lewis, first used the term 'qualia' in its accepted modern sense, a description that is also dualistic since it permits consciousness to be split into two parts. Lewis proposed:

> There are recognizable qualitative characters of the given, which may be repeated in different experiences, and are thus a sort of universals; I call these 'qualia'. But although such qualia are universals, in the sense of being recognized from one to another experience, they must be distinguished from the properties of objects. Confusion of these two is characteristic of many historical conceptions, as well as of current essence-theories. (Lewis 1929: 121)

Data does not experience qualia and feelings and this is used to flatter 'us in his attempt to be more like us and often expresses the android form of regret that he is incapable of experiencing human emotions' (Relke 2006: 47). The

philosopher Frank Cameron Jackson later popularised and defined qualia as 'certain features of the bodily sensations especially, but also of certain perceptual experiences, which no amount of purely physical information includes' (Jackson 1982: 127), thereby expanding on Lewis's original delineation that 'the quale is directly intuited, given, and is not the subject of any possible error because it is purely subjective' (Lewis 1929: 121).

This is almost paradoxical, as noted by the philosopher and cognitive scientist Daniel Dennett, who avers that qualia is 'an unfamiliar term for something that could not be more familiar to each of us: the ways things seem to us' (Dennett 1988: 381). For Dennett, qualia are an abundant collection of individual neural responses to stimuli that are simply too fine-grained for language to capture, all of which complexly interact to produce equally unique effects on different individuals, such that 'one will always be "leaving something out"' when attempting to describe a quale (Dennett 2001: 233). Nevertheless, Dennett also ascribed to qualia four properties:

> Qualia are ineffable and can only be appreciated by direct experience – they cannot be communicated. These experiences are therefore private and their interpersonal comparison is not possible. Qualia are also intrinsic and non-relational. They do not change depending on the qualia's experience in relation to other things. And finally, qualia are directly and immediately experienced in consciousness such that when one experiences a quale, one immediately recognises this. (Dennett 1988: 385)

However, Data has no qualia or feelings: 'Data's charm is that he has no emotional awareness: he is the perfect embodiment of Enlightenment reason and human reason's highest technological achievement' (Relke 2006: 47). What Data often regards as a deficit changes when he attains the ability to experience qualia, which also brings him closer to his goal of attaining a measure of humanity.

The Hard Problem

Ned Block posits a dualistic division for consciousness with two complementary aspects: phenomenal (p-consciousness) and access (a-consciousness) (Block 1990: 596-8). Quoting Thomas Nagel, Block describes phenomenal consciousness as experience: 'what makes a state phenomenally conscious is that there is something "it is like" to be in that state' (Block 1995: 228). Access consciousness, on the other hand, is the process whereby qualia and other forms of data, such as thoughts, beliefs, and desires, are stored as memories and made accessible for reasoning and functioning, the neural correlates of various conscious states. Block posits three main differences between the two:

> P-conscious content is phenomenal, whereas a-conscious content is representational [...] A second difference is that a-consciousness is a functional notion, so a-conscious content is system-relative: what makes a state a-conscious is what a representation of its content does in a system. P-consciousness is not a functional notion. [...] A third difference is that there is such a thing as a p-conscious type or kind of state. [...] But any particular thought that is a-conscious at a given time could fail to be accessible at some other time. (Block 1995: 232)

While seemingly possessing a-consciousness, Data is initially impervious to p-consciousness. Indeed, in many ways, he 'is an illustration of balance in the mathematical sense, the kind of balance achieved between the terms of an equation. This is a balance that does not involve nature. It is the illustration of mathematical equidistance from all fleshly reality' (Balinisteanu 2007: 409–10). His mechanical nature makes him an ideal candidate for lack of emotion and an almost ascetic state of aqualia. In all ways, he is more Vulcan than Vulcans.

Philosopher and cognitive scientist David Chalmers has designated these the 'easy' and the 'hard' problems of consciousness (Chalmers 1995: 200–19). Access consciousness is the easy problem since it is theoretically susceptible to cognitive science methodologies and explicable by the philosophy of mind known as Functionalism, in terms of standard computational or neural mechanisms. Various facets of consciousness that are incorporated in the easy problem include the ability to categorise and react to external environmental stimuli and to access the system's own internal state, the ability to integrate and process information, the focus of attention, the reportability of mental states, and the difference between states of wakefulness and sleep, along with the deliberate control of behaviour.

P-consciousness constitutes the hard problem since it is resistant to extant computational or neural mechanisms and does not appear reducible to any know physical systems other than biological brains. Moreover, we have no clue as to how p-consciousness could possibly be instantiated in a machine. The hard problem had been prefigured by other thinkers, including T.H. Huxley who averred: 'how it is that anything so remarkable as a state of consciousness comes about as a result of irritating nervous tissue, is just as unaccountable as the appearance of the Djinn, when Aladdin rubbed his lamp' (Huxley 1866: 193). This sense of wonder and mystification is shared by more recent thinkers even when attempting to hypothesise the possibility of consciousness in non-humans, including machines, since 'we lack a principled basis precisely because we do not have an explanation for the presence of conscious experience even in ourselves' (Levine 1983: 79). The physicist Erwin Schrödinger had a counter-

materialist take on this subject:

> The sensation of colour cannot be accounted for by the physicist's objective picture of light-waves. Could the physiologist account for it, if he had fuller knowledge than he has of the processes in the retina and the nervous processes set up by them in the optical nerve bundles and in the brain? I do not think so. (Schrödinger 1967: 154)

Clearly, the existence of cerebral events, qua cerebral events, in response to external stimuli or internal recall/introspection cannot explain why they are accompanied by corresponding qualitative experiences. The hard problem thus constitutes the reality of personal experience, the existence of qualia, the subjective aspects that accompanies sensory input and information processing in the mind. Indeed, Chalmers asks:

> Why is it that when our cognitive systems engage in visual and auditory information-processing, we have visual or auditory experience [...] How can we explain why there is something it is like to entertain a mental image, or to experience an emotion? It is widely agreed that experience arises from a physical basis, but we have no good explanation of why and how it so arises. (Chalmers 1995: 201)

Vivid and almost disingenuous examples that thinkers have proposed include deceptively simple sensory experiences such as 'the quality of deep blue, the sensation of middle C' (201). The equivalent happens to Data, when he experiences his first quale by tasting his first drink. Taken aback by this revelatory experience, he exclaims: 'I believe this beverage has provoked an emotional response' (*Star Trek: First Contact*).

Joseph Levine has concluded that this leaves us with a 'significant explanatory gap' in our knowledge of how the mind works (Levine 1983: 354). A minority of scholars have speculated that these may merely constitute an epistemological impediment insofar as we have not yet been able to formulate this problem coherently (Chalmers 2006: 167-94). Alternatively, it may be impossible to do so since 'it is possible for a human being to believe that there are facts which humans never will possess the requisite concepts to represent or comprehend' (Nagel 1974: 441). However, most thinkers acknowledge the existence of the hard problem 'of explaining why the neural basis of a phenomenal quality is the neural basis of that phenomenal quality rather than another phenomenal quality or no phenomenal quality at all' (Block 2002: 394).

AI and P-Zombies

Matters are further complicated by the Strong/Weak AI dichotomy. Searle

defines Weak AI as a machine running a program that is only capable of simulating real human behaviour and consciousness without intentionality. This hardware-software combination does not attempt to perform the full gamut of human cognitive abilities, lacks intentionality, and is supported by Searle's famous Chinese room argument which holds that a program cannot give a computer a mind, understanding or consciousness, 'regardless of how it was programmed' (Searle 1980: 423). He contrasts this with the Strong AI hypothesis which contends that (as yet to be designed) hardware may be able to run (as yet to be written) software that truly emulates the activity of a human brain, creating a mind with awareness, consciousness and intentionality. Searle does not disagree with the contention that machines can have consciousness and intentionality simply because 'we are precisely such machines' (422). However, Searle insists that the brain gives rise to the equivalent of Strong AI using non-computational mechanisms, since only 'certain brain processes are sufficient for intentionality' (417). Without the isolation and identification of these mechanisms, consciousness or Strong AI cannot be induced or claimed to occur. Searle thus upholds a philosophical position he calls 'biological naturalism' (Searle 1983: 264): that human mental phenomena such as consciousness and understanding require specific biological machinery that is found in brains, as an emergent property of physical–chemical properties, and that a hardware-software system that prima facie acted exactly like a human mind might still not be conscious.

The ability to divide consciousness into two components predictably posits another gedankenexperiment, a speculation as to the possibility of the existence of so-called philosophical zombies or p-zombies who lack phenomenal experiences, i.e. qualia. For many, this possibility was purely theoretical such that 'there can be no doubt that this is prima facie incredible to Common Sense' (Stout 1931: 138). However, Block has popularised 'the possibility of 'zombies,' creatures that have information processing that is the same as ours but no phenomenal consciousness' (Block 1995: 229). Chalmers supports the possibility of p-zombies that constitute physical duplicates of human beings, lacking only qualia, averring 'that conceivability entails possibility' (Chalmers 2002: 198). Data arguably manifests a-consciousness but 'is endowed with the kind of energetic balance that humans could only achieve in mythological Edens. His awareness is infallible; temptation, apparently, cannot undo his course' (Balinisteanu 2007: 410), due to his lack of p-consciousness.

The Harder Problem

Block has taken this problem one step further, coining 'The Harder Problem of Consciousness' as the impossibility of denying the existence of phenomenal

states (qualia) in non-human beings who may naturally and very relevantly fail to share our physical nature. His position is that by default, such entities must be assumed to experience qualia and have consciousness until proven otherwise. Block summarises this in two statements, that 'the harder problem reveals an epistemic tension or at least discomfort in our ordinary conception of consciousness which is not suggested by the hard problem' (Block 2002: 392) and that 'the harder problem depends on the puzzling nature of multiple physical constitution of consciousness' (423).

Of particular relevance to artificial intelligences, Physicalism is the contention that all phenomena supervene on the physical, tangible plane, and that even consciousness is a by-product of physical processes from a neurobiological standpoint. In *Star Trek*, this leads to a tension 'between the notion of what is, to all intents and purposes, a soul, with the spiritual and possibly even deist accoutrements that this brings along, versus science which, even within science fiction, acknowledges exclusively rational tropes and explanations, an acknowledgment which would automatically exclude these motifs' (Grech 2013: 14).

The creation or existence of such beings would vindicate Computationalism, the computational theory of mind that avers that the human mind and/or brain is an information processing system and that thinking is a form of computing that could therefore be carried on diverse systems, even perhaps computers if properly designed, although we do not know, at this stage, how this might possibly be done. Such creations would have phenomenal states, thereby upholding Functionalism, the perception that phenomenal states are constituted solely by their functional role and that they may instantiated in any neural-equivalent substrate. If Data, albeit a machine, could be shown to acquire both p- and a-consciousness, this would invoke a 'complexity which brings human and computer intelligence one step closer' (Short 2003: 211), as well as, arguably, the instantiation of a human-type consciousness.

Data as a P-Zombie

For Block, Data appears as an exemplar of a 'superficial functional isomorph' (Block 2002: 399) who seemingly always had both a- and p-consciousness. By contrast, I argue that is only in the film *Star Trek: Generations* (1994), released eight years prior to Block's paper and just at the end of *The Next Generation* series, that Data acquires qualia. During *The Next Generation*, by his own admission, Data lacks feeling but he also lacks qualia:

> I have often wondered what it must be like to have one's mouth water in anticipation of the arrival of a confection. Or to feel the pleasure I have observed in humans as they consume it [...] I have often wished to be

> human. I study people carefully, in order to more closely approximate human behavior. […] I would gladly risk feeling bad at times, if it also meant that I could taste my dessert. ('Hero Worship' (1992))

It is for this reason that Lt. D'Sora breaks off an amorous relationship with him: 'Nothing I can say or do will ever make you happy or sad, or touch you in any way' ('In Theory' (1991)). This situation is static up until the point when his endeavours to become more human almost inevitably lead him to install an 'emotion chip' in *Star Trek: Generations* 'that allows him to experience feelings and emotions, thus demonstrating intentionality and attaining qualia' (Grech 2012: 13). Prior to this watershed, Data is emotionless and incapable of experiencing qualia.

Although Data appears to be as sentient and as conscious as the rest of *The Next Generation* crew, his p-zombie predicament, and the uncomfortable fact that he is a unique but desirable exemplar, is interpreted by Starfleet, in the episode 'The Measure of a Man' (1989), as meaning that he is a machine with no rights. This is paradoxical as Roddenberry specifically states that Data is 'an android so perfectly fabricated […] that on applying for a Starfleet commission […] he tested out as alive (Roddenberry 1987: 6) and that 'Starfleet's own regulations prevent the rejection of a candidate so long as it tests out to be a sentient life form' (26). It must be assumed that this was ignored by the series writers in order to highlight the ethical issues that arise from the question of whether a machine is authentically conscious or not.

In 'The Measure of a Man', Data re-encounters Maddox, a Starfleet cyberneticist who 'was the sole member of the committee to oppose my entrance on the grounds that I was not a sentient being.' Maddox elaborates:

> Ever since I first saw Data at the entrance evaluation at the Starfleet Academy, I've wanted to understand it. I became a student of the works of Dr Noonien Soong, Data's creator, and I've tried to continue his work. I believe I am very close to the breakthrough that will enable me to duplicate Dr Soong's work and replicate this. But as a first step I must disassemble and study it. Data is going to be my guide.

Picard initially resists Maddox's intention to take Data apart by emphasising his value to his senior crew. Maddox, though, has transfer orders from Starfleet, 'reassigning it [Data] to […] my command', so that Picard temporarily wavers: 'I have to consider Starfleet's interests. What if Commander Maddox is correct, there is a possibility that many more beings like yourself could be constructed?' Data points out that the cybernetic implants of the *Enterprise*'s blind engineer, La Forge, 'are far superior to human biological eyes': 'Then why are not all

human officers required to have their eyes replaced with cybernetic implants? I see. It is precisely because I am not human.'

An attempt to thwart Maddox's plans by Data resigning his commission is in turn countered by Maddox's utilitarian argument that his agenda will benefit many:

> If I am permitted to make this experiment, the horizons for human achievement become boundless. Consider, every ship in Starfleet with a Data on board. Utilizing its tremendous capabilities, acting as our hands and eyes in dangerous situations. [...] Data is an extraordinary piece of engineering, but it is a machine. If you permit it to resign, it will destroy years of work in robotics.

And indeed it is ruled that 'Data is the property of Starfleet. He cannot resign and he cannot refuse to cooperate with Commander Maddox.' Picard stalls by requesting a 'hearing [...] to determine' Data's 'legal status'. The prosecution reminds the hearing that Data was created by a human, with computational capabilities that exceed that of the human mind, along with superhuman strength and speed. But ultimately, 'its purpose is to serve human needs and interests. It's a collection of neural nets and heuristic algorithms. Its responses dictated by an elaborate software program written by a man.'

At this point, a hidden switch deactivates Data. Picard realizes that an unfavourable ruling would have profound and long-reaching implications, including the creation of a race of 'disposable creatures' that 'do the dirty work':

> An army of Datas, all disposable, you don't have to think about their welfare, you don't have to think about how they feel. Whole generations of disposable people. [...] Slavery [...], that's a truth we have obscured behind a comfortable, easy euphemism. Property.

Picard then ably defends Data by demonstrating that Data values his Federation medals and a copy of Shakespeare that Picard had given him since the latter is 'a reminder of friendship and service.' Picard then calls Maddox to the stand and confirms that it is his 'contention that Lieutenant Commander Data is not a sentient being and therefore not entitled to all the rights reserved for all life forms within this Federation [...]. What is required for sentience?' Maddox replies, somewhat smugly, 'intelligence, self-awareness, consciousness.' From this point on, Maddox finds himself arguing circularly and concedes that Data is definitely intelligent with 'the ability to learn and understand, and to cope with new situations.' Picard quizzes Maddox: 'what about self-awareness? What does that mean? Why am I self-aware?' The increasingly flustered Maddox blurts, 'because you are conscious of your existence and actions. You are

aware of yourself and your own ego.' Picard then asks Data, 'what are you doing now?':

> Data : I am taking part in a legal hearing to determine my rights and status Am I a person or property?
> Picard : And what's at stake?
> Data : My right to choose. Perhaps my very life.
> Picard : My rights. My status. My right to choose. My life. It seems reasonably self- aware to me.

Block references precisely Picard's summation that 'Starfleet was founded to seek out new life. Well, there it sits. Waiting', by averring that 'one day the question of whether a creature like Commander Data is phenomenally conscious may become a testable empirical question' (Block 2002: 406). The presiding judge finds herself in the same dilemma and concedes:

> It sits there looking at me, and I don't know what it is. This case has dealt with metaphysics, with questions best left to saints and philosophers. I'm neither competent nor qualified to answer those. I've got to make a ruling, to try to speak to the future. Is Data a machine? Yes. Is he the property of Starfleet? No. We have all been dancing around the basic issue. Does Data have a soul? I don't know that he has. I don't know that I have. But I have got to give him the freedom to explore that question himself.

The judge has been brought up short by both the hard and the harder problems with regard to the presence or absence of Data's consciousness, since 'it is obvious that we do not now have any conception of how it could be tested' (Block 2002: 406). Furthermore, although phenomenal or simpler conscious experiences may not exactly correspond with ours, we cannot deny their potential existence, and if extant, their validity. This is in agreement which Nagel's assertion that 'the fact that we cannot expect ever to accommodate in our language a detailed description of Martian or bat phenomenology should not lead us to dismiss as meaningless the claim that bats and Martians have experiences fully comparable in richness of detail to our own' (Nagel 1974: 440).

This episode thus highlights a fundamental problem that faces the detection of consciousness in such beings. Block contends that due to their very differences from us, their putative consciousness is 'meta-inaccessible' (Block 2002: 405), and that 'the root of the epistemic problem is that the example of a conscious creature on which the science of consciousness is inevitably based is us': 'But how can science based on us generalize to creatures that do not share

our physical properties?' (407).

With regard to non-human intelligences, our dilemma increases when we consider 'the problem of attributing qualia to other creatures, those that do not share our physical organization [...] a very real puzzle whether such creatures have qualia like ours or even any at all' (Levine 1983: 89). In the case of Data and other artificial intelligences, the problem is potentially compounded by the addition of having a created being with an electronic architecture: 'How much of our physicofunctional architecture must be shared before we have similarity or identity of experience?' (Levine 1983: 89). Judge Louvois therefore accedes to the contention that in truth 'our lack of knowledge is no argument against the consciousness of Commander Data' and similar creations (Block 2002: 416) and that 'not only do we lack a ground of belief, but we lack a conception of any ground of belief' (405). Like the judge, we will be forced to give such creatures the benefit of the doubt since 'on the phenomenal realist view of consciousness, it is an open question whether Commander Data is (a) conscious, (b) not conscious, (c) a borderline case' (419).

Data's De-Zombification

Data is thus potentially a p-zombie, such that 'if the phenomenal consciousness module could be replaced by a device that had the same information-processing effects on the rest of the system, but without phenomenal consciousness, the result would be a zombie' (Block 1995: 229). However, although in this particular instance, the zombie is a crafted being and not a human as originally postulated when the concept was first formulated, the proposition is virtually identical. As already mentioned, Data's next milestone occurs when he comes to the realization that his 'growth as an artificial lifeform has reached an impasse. For thirty-four years I have endeavored to become more "human", to grow beyond my original programming. Still I am still unable to grasp such a basic concept as humor. This emotion chip may be the only answer' (*Star Trek: Generations*).

The installation thrusts Data into an analogous situation with one proposed by the philosopher Frank Jackson. Jackson posited 'the Knowledge Argument' which purports that conscious experience involves non-physical properties (Jackson 1986: 291–5). It is based on the notion that someone who has complete physical knowledge about another conscious being might yet lack knowledge about how it feels to have the experiences of that being. The specific example given by Jackson was of the hypothetical Mary, a scientist who is forced to investigate the world from a black and white room via a black and white television monitor. When shown colour for the first time, she experiences a quale that was not previously possible for her to experience despite all of her physical knowledge. This is precisely what happens when Data helps himself to

a drink after the installation of his emotion chip:

> I am uncertain. Because I have had little experience with emotion I am unable to ...articulate the sensation. [...] Yes. That is it. I hate this. [...] Yes. I hate this! It is revolting! (*Star Trek: First Contact*).

Data's chip initially leads him to lose control of his emotions, to the extent where he asks the Captain to be relieved of his duties, exposing his quest for feeling to be a double-edged sword (*Star Trek: Generations*). When, during a hazardous mission, he confesses to Picard that he is 'feeling . . . anxiety . . . an intriguing sensation . . . distracting' (*Star Trek: First Contact*), Picard advises Data to deactivate the chip.

Subsequently, however, the Borg Queen re-engages his emotion chip, causing Data to feel apprehension and even fear. She attempts to suborn Data's loyalty by appealing to his Pinocchio complex, grafting him with biological skin and thereby allowing him to enjoy the sensation of biological touch, a specific quale that initially overwhelms Data. When he tries to escape, Data wounds his new biological implants and experiences physical pain, another new quale which overpowers him as his 'programming was not designed to process these sensations', terminating his escape attempt. The Borg Queen taunts him:

> Is it becoming clear to you yet? Look at yourself, standing there cradling the new flesh that I've given you. If it means nothing to you, why protect it? [...] Tear the skin from your limbs as you would a defective circuit. Go ahead, Data. We won't stop you. Do it. Don't be tempted by flesh.

Data thus goes from experiencing just 'access-consciousness, [...] availability for use in reasoning and rationally guiding speech and action' (Block 1995: 227) to also experiencing qualia. He is therefore no longer a p-zombie as 'phenomenal consciousness is experience; the phenomenally conscious aspect of a state is what it is like to be in that state' (227). Since 'we have no reason to believe that we cannot find or make a merely superficial isomorph of ourselves' (Block 2002: 401), any artificial intelligences that we may encounter or even create may also experience qualia because 'naturalism (and physicalism) give us no good reason to doubt the consciousness of Commander Data' (415).

As Data continues to manifest the Pinocchio syndrome, the acquisition of the ability to experience qualia aids him by helping him to understand the human condition. The notion of qualia on a chip thus lends insight into what it would be like for a p-zombie to acquire the ability to experience qualia:

> We presently know so little about the scientific nature of phenomenal

> consciousness and its function that we cannot judge whether the same function could be performed by an ersatz phenomenal consciousness module – that is, whether such a module could inject its representations with ersatz conscious content that would affect information processing the same way as real conscious content. (Block 1995: 229)

Block's module is notionally equivalent to Searle's Strong AI causal powers. The notion of qualia on a chip also accedes to Chalmers' contention that if consciousness is a computational phenomenon, then 'in some ways a theory of consciousness will have more in common with a theory in physics than a theory in biology' since 'theories in physics, insofar as they deal with fundamental principles, aspire to simplicity and elegance' (Chalmers 1995: 210).

Conclusion

Data in *Star Trek: The Next Generation* closely simulates or actually has intentionality with access consciousness. He 'is conscious on superficialist grounds. And even if we reject superficialism, there are other potential meta-inaccessible physical bases of a phenomenal overlap between us and Commander Data' (Block 2002: 413). However, Searle doubts that true consciousness in an android could ever be possible with our present state of knowledge:

> The brain's causal capacity to produce intentionality cannot consist in its instantiating a computer program, since for any program you like it is possible for something to instantiate that program and still not have any mental states. Whatever it is that the brain does to produce intentionality, it cannot consist in instantiating a program since no program, by itself, is sufficient for intentionality. (Searle 1980: 424)

It is therefore Searle's belief that a machine may share our computational organization with our behavioural and functional equivalence without being an intentional/conscious system, since consciousness requires not only functional organization but also a specific and unknown (perhaps unknowable) way in which functional organization is implemented in the biology of the organism.

Not all philosophers and cyberneticists agree with this contention and it may simply not be possible to determine whether beings such as Data have intentionality or not. This is because to decide whether 'Data is conscious depends on extrapolating a concept of consciousness grounded in our physical constitution to other physical constitutions. If those other physical constitutions are sufficiently different from ours as is stipulated for Commander Data, then the matter is indeterminate' (Block 2002: 419). However, throughout the franchise, Data's consciousness, and by extension his humanity, is 'framed in humanist

terms: Data is sentient because he possesses intelligence, self-awareness, and consciousness. […] In other words, Data is defined in terms of his mind, rather than his body' (Relke 2006: 87-8).

By contrast, Data can be regarded as a p-zombie who attains qualia and the ability to feel emotions through the installation of an emotion chip. This is equivalent to Block's 'ersatz phenomenal consciousness module' (Block 1995: 229). However, labelling it is not equivalent to understanding it since 'the fact that an organism has conscious experience at all means, basically, that there is something it is like to be that organism […] fundamentally an organism has conscious mental states if and only if there is something that it is like to be that organism – something it is like for the organism' (Nagel 1974: 434). This is particularly relevant since Data's thought processes are blindingly fast and involve parallel processing. By his own admission, while he kissed Lt. D'Sora, he was 'reconfiguring the warp field parameters, analysing the collected works of Charles Dickens, calculating the maximum pressure I could safely apply to your lips, considering a new food supplement' for his cat. To the self-programming android, this is done by creating a 'subroutine specifically […] a program within the program' ('In Theory' (1991)). This accords with Block's position that 'fundamentally different physical realization from us per se is not a ground of rational belief in lack of consciousness. So the fact that Commander Data's control mechanisms are fundamentally different is not a ground of rational belief that he has no phenomenal states' (Block 2002: 405). The human mind cannot conceive performing these tasks so rapidly and simultaneously, and we can thus never understand the nature of Data's consciousness. It is 'perceptually closed' (McGinn 1989: 357) to us and we can at best only accept that it is there. Indeed, since Data's 'brain works via different principles from ours, it is guaranteed that his states will not be governed by all of the same laws as the functionally equivalent states in us' (Block 2002: 420).

This difficulty is acknowledged in science fiction and the attempt to understand an alien has been tackled, for example, by creating a hybrid in the *Babylon 5* episodes, 'Chrysalis' and 'Soul Mates' (both 1994), when a Mimbari ambassador undergoes a transformation to become half-human. With the continuous evolution and ongoing research in the field of AI, 'we have no reason to believe that Commander Data is not nomologically or otherwise metaphysically possible' (Block 2002: 402). However, even if we discover the biological elements that instantiate consciousness and construct an artificial being such as Data, 'we have no conception of a ground of rational belief that Commander Data is or is not conscious, and we have no way of moving from a conclusion that Commander Data is conscious to any consequence for the truth of physicalism' (413–4). This runs contrary to Alan Turing's contention

that 'these mysteries necessarily need to be solved before we can' create an artificial intelligence (Turing 1950: 447).

Moreover, even if Data has his own version of a- and p-consciousness, we could not possibly comprehend them. Instead of understanding Data in himself, his function within the franchise is for us to reflect upon what we are, and how an external observer views us:

> Assembled and programmed to specification, Data had been the only truly Rational Man aboard the *Enterprise* and *Star Trek*'s only consistently dependable repository of humanist values. All those years Picard had spent instructing Data in the value of the humanities – Shakespeare and Dickens, Bach and Mozart – were really years in which Picard was learning, through Data's efforts to process the data, what the process of becoming entails. (Relke 2006: 150)

.

Our inability to detect and/or understand particular facets of authentic consciousness, because of their instantiation in non-humans, may lead us, according to Captain Picard, to 'redefine the boundaries of personal liberty and freedom, expanding them for some, savagely curtailing them for others. Are you prepared to condemn him and all who come after him to servitude and slavery?' ('The Measure of a Man' (1989)). Thus 'it is not what we are made of – whether it be "natural," organic or otherwise – that provides "human" status, but how we behave' (Short 2003: 223). It would therefore behoove us to carefully consider the ramifications of any decisions we make with regard to non-human beings, since the proof of the presence of authentic a-consciousness may evade us and the comprehension of non-human p-consciousness may forever elude us.

Works Cited

Balinisteanu, Tudor. 2007. 'The Cyborg Goddess: Social Myths of Women as Goddesses of Technologized Otherworlds.' *Feminist Studies* 33.2: 394–423.

Block, Ned. 1990. 'Consciousness and Accessibility.' *The Behavioral and Brain Sciences* 13.4: 596–8.

----- 1995. 'How Many Concepts of Consciousness?' *The Behavioral and Brain Sciences* 18.2: 272–87.

----- 2002. 'The Harder Problem of Consciousness.' *The Journal of Philosophy* 99.8: 391–425.

Carson, David, dir. 1994. *Star Trek: Generations*. Paramount.

Chalmers, David J. 1995. 'Facing up to the Problem of Consciousness.' *Journal of Consciousness Studies* 2.3: 200–19.

----- 2002. 'Does Conceivability Entail Possibility?' In Tamar Gendler and

John Hawthorne, eds. *Conceivability and Possibility.* Oxford: Oxford University Press, 145–200.
----- 2006. 'Phenomenal Concepts and the Explanatory Gap.' In Torin Alter and Sven Walter, eds. *Phenomenal Concepts and Phenomenal Knowledge: New Essays on Consciousness and Physicalism.* Oxford: Oxford University Press, 167–94.
Daniels, Marc, dir. 1968. 'Spock's Brain.' *Star Trek: The Original Series*. Paramount.
Dennett, Daniel. 1988. 'Quining Qualia.' In Anthony J. Marcel and Edoardo Bisiach, eds. *Consciousness in Contemporary Science*. New York: Oxford University Press, 42–77.
----- 2001. 'Are We Explaining Consciousness Yet?' *Cognition* 79.1: 221–37.
Flinn III, John C., dir. 'Soul Mates.' *Babylon 5*. Warner Bros. Television.
Frakes, Jonathan, dir. 1996. *Star Trek: First Contact*. Paramount.
Gergen, Kenneth J. 2010. 'The Acculturated Brain.' *Theory and Psychology* 20.6: 795–816.
Grech, Victor. 2012. 'The Pinocchio Syndrome and the Prosthetic Impulse in Science Fiction.' *New York Review of Science Fiction* 24.8: 11–15.
----- 2013. 'Brain and Dualism in *Star Trek*.' *SFRA Review* 304: 14–24.
Greek, Janet, dir. 1994. 'Chrysalis.' *Babylon 5*. Warner Bros. Television.
Huxley, T.H. 1866. *Lessons in Elementary Physiology*. New York: Macmillan.
Jackson, Frank. 1982. 'Epiphenomenal Qualia.' *The Philosophical Quarterly* 32: 127–36.
----- Jackson, Frank. 1986. 'What Mary Didn't Know.' *The Journal of Philosophy* 83.5: 291–5.
Jaynes, Julian. 2000. *The Origin of Consciousness in the Breakdown of the Bicameral Mind.* Boston: Houghton Mifflin.
Levine, Joseph. 1983. "Materialism and Qualia: The Explanatory Gap.' *Pacific Philosophical Quarterly* 64.4: 354–61.
Lewis, Clarence Irving. 1929. *Mind and the World-Order: Outline of a Theory of Knowledge.* New York: Dover.
Lillegard, Norman. 1994. 'No Good News for Data.' *Cross Currents* 44.1: 28–42.
Locke, John. 1690. *An Essay Concerning Human Understanding*. London: Edmund Parker.
McGinn, Colin. 1989. 'Can We Solve the Mind-Body Problem?' *Mind* 98.391: 349–66.
Nagel, Thomas. 1974. 'What is it Like to be a Bat?' *The Philosophical Review* 83.4: 435–50.
Relke, Diana M.A. 2006. *Drones, Clones, and Alpha Babes: Retrofitting Star*

Trek's Humanism, Post-9/11. Alberta: University of Calgary Press.
Roddenberry, Gene. 1987. *Star Trek: The Next Generation Writers Guide*. Los Angeles: Paramount.
Scheerer, Robert, dir. 1989. 'The Measure of a Man.' *Star Trek: The Next Generation*. Paramount.
Schrödinger, Erwin. 1967. *What is Life?: The Physical Aspects of Living Cell with Mind and Matter and Autobiographical Sketches*. Cambridge: Cambridge University Press.
Searle, John R. 1980. 'Minds, Brains, and Programs.' *The Behavioral and Brain Sciences* 3.3: 417–24.
----- 1983. *Intentionality: An Essay in the Philosophy of Mind*. Cambridge: Cambridge University Press.
----- 1990. "Who is Computing with the Brain?" *The Behavioral and Brain Sciences* 13.4: 632–42.
Short, Sue. 2003. 'The Measure of a Man?: Asimov's *Bicentennial Man*, *Star Trek*'s Data, and *Being Human*.' *Extrapolation* 44.2: 209-23.
Stewart, Patrick, dir. 1991. 'In Theory.' *Star Trek: The Next Generation*. Paramount.
----- 1992. 'Hero Worship.' *Star Trek: The Next Generation*. Paramount.
Stout, George Frederick. 1931. *Mind and Matter.* Cambridge: Cambridge University Press.
Turing, Alan M. 1950. 'Computing Machinery and Intelligence." *Mind* 59.236: 433–60.
Woolf, Virginia. 1980. *The Letters of Virginia Woolf, Volume 3: 1923-1928*. Eds. Nigel Nicolson and Joanne Trautman. London: Hogarth Press.

The Social Uses of the Alien: An Account of a Science Fiction Film Project in a UK Men's Prison

Elizabeth Chapman Hoult (Birkbeck College, London)

In a pivotal moment in Robert Zemeckis's science fiction film *Contact* (1997), Jodie Foster's astrophysicist heroine, Ellie Arroway, is propelled through space into a foreign solar system. She is rendered inarticulate by the beauty of the unfamiliar celestial scenes. 'They should have sent a poet,' she mumbles, thus characterizing her own discipline of science as an inferior way of knowing to the literary. When she 'lands', somewhere in deep space, she meets an alien. The encounter is peculiar, tranquil and loving – and it rocks her ontological foundations. Rupture is experienced as grace. Ellie has been offered a way out of logocentric confinement, and she apprehends what life could be outside the prison walls of conventionally understood space, time and reality. For her, the Earth-bound reality machine breaks down for thirteen hours, providing her with an intergalactic rabbit hole through which to escape the binary logic of her society. But when she returns to Earth she discovers that she has only been away for a split second. Her account is discredited and she is mocked as delusional. Ellie's experience of the alien and the unknown remains for her beyond both calculation and representation. The concerns of the film – what counts as knowledge in a scientistic society; the risks involved in surrendering to the encounter with the unknown other; and the role of listening in discovery – are thus encapsulated in the central presentation of her encounter with the alien as a mystical experience.

Contact was one of the films I explored with a group of male prisoners in a UK category D prison in the winter and spring of 2015. The aim of the project was to understand if the demonstrable ability to read texts (in this case, film texts) in plural ways can be transposed onto the way people are able to imagine plural (and therefore possibly hopeful) futures – personally and collectively. The project was then, in part, an attempt to explore the portability of deconstructive reading practices. We worked with films, rather than books, because the feedback from academic peers and from the National Offenders Management Service (NOMS), which governs all research carried out in UK prisons, at project design stage was strongly advisory that I take full account of high adult illiteracy rates in UK men's prisons. I therefore modified my original plan to run a book group, looking at such texts as Philip K. Dick's *VALIS* (1981) and Geoff Ryman's *The Child Garden* (1989). In the event the participants were sophisticated; some were university-educated and others, although they had left compulsory education at sixteen, were much more erudite about science

fiction than I was. The pedagogical fantasy of the reforming, moralizing version of unilateral transformation (i.e. where the teacher enlightens the learner) was problematized from the outset.

We spent five months, on and off, watching the films together and discussing the ideas that came out of them – with me as the university-based researcher/teacher and the prison group as participants. Each film featured the figure of the alien prominently. The project was funded by the UK's Economic and Social Research Council (ESRC) under the aegis of another research council – the Arts and Humanities Research Council (AHRC)'s 'Connected Communities' funding stream. It was part of the much larger, multi-university Imagine project, which sought to understand the ways that research, which is co-produced with communities, can drive social change and support community agency. The prison project was underpinned by the assumption that reading (in its widest sense) challenging fictional texts together, as a group, might facilitate a loosening of fixed, single readings of the world and therefore an abandonment of what Jacques Derrida called the search for the 'centre' (Derrida 2006: 351–70). In other words, that there is some link between surrender to the infinity of endless play and the possibility we all have for rewriting the scripts of our lives.

In previous work on resilient adult learning (Hoult 2012), I had argued that particularly resilient adult learners – those who had faced significant trauma, disadvantage and setbacks and yet who still thrived and succeeded as mature students – might be characterized as being able to perform the following capabilities (among others):

1) They engage in open readings (of texts and of life in general), resisting closed meanings and final answers; and
2) They are open to the unknown and transformation.

The overall aim for this prison project was to see if it was possible to teach some of these life capabilities to learners through the structured reading (watching) of fictional texts. A sub-question was: is it possible to trouble conventional ways of understanding the other by engaging with the fictional trope of the alien? The figure of the alien in each film was thus used as a discursive framing device for wider discussions about what it means to be self and other, and in turn what kinds of futures are available. I chose to use science fiction, rather than realist fiction, partly to stretch the concept of imaginary futures widely enough for individuals to engage in discussions about their own futures in ways that were not limited by habitual patterns of plausibility. The imaginative constructions of deep space and far futures that inform the science fiction genre provided a safe and playful space for individuals to think about what comes next without the burden of the

near past. I was, after all, working in a prison, where, regardless of who is at fault, the fact remains that the events of the near past have interrupted, if not wrecked, the individual and family lives of those incarcerated.

The aforementioned Imagine project, of which this was a part, was underpinned by a commitment to exploring the notion of utopian futures with community participants. Science fiction has always had a special relationship with the future. As a genre, it rests on writers' and readers' ability to hold in play affective and intellectual responses to the here and now, while submitting to a wholly fictional construction of time to come. As Richard Kahn puts it, 'In the future world, everything is as it is in the former – and yet everything is quite different. The future world is reasonable chaos – chaos which penetrated itself – is inside and outside itself – chaos squared or infinity' (Kahn 2010: 55). The narrative structures of science fiction frame that chaos, making more and less likely possibilities easier to hold and handle. Science fiction also opens up the question of how we respond to the 'not me', or more accurately, the 'not us' in ways that allow for a contestation of normative and reductive responses. It was therefore the ideal genre to explore with participants in a prison who were experiencing a fundamental pause in their life stories and were therefore invested in thinking about possible futures.

The discussions that came out of the films and the follow-up interviews were complex and wide-ranging and, as such, difficult to characterize. That the meanings of the encounters are difficult to calculate is not a surprise – there are long-established debates in social science about the tendentious nature of truth telling in empirical data and the folly of making claims that exceed tentative interpretations of various forms of representation. Overall, the data suggests that science fiction, perhaps more than other literary and cinematic genres, represents the potential for opening-up discussions that question underpinning ontological positioning, in ways that surpass texts that are more usually used in such groups. In the quotation below, for example, prompted by the group's viewing of *2001: A Space Odyssey* (1968), one of the participants, Chris,[1] asked:

> What is the connection between violence and evolution? I think that's very simple to discuss and answer to me. We are still, to this day, now in a very basic stage of evolution. [...] It's like a design flaw in our creator, whether it be [according to the theories of] Darwin or God – whatever you subscribe to. We only seem to evolve through pain and growth, whether it be from making mistakes, it's the way we're designed. And, being a father (and I've got two boys), I see when they – from the moment they've grown. The whole play/fighting – it's *in* us.

The nature and purpose of violence was central to the group's consideration

of Stanley Kubrick's film, and it opened up to a much wider political discussion about the propensity of some young men to be attracted to violence in the context of world events and the potential to resist that pull. Deep engagement with a challenging science fiction text thus rapidly opened-up to discussions about philosophical assumptions. I would assert that the non-elitist nature of science fiction made it easier to draw into the project a diverse group of thinkers in ways that more usual routes to this sort of philosophical discussion (for example a philosophy, poetry or faith group) would have done. The experience of carrying out the project thus affirmed the conviction that the work of engaging with the fictional alien is worthwhile, and that it has as much to offer the community educator and social researcher as it does the cultural critic and literary or film enthusiast.

Methodology

The substantive question about how we apprehend and respond to the alien underpinned the project in terms of its enactment, as well as its pedagogical and intellectual framing. As inmates of a UK, category D prison, the participants had usually served a sentence in a higher category prison, and were in the process of being prepared for release and subsequent return to the community. Category D prisoners in the UK have been assessed as trustworthy in open environments. Over time, they are able to earn various privileges in terms of release on temporary licence (ROTL) which enable them to make home visits and to work. The open nature of the prison and the relatively imminent release dates made it seem – to an outside visitor like me – a hopeful and, as far as I could tell, peaceful place to visit. The prison is constructed mainly in low-level, open-plan accommodation, near the sea and close to a nature reserve, and the sound of the sea and the birds made for a feeling of calm, at least for a privileged visitor. This was undermined, but also heightened, by the ominous presence of the closed higher security prisons on the same site. Everybody was acutely aware that they were not at either of those places (any more), but also that the prospect of returning to one of them was real as a reprimand for rule breaking. There was a sense that this was a contemplative environment, enhanced by the fact that the participants all wore the same uniform – grey track suits – and that the rules disallowed general access to the internet and money.

I visited the prison more or less weekly to work with the small group, and I was very aware of the inequalities of power and agency available to me as a visitor, in comparison with the participant inmates. We met in a room off the chapel and multi-faith centre; it was the only quiet place with a DVD facility. We watched and talked about a range of films, documentaries and TV dramas together over the period. These included *Contact*, *2001: A Space*

Odyssey and Andrei Tarkovsky's *Solaris* (1972). Each text was concerned with exploring the central question of how the human can imagine and relate to the non-human alien. The collective group nature of the film experience came to represent something integral to the project – particularly notable in the psychedelic sequences of *2001: A Space Odyssey*, the journey through the worm-hole in *Contact* and the hypnotic travel imagery in *Solaris*. This was a shared, supportive experience which was qualitatively different from the classic processes of the book group, in which a novel is read independently and then the group convenes to discuss it. I recorded each post-film discussion and, at the end of the project, conducted an in-depth interview with each participant about the films and the ways that they imagined the future – globally and personally. The interviews were semi-structured to allow for a freer exploration of the ideas raised. I asked the participants to apply the practice of interpreting aspects of the films in plural ways to the conceptions of their own futures. So, for example, in the interviews I asked each participant to suggest three possible meanings of the Star Child at the end of *2001: A Space Odyssey*, then followed this with a request for three different scenarios of what might happen to the Earth in fifty years' time. Finally, I asked them to provide three possible scenarios of their own lives, post-release. I was interested in the extent to which the habit of 'reading' a fictional text plurally could translate to a habit of hopeful plurality in respect of one's own life.

The Prison Context

The project was, in its performance as well as its content, infused with a sense of the meeting of extraneousness. This encounter between aliens was one of praxis on both sides but the divisions of power and cultural capital were much more complicated than I had imagined they might be, and that the rigorous internal and external permissions procedures – both the normal university procedures for ethical clearance for a project involving 'vulnerable adults' and the demands of NOMS, a division of the Ministry of Justice – had led me to believe. Unlike both routine university-based teaching and learning work and the community-based 'outreach' project, this teaching and learning event took place in a meeting place which was none of our homes. The texts themselves – the films – were encountered away from both shared community and university histories. We did not meet in a local setting in the sense of a community with a long, shared history and anthology of stories, nor did we meet inside a university, where I did the rest of my teaching. Indeed, through the research funding, I had been granted my own version of release on temporary licence once a week, to carry out the project. True, the members of the film group slept, ate and resided in the prison temporarily, but it was not their home. They came from

other worlds. Each member of the group was a first- time offender. The prison was as alien to them as it was to me, although they were more familiar with it, in spatial and temporal terms. In one sense, then, the film group work on Thursday afternoons seemed to be suspended in space, like the island of home on a sea of consciousness in the final of scene of Tarkovsky's *Solaris*.

In their account of how a prison education programme was framed and informed by an engagement with Hannah Arendt's philosophy of natality, 'the human capacity to begin and to continue to begin' (Meyer and Fels 2013: 301), Karen Meyer and Lynn Fels note that the prison environment itself operates as a stark dramatization of 'the gap between past and future' (307). As such, it is – or can be - the temporal and spatial springboard for the practice of making new beginnings. This question of the potential to begin again, or to imagine a post-release future was a central idea in the project. I asked of each film if it could be read as hopeful, or not and, predictably the participants noted the ambivalence of *2001: A Space Odyssey*. 'You know what, if you hadn't posed the question,' said Chris, 'I don't know if I would have acknowledged that I'd seen it as a hopeful film.'

In Meyer and Fels's work it is the very interruption in mundane space-time (what their participants describe as being 'on the shelf') that provides this space to consider the possibility of hope in a more abstract sense. I would add that the prison – so ostensibly different from the choice-laden, modern, neo-liberal university – presents an interruption to the taken-for-granted mechanics of teaching and learning that underpin higher education. Other university teachers who have taught in prisons have noted similar sorts of creative interruptions. Steven Shankman, for example, writes powerfully of his experiences of teaching the Russian novel alongside Levinasian ethics in a prison as part of the renowned 'Inside Out' programme in the USA (Shankman 2013: 143–54). Although the alien is not dramatized so explicitly in the texts he uses, the ethical and existentialist questions that the other asks of us are comparable. As he says of his teaching, which positions the analysis of Dostoyevsky's novels alongside Emmanuel Levinas' writings on ethics:

> My encounter with the other breaks the trance of presence, of being, of knowing. The other is infinite, cannot be contained by my consciousness. He or she is infinite in this sense, and in the sense, as well, that I am never finished with the other, that my responsibility is never completely fulfilled. I am always, infinitely – without end – obligated to the other. (Shankman, 2013: 145–46)

In his work, Shankman also notes that the prison education environment provides an opportunity for authenticity both on the part of teachers and learners: 'an

honesty that is rare in a conventional academic setting, and that encourages students to be vulnerable and take risks' (Shankman 2013: 148). Certainly, this experience of unusual, even unique authenticity is one that I noted in my own work in the men's prison. There was a sense of raw, almost timeless reality to the encounters. It struck me that the prison environment could be at its very best, a contemplative environment, in which the inmates' (and, because it was mandatory, my own) isolation from the noise of modern living (most notably highly restricted access to the internet and mobile phones) facilitated a depth of engagement with texts and with existentialist discussion that would be difficult to replicate in more conventional, open and connected contexts. Was it also relevant that our discussions were haunted by the presence of the imaginary third – the alien at the table?

Theoretical Framework: Alien as Strange Stranger

The consideration of the fictional alien leads to a recognition and articulation of a basic ontological position in relation to the other. Underpinning all of our group discussions was the implied ethical question: how do I respond to that which is apparently wholly other than me but whom I must imagine through my own ontological framework (because I have nothing else to go on)? Framed in this context, the questions, 'Does extra-terrestrial life exist?', 'Does the knowledge that it probably does make me feel hopeful?' and therefore 'Should we make contact with extra-terrestrial life forms?' – all questions I asked members of the group, both collectively and individually – become the stimuli for serious ethical enquiries, rather than a fanciful meandering. After we watched *Contact*, for example, one of the participants, Pete, reflected on the difference between the stance taken by the extra-terrestrials in that film (located in a solar system around the star Vega) and the aggressive stance of the (western construction of) the human:

> But I tell you what, like, as a society, if we had actually found – if we had been the one that sent that message and built that and done that, just as a society that we are, we would be a lot more controlling with those people . . . we'd be a lot more aggressive than they are passive.

Based on the experience of carrying out the project, I would argue that the alien has particular characteristics that can make the familiar strange by temporarily taking us out of this inhumane version of what it means to be human and encouraging us to question its inevitability. The possibility of the alien is then intrinsically hopeful because it means that there are other ways of living. But dystopias pervade the genre and invading, hostile aliens are ten a penny. Men did not just invent gods in their own image, as Hélène Cixous (1986: 65) has put

it, but also a million identikit aliens who have sprung out of the history of western literature and philosophy. Much more imaginative toil is involved in dreaming up an alien who bears us kindness, or even neutrality, than churning out multiple versions of gun-toting intergalactic colonialists.

The alien is a standard and familiar trope of science fiction; s/he is the embodiment of the unknowable, incalculable infinity. She, he or it is dark matter brought to light or the unimaginable made comprehensible. The alien in popular culture is also familiar and accessible representation of the unknown other which provides a tangible way of grappling with ideas of that which is other than me. The alien is both unknowable and impossible to disprove. Paradoxically, the likelihood of its existence confronts modernist materialism, but the probability of that existence is deeply rooted in rational, mathematical thought; given the unfathomable vastness involved, it is highly unlikely that there is not life elsewhere in the universe. So, the alien provides fertile ground for speculative/science fiction plots in fiction and the search for extra-terrestrial life is also a serious sub-discipline of astrophysics, for example as led by the Search for Extra Terrestrial Intelligence (SETI) programme in California. The latter is dramatized most notably in *Contact* in which astrophysicist Ellie Arroway jeopardizes her prospects for a prestigious career in mainstream research by investing her time in the search for extra-terrestrial life. Despite its long-standing establishment inside a mainstream of the Hollywood film industry, the science-fiction genre itself provides multiple and nuanced representations of the alien other, that go beyond the Hegelian binary of self/other that Cixous argues underpins western philosophy and literature. Well-known representations in English speaking, mainstream film industry include alien as terrifying monster (the *Alien* series, including *Prometheus* (2012)); alien as mysterious, ambivalent observer (*Close Encounters of the Third Kind* (1977) as well as *2001: A Space Odyssey*); alien as friend to or saviour of humanity (*Superman* (1978), *Contact* and, arguably, *2001*); and the ingénue (*E.T.* (1982); *The Man Who Fell to Earth* (1976); *The Brother from Another Planet* (1984)). Some films transcend and include all four categories, for example, Tarkovsky's theologically inflected *Solaris*.

Science fiction therefore opens-up a discursive space within which to consider the other, here on Earth. Pedagogically, such texts facilitate enquiry into philosophical questions in community education work with groups of adults, such as men in prison, who would perhaps be less likely to participate in equivalent groups outside of the institution. At a contemplative level, the location of such a project in a prison provided a space for participants and researcher/teacher to consider what it means to other and be othered by a judicial system, and how this relates to the construction of personal hope at the prospect of returning to the 'community'. Work in the prison environment places the researcher/teacher

and the participant in a shared space where the strangeness of the stranger is both illuminated and diminished.

There are dangers involved in summoning aliens, though, quite apart from the fact that they might turn up. The alien motif remains a highly problematic framing device, even if it was the locale of content for the project. Many prisoners feel alienated and dehumanized anyway; they don't need an academic re-inscribing that identity for the purposes of pursuing a theoretical point. Likewise, the image of university teacher as pioneer traveller in the prison environment ('adventure tourist' as Anne Snitow (2011) has it) is loaded with horrible colonialist baggage and memories of the missionary, whose earnest desire to reform is shot through with epistemic and literal violence. So, I want to make it clear that in deploying the alien motif here I am expressly doing so bi-laterally; I am the alien too, even though my ability to walk away made this meeting of aliens unevenly balanced. Still, language is slippery and it sticks to things, so although I will employ the word here, I will continue to acknowledge its problems.

Timothy Morton uses the term 'the strange stranger' instead of alien to encompass all that is not me but is also me, in a deployment of Levinasian ethics, and the application of Derridean deconstruction to the categorization of beings, in order to apprehend a universe that is unavoidably interconnected:

> When I encounter the strange stranger, I gaze into the depths of space, far more vast and profound than physical space that can be measured with instruments. The disturbing depth of another person is a radical consequence of inner freedom [...] Rather than a vision of inclusion, we need a vision of intimacy. (Morton 2010: 78)

The strange stranger argument emphasizes interconnectedness and radical passivity as an ethical stance towards the other. It is helpful way of understanding the alien as fictional device, as probable substantiality (as SETI would have it), and as relational (you, who are not me - inside and outside the prison). Morton says of the concept of the strange stranger: 'the stranger is infinity' (80). By emphasizing the incomprehensibility of the stranger, he asks us to engage directly with our habitual preparedness for hostility:

> Before we get to mutual recognition, we must have radical openness. There are many difficulties here. The encounter is loving, risky, perverse. Because the strange stranger is uncanny and uncertain, she, he or it gives us pause. The fact that the strange stranger might bite is the least of our worries. (81)

The challenges involved in resisting the call to arms are manifold, though, and

the participants returned to the idea several times in their discussions about the films. In response to *2001: A Space Odyssey*, Chris identified not just the inevitability of human violence, as his previous quotation illustrates, but also the inextricable link between violence and the supra-human intervention in evolution:

> It's just a granite tombstone with no writing on and after it appears obviously you see one ape in particular looks up and it, kind of, seems to set in motion a chain reaction and then the next thing they pick up the bone (then) on the moon it then seems more aggressive because there's, like, an attack on their senses in some way.

But even here, the conventional reading of the alien intervention was destabilized by alternative readings suggested by other members of the group. Jim challenged the teleology of assisted evolution that sometimes is used in interpretation of the film:

> I mean, I'm not – I'm not convinced that it does intervene at key points. It intervenes at two points we see it, okay, we see it at the end, but, you know, we start right at the beginning of evolution and then all of a sudden we're on the moon, so we're way past our lifetime and we get no evidence that it intervenes, apart from the fact that it's unexplained and the apes evolve into an understanding how to utilise violence to its maximum capacity and on the moon, you know, it – it makes them, it gives them something unanswered and maybe just refocuses the mind to try harder to push the boundaries of what – what we can do.

So although we are a long way removed from Morton's call to disarmament, the strange stranger – in the guise as alien on the screen – provides a serviceable container for our speculative discussions about how we feel about the 'not me' and how we feel about a future which must always contain aliens of some kind or another. Do we assume that the alien bears us malice or, at the very least will be driven by her colonialist impulses to organize us in ways that we will resist? Or do we imagine that she has our best interests at heart, that she looks on us from her advanced position with love and the desire to help us through our technological and moral adolescence, as the Providers do in Doris Lessing's series of science fiction novels, most notably in *The Marriages between Zones Three, Four and Five* (1981). In the case of the former, we must surely lay low, heavily defended against the prospect of being found. In the case of the latter we could lay open and listen for what we hope is benign and surrender to the possibility of its arrival. Citing Martin Buber's 1947 text *Between Man and Man*, Charles Scott puts the implications of the dilemma thus: 'Our challenge lies in

becoming sensitive to the signs all around us, the calls of address from every quarter. The waves of aether roar on always, but for most of the time we have turned off our receivers' (Scott 2010: 140).

The notion of who might be listening – both to us, and on our behalf – in relation to extra-terrestrial neighbours became a familiar strand in the group's discussions after each film we watched. So that the idea of whether it is possible to adopt a compassionate, or at least non-aggressive, non-judgmental relation to the strange stranger (and what could be stranger than the alien?) drove the analysis of the films and this led to much deeper and applied considerations of what the alien might mean in real life. In the quotation below, which I cite in full because it so nicely illustrates the ways that the films gave rise to these sorts of discussions, Pete reflected on what it meant to be criminal, and therefore other, in a respectable society:

> I went on my home leave this weekend – this week – and my mum was driving me back and my mum said to me, you know, the people that you've met (and I told her about), you know, a drug-dealing bloke who got caught with a gun, that was in my last prison, that I write to quite a lot . . . and some other people, like this lad who's in for murder, and she said, 'Oh do you think, you know, you'll keep in touch with these people?' and I was like, you know, I said, 'Look, some of them you're going to bump into and maybe have a beer if you're in town . . . .but there are a couple of people that I think I'd actually enjoy keeping in touch with, and I know they'll keep in touch with me' . . . and then my mum's thought process was really interesting because – and she said to me, 'yeah, yeah, you say that but when you get out, you know, you may not want to associate' . . . She was basically saying, look, you're not going to really to want to associate with people like that, and I was, like 'Mum, I don't understand what you're saying,' it's like I'm a prisoner, exactly the same as them, what's the difference?

Thus, degrees of otherness were illuminated and considered because of watching these films which foregrounded the idea of the alien. Pete reflected on the way that his mother was more comfortable projecting onto other prisoners the notion of wholly other otherness, a stance that Pete rejected – if those other criminals represent the strange stranger, then so do I. Morton's assertion that the most profound realization comes when we go beyond recognizing the infinite strangeness of the alien to a point where we understand the strange stranger in ourselves. It might be that the experience of prison had loosened the sense of identity to such an extent that Pete was able to talk in this way. The use of the films as a discursive frame gave shape and, to a certain extent, a vocabulary to that shift.

Conclusion

The experience of carrying out the project brought to light several ideas. Firstly, that serious engagement with the trope of the alien in group discussions has the potential to safely frame profound philosophical discussions about the self-other and human/non-human. As such, it can be argued that science fiction also has the potential to support the consideration of far future and non-human futures because it is not tied to a religious discourse, or indeed a scientistic discourse, but draws from both. Fiction acts as a safe and playful container for abstract and difficult philosophical concepts such as the strange stranger or colonialism. Even in the highly masculine environment of a men's prison, participants engaged sensitively and profoundly with alternative philosophical schema which sympathetically regard the other as strange stranger. There is, therefore, value in running a science fiction film group with hard-to-reach groups. I tentatively suggest, on the basis of the project, that there is mileage in exploring the uses of other applications of the methodology to other kinds of hard to reach groups, inside and outside of the justice system. The unique way in which science fiction opens to playful and open discussion about distant utopian and dystopian futures, as well as the way it forces us to consider what is human and therefore inhuman, might make it a useful imaginative tool for engaging with young people who are vulnerable to closed single readings born out of seductive but deadly ideologies. In the closing scenes of *Contact*, Ellie Arroway is depicted as teaching children about the vastness of outer space. The opening to a pedagogical role for science fiction is apt and this project supports it.

Endnote

[1]For the purpose of the study, all the names of the participants have been changed.

Works Cited

Cixous, Hélène. 1986. 'Sorties: Out and Out, Attacks/Ways Out/Forays' (1975). In *The Newly Born Woman*. Eds. Catherine Clément and Hélène Cixous. Minneapolis and London: University of Minnesota Press, 63–130.

Derrida, Jacques. 2006 [1967]. *Writing and Difference*. Trans. Alan Bass. Abingdon: Routledge.

Hoult, Elizabeth Chapman. 2012. *Adult Learning and La Recherche Féminine: Reading Resilience and Hélène Cixous*. New York: Palgrave Macmillan.

Kahn, Richard. 2010. 'Love Hurts: Ecopedagogy between Avatars and Elegies.' *Teacher Education Quarterly* 37.4: 55–70.

Kubrick, Stanley, dir. 1968. *2001: A Space Odyssey*. UK/USA: Metro-Goldwyn-Mayer.

Meyer, Karen and Lynn Fels. 2013. 'Imagining Education: An Arendtian Response to an Inmate's Question.' *Canadian Journal of Education* 36.3: 298–316.

Morton, Timothy. 2010. *The Ecological Thought*. Cambridge MA: Harvard University Press.

Shakman, Steven, 2013. 'Turned Inside-Out: Reading the Russian Novel in Prison, after Levinas.' In *Turning Teaching Inside Out: A Pedagogy of Transformation for Community-Based Education*. Eds. Simone Weil Davis and Barbara Sherr Roswell. New York: Palgrave Macmillan, 143–54.

Scott, Charles. 2010. 'Ecological Identity Through Dialogue.' *Canadian Journal of Environmental Education* 15: 135–49.

Snitow, Ann. 2011. 'Dangerous Worlds: Teaching Film in Prison.' *Dissent*. URL: https://www.dissentmagazine.org/article/dangerous-worlds-teaching-film-in-prison (accessed 23/12/2017).

Tarkovsky, Andrei, dir. 1972. *Solaris*. USSR: Creative Unit of Writers and Cinema Workers.

Zemeckis, Robert, dir. 1997. *Contact.* USA: Warner Bros.

Scientists in Nigerian/Western Science Fiction

Polina Levontin (Imperial College, London)

Science fiction plays a role in the conversation about science and scientists wherever it is consumed, and yet critical attention has focused almost exclusively on the global north. Canonical works from North American and European authors have been widely considered, while little has been done to interrogate the narratives around science in other parts of the world, for example in Nigerian literature. In particular, the figure of the scientist has been examined extensively in western literature, but not in Nigerian science fiction.

Identifying this body of literature requires qualifying the terms 'Nigerian' and 'science fiction'. For this study, the term 'Nigerian' refers to the author and includes both residents of Nigeria and members of the diaspora. Definitions of an 'African writer' vary and are contested. None of the writers considered here would be excluded from the eligibility criteria posted on the website for the Caine Prize, the major mainstream fiction award for African writing: 'An 'African writer' is taken to mean someone who was born in Africa, or who is a national of an African country, or who has a parent who is African by birth or nationality.' All the authors discussed are either Nigerian citizens or first-generation Nigerians living in the diaspora who maintain links with Nigerian cultural life.

For the second term, 'science fiction', I am relying on the publishing industry's definition, using those literary sources that are marketed as 'science fiction'. Comic books, graphic novels, art, film or science fiction sources in the media other than the written word are not considered. The immediate consequence of defining Nigerian sf in this way is to narrow the list of eligible publications, enabling a survey of a large proportion of relevant works, both in paper or purely digital formats. This is a pragmatic choice for the definition of 'science fiction' but a restrictive one – it excludes works marketed as 'magical realism', 'fantasy' or traditional belief fiction, which can be considered part of the genre.

This study examines representations of scientists in Nigerian science fiction in relation to discourses on gender, science and technology. It identifies and characterizes a sample of scientist figures in Nigerian science fiction, and contrasts them with archetypes in western literature. The most recent research indicates that long-enduring stereotypes in western literature are finally being eroded. The representations of scientists in contemporary fiction do not fit as easily into a typology as they did prior to the twenty-first century (Haynes 1993, 2003, 2016; Meyer et al 2013), and my findings indicate that this is particularly true of Nigerian literature.

Looking at a large number of texts simultaneously necessitates what Franco Moretti (2007) has termed a 'distant reading' approach with a focus on patterns rather than individual characters. The majority of the scientists come from short stories, a few come from novellas such as Efe Okogu's 'An Indigo Song for Paradise' (2015), but I was able to find only four relevant novels: *Lagoon* (2014) and *The Book of Phoenix* (2015) by Nnedi Okorafor, *Nigerians in Space* (2014) by Deji Olukotun, and *Rosewater* (2016) by Tade Thompson. Other print sources comprise five collections of short stories and novellas: *AfroSF* (2013), *AfroSF2* (2015) and *Terra Incognita* (2015), containing both Nigerian and other African writers, and *Lagos_2060* (2013) and *How to Spell Naija in 100 Short Stories* (2013) that are solely Nigerian. Olukotun (USA), Okorafor (USA), Okogu (Mexico) and Thompson (UK) live in the diaspora. Because these writers publish outside Nigeria, reviews of their work are more readily available in the UK. All of the original texts are at the moment of writing available in print or online. Further, the complete database of characters discussed in this study is available online, through GitHub, along with the code for the statistical analysis (https://github.com/pl202/NigerianSF).

Only in the last few decades have portrayals of scientists in fiction started to escape the narrow bounds of archetypes that have persisted in western literature. Those archetypes applied to personalities of the scientists, their work and their settings. Roslynn Haynes (1994: 3) grouped representations of the scientist in western literature into six recurrent stereotypes: the alchemist, the stupid virtuoso, the Romantic unfeeling scientist, the heroic adventurer, the helpless scientist and the scientist as idealist, as outlined in the following table.

The alchemist	Obsessed or maniacal. Driven to pursue an arcane intellectual goal that carries suggestion of ideological evil.
The stupid virtuoso	Out of touch with the real world of social intercourse. More comical than sinister. Preoccupied with the trivialities of his private world of science, he ignores his social responsibilities.
The Romantic unfeeling scientist	His emotional deficiency is condemned as inhuman, even sinister, but in a less extreme form it is also condoned, even admired, as the inevitable price scientists must pay to achieve their disinterestedness.

The heroic adventurer	In the physical or the intellectual world. Towering like a superman over his contemporaries, exploring new territories, or engaging with new concepts.
The helpless scientist	This character has lost control either over his discovery (which, monster-like, has grown beyond his expectation) or, as frequently happens in wartime, over the direction of its implementation.
The scientist as idealist	This figure represents the one unambiguously acceptable scientist, sometimes holding out the possibility of a scientifically sustained utopia with plenty and fulfillment for all but more frequently engaged in conflict with a technologically-based system that fails to provide for individual human values.

Table 1. *Archetypes of scientists. The definitions in the table are abridged quotes. These are not mutually exclusive categories, with characters found to display features of several types.*

In recent decades, the negative stereotype of the 'mad, bad' scientist in western literature has begun to be overturned. According to Haynes, a much greater range of scientists emerges in literature towards the end of the twentieth century:

> They substitute for the stereotype of the arcane, threatening scientist an image of healthy, attractive, outdoors adventurers, generous with their knowledge and respectful of the organisms and processes they explain to their audiences. Similarly, laboratories, as shown on television, are no longer secret, threatening places with dangerous-looking, unfamiliar equipment, but light and bright and staffed by equal numbers of men and women, most young and enthusiastic. (Haynes 2016: 35–6)

The focus on areas of expertise and gender is the basis for Haynes' analysis of representations of scientists in western literature, where she shows that specialization and gender correlate with patterns of fictional representation. The depiction of natural scientists tended to be 'complimentary to the point of eulogy' in the nineteenth century (Haynes 1994: 109). After World War Two the portraits of physicists, biologists and chemists became tainted due to association with military uses, such as nuclear, biological and chemical weapons, while the portraits of astronomers remained largely positive (Haynes 1994: 276).

Gender Stereotypes in Nigerian SF

By contrast, equal numbers of men and women scientists are not yet a characteristic of Nigerian sf. Most scientist characters in Nigerian sf are identified with a specific field of research (Table 2), such as robotics, environmental science, genetics, medicine, virology, energy, engineering, and space. These categories capture the diversity of scientists in specific enough detail, without creating too many subgroups. Space is the most popular specialization.

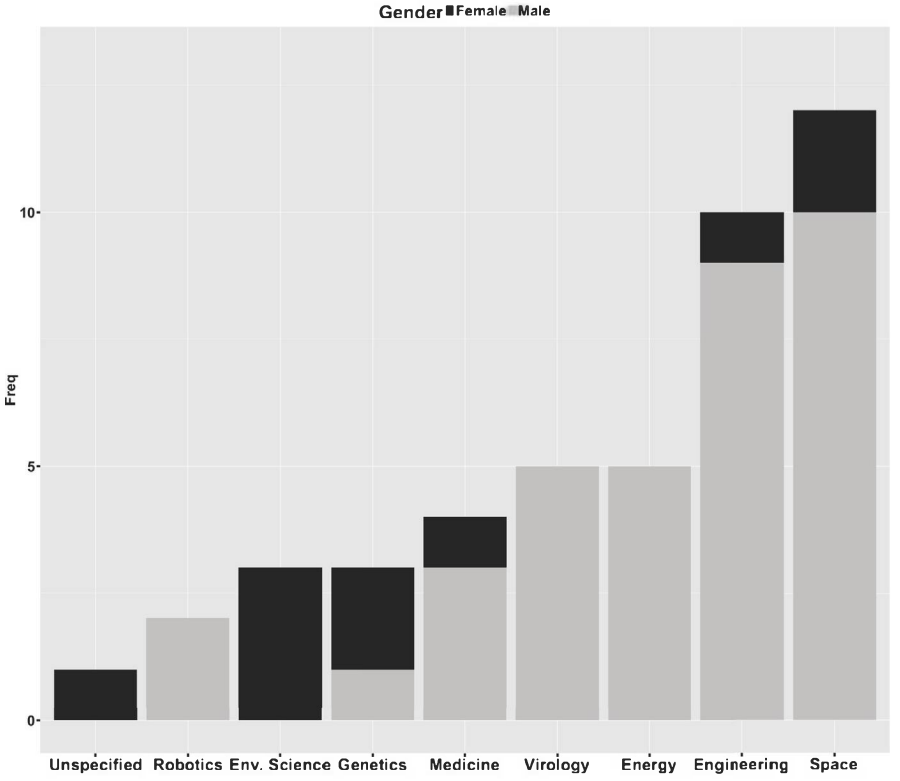


Table 2. *The gender and area of expertise of scientist in Nigerian sf.*

One of the first things which stands out from the data is the gender imbalance. Women are underrepresented both amongst the authors and the amongst the scientist characters. Out of the forty-three scientist characters, only nine are female, of which four are the protagonist or a major character. Female Nigerian sf writers are also a minority. Cross-referencing the gender of the characters with the gender of the authors, it appears that female writers are more likely

to have female scientist characters in their fiction. Albeit even amongst the scientist characters written by women, fewer than half are female scientists. Male Nigerian sf authors overwhelmingly imagine scientists as male. Female authors were also found to be more likely to depict women as scientists in western sf (Merrick 2012).

About half of the female scientists are part of a romance narrative, involving courtship or early stages of marriage. All female scientists are described as physically attractive. At some point in all of the narratives containing a female scientist, she appears as a young woman – whereas the majority of male scientists are presented as middle-aged. So indispensable is the appearance for female scientists in Nigerian sf, that there is even a character who turns to science solely out of fear of losing her legendary beauty. Evelyn McDuffie, in Mazi Nwonwu's 'Deletion' (2013), discovers a way to prolong youth, but her achievement is stigmatized: she amasses a business empire that becomes politically corrupt, and her research is rumored to be linked to a new and deadly virus that starts to decimate the population.

One of the female characters, Rekia in Terh Agbedeh's 'Mango Republic' (2013), is a scientist, but her research is so marginal to the story there is no hint of what she does. Instead, the story focuses on her role as the wife of the protagonist Aromire, and as a mother-to-be of his child. By contrast, Aromire's many achievements as a scientist are named and valorized. Rekia suffers seven miscarriages while working as a scientist; she pleads for her husband's permission to leave work, because the doctor has assured her that she will succeed in carrying to term only if she becomes a housewife. This story imagines that in 2060 it is still the norm for all important family decisions to be made by men.

The incompatibility between the goal of motherhood and aspirations of being a scientist is a persistent theme through all the narratives in Nigerian sf. Out of nine female scientists, only Adaora in Okorafor's *Lagoon* has children and, as the novel progresses, they are taken away from her by her husband as a matter of safety – success in her role as a scientist coincides with failure to protect her children. By contrast, Bumi's monstrousness as a scientist, in *The Book of Phoenix*, is based largely on her depiction as an abusive surrogate mother to Phoenix, whom she helps to genetically engineer. Bumi abuses Phoenix both physically and psychologically, subjecting her to painful experiments. Phoenix escapes the American government laboratory but her childhood trauma makes her into an uncontrollable apocalyptic weapon. Many male scientists in Nigerian sf have children, and the conflict between their careers and fatherhood is not explicitly part of any narrative. When Wale Olufumni in *Nigerians in Space* goes into exile, hiding from government-backed gangsters, he still gets to raise his

son Dayo (after kidnapping him from his mother).

Nevertheless, most of the female scientists possess inspiring character features. Adaora, in particular, is smart, brave and independent – a woman who stands up to her husband, the army, the president, the church and even the aliens. DevilDog in 'An Indigo Song for Paradise' defies the establishment, Oyin Da in *Rosewater* the government, while Violet Parker in Chinelo Onwualu's 'CJ' (2013) and Tara Johnson in Afolabi Ashiru's 'Amphibian Attack' (2013) defy their respective corporations. However, these characters don't feel particularly committed to science – nearly half of the female scientists quit science in the various narratives.

Three of the female scientists are identified with nature through their work in the field of environmental science (Adaora, Tara and Yinka in Okey Egboluche's 'Animals on the Run' (2013)), as women are associated with 'Mother Nature' in many cultures. In fact, there are no male scientists in the field – Wale Olufumni is a geologist, but he is a lunar geologist and his scientific interests are mostly to do with space exploration. So, while female scientists protect nature, prolong beauty, give birth and get married, male scientists conjure new ways to produce energy, build robots and invent space-time travel.

Compared with western sf in the twenty-first century, portrayals of women scientists in Nigerian sf are more problematic, reflecting a greater degree of patriarchy and sexism in their society, as the prize-winning author, Chimamanda Ngozi Adichie, has argued in her pamphlet *We Should All Be Feminists* (2014). However, the directions of the biases are historically similar: writing women characters who are young and attractive, positioning female scientists in romantic roles but rarely depicting them as mothers (Merrick 2012). But, for both Roslynn Haynes and Helen Merrick, western sf increasingly contains portrayals of women participating in the full range of sciences, of varying ages and appearances, in positions of authority, able to balance their passion for science with motherhood, and living and working in non-sexist environments. I was not able to find equivalent representations of female scientists in Nigerian sf. Furthermore, unlike western characters such as Keith DeCandido's Delphine Cormier, there are no female homosexual scientist characters in Nigerian sf. There is one (dead) male homosexual scientist in *Nigerians in Space*, who is presented positively through the recollections of his Parisian neighbour.

Settings, Archetypes and Themes

Scientists' research in Nigerian sf is always politicized, especially in the areas of energy, genetics and robotics. This is likely due to the heightened attention in Nigeria to oil, ethnicity and unemployment. Nigeria, which had 45 million people at independence in 1960, has approximately 190 million people now,

and is projected to grow to 400 million by 2050 to become the world's third most populous country, after India and China. It is not surprising then that Nigerian sf writers are anxious about governing the country in a future that is under threat from climate change, regionalism and technologies which eliminate jobs while the population grows rapidly. Nigeria as a state is a product of colonialism, and is still working to resolve the tensions amongst groups that coexist uneasily within its borders (see Bourne 2015).

Scientists in Nigerian sf are frequently presented as well intentioned, but their efforts are compromised by the system. These scientists are often left without agency or control over their inventions – in Nigerian sf, they are frequently victimized. The governments have the prime responsibility for the mostly dystopian futures depicted in Nigerian sf, except in 'Amphibian Attack' and *Lagoon*, where elected politicians are outwitted and overpowered by corporations and aliens, respectively. In almost every Nigerian sf text, political authorities are either corrupt or seek to derail science which, in *The Book of Phoenix*, justifies the heroine's attack upon the seven Towers located around the globe that, in her world, house the centres of science:

> Behind the good intentions and amazing science, however, was abomination. Weapons, the quest for immortality, how far could we go… The foundation of all the towers was always always always corrupt, driven by a lusty greed.
>
> To kill a snake, cut off the head. (Okorafor 2015: 98)

The scientists in Nigerian sf are often portrayed in settings that are threatening. Although it is often implied that their 'normal' places of work are similar to modern labs and universities, the scientists are rarely depicted in such environments. Instead, they find themselves in prisons, hiding from assassins, in the middle of a catastrophe, at a site of crime (as victims), or in settings deliberately recalling the alchemical stereotype – Haynes' 'secret, threatening places with dangerous-looking, unfamiliar equipment'. Of the forty-three scientists, just two are presented exclusively in benign settings: Mr. Martin, in Rayo Falade's 'Coming Home' (2013), is portrayed at home and Violet Parker is at her wedding, both having retired from science.

Nigerian sf writers are clearly aware of western tropes for scientists but they use them sparingly – the majority of the scientist characters do not match these stereotypes. Sometimes these western tropes are referred to apropos, as in 'CJ': 'but Vi was going to become a mad scientist who would cook up the cure for cancer in some basement lab' (Onwualu 2013: 179). Thompson uses European scientist archetypes deliberately to invoke a colonialist legacy in West Africa. In 'Notes from Gethsemane' (2012), there is a Belgian scientist

in a neo-colonialist role who characteristically comes up with the wrong solution, only harming the locals. The description of his lab recalls both the alchemist stereotype and the image of the colonial era scientist:

> Adam's quarters were full of altars, statuettes, and carvings of gods and goddesses from a thousand cultures. In the air, Tosin could detect old incense and cumin like the aftertaste from a spicy meal. There were animals too, caged rodents, exotic reptiles, pacing within their filthy confines. Underneath it all was a stench of decay and rot, a foundation of putrefaction.
>
> Tosin noted dozens, perhaps hundreds of books, some open, some torn, none in the bookshelves lining the walls. The shelves instead contained bottles filled with liquids and powers. In the middle of the room, there was an hourglass the size of a grandfather clock, top bulb spilling its sand inexorably into the bottom one. (Thompson 2012: 115)

Interestingly, this quote is similar to Phoenix's indictment of the foundations of research performed in the Towers. The implication is the same: research needs to be ethically grounded. Thompson and Okorafor dramatize the instances where the quest for knowledge is driven by greed and a disguised desire for domination, commenting on the history of research on Africa by the colonizing powers. Their scientist characters, Bumi, Adam and Roger Conrad, personify this by participating as scientists in colonialist or neo-colonialist enterprises.

Chris Yadua in 'Deletion' also fits the alchemist stereotype. The author is clearly aware of both stereotypes: the 'light and bright' lab of modern research and the 'bubbling liquids' of Gothic horror. The invocation of the alchemist archetype here serves to show that this research lab is composed of dissident anarchist scientists, working in secret on a cure for a disease that the government finds convenient as a method of population control and perhaps is even responsible for unleashing:

> In the video a sickly man with droopy eyes – as if he was struggling to stay awake – loomed over a clustered table, his eyes appearing to look directly at me. The ruggedness of his stubble indicated that it was not a style – he was in dire need of a Lazor™ – *a too-busy-for-tidiness appearance* that his rumpled lab coat did not help alleviate. He was in some kind of lab, one lacking the overly neat feel of the white tiled labs of movies and documentaries. Behind him were several lab coats, all in worse state than the *was-white* status of the one that hung tent-like on his shoulders. Vials, glass tubes, clamps, bubbling liquids and blinking kaleidoscopes of light conspired to mark the room as the domicile of some mad hatter scientist. (Nwonwu 2013)

Of the six archetypes that Haynes has described, the categories of 'alchemist', 'helpless scientist', 'idealist scientist' and 'Romantic unfeeling scientist' can accommodate a few of the scientists in Nigerian sf but not all. The diaspora writers write more characters which fit these western stereotypes than the writers living in Nigeria. For example, Roger Conrad in Thompson's 'Bicycle Girl' (2014) fits very neatly into the 'Romantic unfeeling scientist' category. He is described as a reclusive outsider who has dedicated his life to science while neglecting relationships with other humans. The archetype of a 'helpless scientist' who is not really in control of his inventions reverberates most widely through Nigerian sf. Scientists often have good intentions of 'idealist scientists' but lack agency to translate their scientific achievements into durable social benefits. These two categories are the least culturally specific, and reflects the globalization of research and its integration with military-industrial complexes.

One of the key shifts in the portrayal of scientists in the West in the twenty-first century has been away from depicting them as solitary agents and locating them instead as part of teams within academic-government-business matrices. This is also true of Nigerian sf where only ten out forty-three scientists are depicted as lone actors. In several narratives, the scientists are given prominent public roles as communicators. Adaora is chosen by the aliens as part of the 'first contact' team – she is the only scientist, the other two team members are a hip-hop artist and a soldier. Julio in 'Animals on the Run' is given a position of the spokesman for the new government dedicated to righting the course of Nigeria towards sustainability. Yinka, Julio's fiancé, is both a scientist and a journalist with an environmentalist agenda.

One idea that is prominent in western portraits of scientists is 'playing God', or transgressing against some 'natural' limits to knowledge (Ball 2012, Haynes 1994). These ideas are present in connection to scientist characters in the following texts: *Lagoon*, *The Book of Phoenix*, 'Notes from Gethsemane', and 'An Indigo Song for Paradise'. Another common preoccupation in western literature connected to science is increased longevity or a possibility of eternal life. This theme appears in the previous stories as well as 'Deletion'. Extra-terrestrial aliens are another hallmark of western sf, and we find them also in the first four stories plus *Rosewater* and Rafeeat Aliyu's 'Ofe!' (2012). There is no specific reason to consider these three themes particularly 'western'. However, it is worth noticing that these themes not only tend to appear together in the same texts but are almost exclusively written by diaspora writers, who are part of both Nigerian and Anglo-American literary worlds. Their fiction reflects elements of both cultures.

The Relationship Between Local and Western Knowledges

The tension between western science and local knowledge is shown most vividly in Chuma Nwokolo's 'Minority Report' (2016), where it is articulated by the grandson of a virologist-priest, De Sampa. The grandson is bitter that De Sampa will never be recognized as a scientist and resents that Nigerian systems of knowledge are dismissed:

> Even if it happens in front of 500 witnesses it will be discounted as witchcraft, not worthy of scientific recognition. Only the stuff that comes out of the west is science. Go publish it, baby doctor, see if they will believe you. I failed my pharmacy exams because I treated native wisdom with the same respect as the cant vomited by my professors. (Nwokolo 2016: 358)

It is only because Dr Duke himself comes to believe that De Sampa in fact engineered both the virus and its antidote so that the epidemic could be stopped. However, exactly as the grandson predicted, when Dr Duke writes a report explaining that the local priest De Sampa was in fact a virologist, the report is buried as no one in the academic establishment believes him.

This conflict between western versus local knowledge is embodied in several scientist characters. De Sampa combines virology with the traditional practices of a priest. He himself might not have distinguished research from spiritualism. Dr Ngozi in Kofo Akib's 'A Starlit Night' (2013) discovers time travel while pursuing herbalism – he is described as a university professor who regards local systems of enquiry as equally scientific. The character of DevilDog quits university because she finds the western-based curriculum insufficiently broad – she finds it easier to pursue knowledge outside academy's restrictive frame. In 'Amphibian Attack', Nigerian herbalism outperforms western corporate medicine – local products are more effective; unable to compete, the corporations start hatching evil plans to make up for financial losses.

In his prescient essay 'Decolonizing Science and the Knowledge of the Archive' (2015), Achille Mbembe argues that science has always been a universal pursuit and predicts that in the future academic research will no longer be centred in the Global North. Nigerian sf echoes that prediction. In Nigerian sf, we are more likely to encounter scientists whose research is oriented towards India, Brazil and East Asia rather than Europe and North America. In several narratives, Lagos is the future centre of science. In 'Animals on the Run', the Nigerian Julio is a global celebrity-scientist. We learn that he was educated in India, did his postdoc in Saudi Arabia and, in the beginning of the story, is supervising a major Nigerian-Malaysian robotics project.

Prominent writers, such as Dilman Dila (2015) and Nisi Shawl (2016), have argued that science on the African continent has, for centuries, been connected to both religion and magic and, hence, literatures dealing with these subjects can potentially be sf. As the narrator of *The Book of Phoenix* proclaims, 'science has always been aligned with Ani' (Okorafor 2015: 116), a deity in the Igbo religion. Science is mixed with folklore and magic in *Lagoon*, 'An Indigo Song for Paradise', 'A Starlit Night', 'Minority Report' and Thompson's 'Budo', amongst many others. Thus, if we were to extrapolate a definition of the genre based on the texts now marketed as Nigerian sf, we would have to reclassify many of the older texts that were presented to the reader as 'magical realism' or 'traditional' Nigerian literature.

Mark Bould, for example, has criticized literary scholars of African fiction for deploying a 'de-science fictionalized discourse' which treats 'anything irreal as some kind of postcolonial magic realism or avant-gardist experimentalism' (Bould 2015: 13). He asserts that science fiction in Africa is at least a century old, and gives examples of many African novels which could be read as science fiction but were appropriated by postcolonial theory while ignoring their potential as sf. Pawel Frelik suggests that these 'previously unnoticed or unrecognised' texts that were first approached within the framework of post-colonialism will be 'discovered and brought into [the] fold' of sf (Frelik 2015: 280). Instead, the reluctance to label African stories as science fiction is a colonial legacy. It is part of the discourse which upholds the hegemony of western knowledge over African systems of enquiry. Suppressing the history of African science is a precursor to not recognizing African stories as science fiction. Conversely, the history of science fiction appears rooted in Europe as both its centre and origin (for example, Roberts 2005), a tree on which African science fiction is depicted as the newest branch.

Instead, Africa has thousand-year-old traditions of cosmological tales, for example, in the Dogon cultures. The Dogon narrative that life on earth originated with aliens who are now adjoining ancestral sprits in masque rituals reappears in African sf stories such as 'Deletion'. Science fiction tropes of 'extraterrestrial life, cosmology, and space travel existed in Africa long before the work of H.G. Wells' writes Matthew Omelsky (2013), also referring to Dogon, in his online review of *AfroSF*. Nisi Shawl, a practitioner of Ifa, argues that sf elements are present in other African cultures too:

> There are solid connections between Ifa and the realm of science: Ifa divinities sacred to certain scientific methods, technologies, and areas of study; and parallels between divination and the scientific method. [...] Ogun is the orisha – or deity – most easily understood as relating to science, since Ogun is celebrated throughout the African diaspora

> as the patron of blacksmiths, of metal and metallurgy. In other words, he is a god of technology. His association with knives and other literal cutting edges leads to his association with their figurative equivalents; to invoke Ogun is to invoke frontiers, including the frontier of human knowledge. (Shawl 2016: 221–2)

In *Lagoon*, for example, Adaora is also a 'marine witch' who was born with webbed feet and develops gills. The invading aliens and African deities seem to be old acquaintances and behave as if they have common goals; for Ijele, 'the Chief of All Masquerades', this is not a first contact narrative. They collaborate and conspire in the use of modern technology: 'They went into the computer. Does that make sense? Ijele became like gas and the man in black [an alien] became like smoke and together, they dissolved into the computer' (Okorafor 2014: 201). In *Lagoon*, Nigerian deities and the aliens take control of the world, while the scientists and Christian priests struggle to explain what is happening.

The Narrative of Fear

Science misused by powerful forces outside of the scientist's control is a theme in the majority of the texts explored here. In Nigerian sf there are fewer instances than would be expected from a western sample, of scientists blamed as individuals, although the anxieties about the future of science and technology are similar. The conclusions that Haynes draws about western literature apply to Nigerian sf as well:

> While the details have changed, the essential fears remain: deep-rooted fears of the new, of a loss of emotional roots and even of extinction of the entire human race; fears concerning loss of individuality and the stability engendered by accepted values; fears of cargo cult of technology, bringing with it immense power and unanswered question about its control. (Haynes 1994: 313)

Whereas it is more common for scientist characters in western literature to face ethical dilemmas as individuals, in Nigerian sf the responsibility for negative consequences of scientific breakthroughs is more commonly placed at some collective: the government, the army, a gang or society in general. Scientists found in Nigerian sf are rarely themselves the objects of fear: only Bumi, De Sampa, and Mathew Halliday in 'Ofe!'. These are the only scientists who knowingly cause suffering to other human beings. But only Mathew Halliday sets his own agenda whereas Bumi and De Sampa act on behalf of higher powers, be they political or supernatural authorities. This does not absolve either of them of moral responsibility, but it creates a context in which the ultimate blame can be shifted onto those who give the orders.

When the world is worse off as a result of some discovery, in Nigerian sf it is most likely the fault of the government. As Thompson has written: 'I don't fear the future. I've lived through one apocalypse already (Nigeria in the 1980s). Future ones don't frighten me' (Thompson 2015). Although none of the worlds encountered in Nigerian sf are utopias, several narratives imagine a future where many of the current problems that plague Nigeria are solved. Other scenarios gravitate towards apocalypse: *The Book of Phoenix*, 'An Indigo Song for Paradise' and *Rosewater*. However, only in the first of these do we find a storyline where a scientific invention is directly to blame for the end of the world.

Conclusion

The majority of the scientist characters in Nigerian sf do not map onto the six western archetypes. Nor is it possible to discern an alternative system of archetypes that would accommodate these characters. However, if the comparison is made between publications of similar age, the lack of archetypes in Nigerian sf becomes a sign of similarity with western sf rather than of difference.

Unavoidably, the perception of patterns in literature is influenced by the cultural position and knowledge base of the critical scholar. For example, a prevalent theme of Nigerian history predisposes a reader to imagine that Nigerian sf is preoccupied with corrupt and inadequate governments. Would a Nigerian reader see the failure of scientists to improve the human condition as the consequence of bad governance and conclude that the writers are reflecting a mood of political pessimism in Nigeria? Is the approach to gender in this study Eurocentric? To that end, we can see that when compared to the reality of the science profession, both Nigerian and western sf offer a more progressive view of gender in science. But whereas western sf is approaching gender equality in depicting scientists, Nigerian sf is lagging behind (taking the normative view that gender equality is ideal). The lack of fictional role models may hamper efforts to inspire the next generation of female scientists and engineers.

One of the overarching themes in Nigerian sf is the inadequacy of science and scientists, whose efforts often result in unintended negative consequences for society – and death, infamy, torture and persecution of the scientists themselves. This pessimism raises important policy questions. What structures of governance need to be in place to make sure that good inventions are not misused? How does a society ensure that scientific research is conducted on ethical grounds? How can Nigeria decolonize its academy and rehabilitate the status of historically locally produced knowledge? What can be done to limit the impact of technology, especially robotics, on unemployment? If the fiction correctly reflects public pessimism with respect to genetics research, what

has gone wrong and how should the scientific community or the government respond?

This study focused on fictional scientists in Nigerian sf assuming that their representations could offer insights of attitudes towards science. This particular frame of enquiry was directed away from the analysis of the literary qualities of the texts. A close analysis of individual works was sacrificed in order to produce an overview in an attempt to discover qualities shared by many texts. Hopefully, there will be interest amongst other researchers to follow up on some of the themes highlighted, with a closer look at individual works of Nigerian sf. As Nigerian sf is a rapidly growing field, I particularly hope that my findings with respect to gender will soon be out of date.

Works Cited

Adichie, Chimamanda Ngozi. 2014. *We Should All Be Feminists*. London:Fourth Estate.

Agbedeh, Terh. 2013. 'Mango Republic.' In *Lagos_2060: Exciting Sci-Fi stories from Nigeria*. Ed. Ayodele Arigbabu. DADA Books, 180–99.

Akib, Kofo. 2013. 'A Starlit Night.' In *Lagos_2060: Exciting Sci-Fi stories from Nigeria*. Ed. Ayodele Arigbabu. DADA Books, 106–37.

Aliyu, Rafeeat. 2012. 'Ofe!' In *AfroSF: Science Fiction by African Writers*. Ed. Ivor W. Hartmann. StoryTime, 297–318.

Arigbabu, Ayodele, ed. 2013. *Lagos_2060: Exciting Sci-Fi stories from Nigeria*. DADA Books.

Ashiru, Afolabi. 2013. 'Amphibian Attack.' In *Lagos_2060: Exciting Sci-Fi stories from Nigeria*. Ed. Ayodele Arigbabu. DADA Books, 2–41.

Ball, Philip. 2012. *Unnatural: The Heretical Idea of Making People*. London: Vintage.

Bould, Mark. 2015. 'African Science Fiction 101.' *SFRA Review* 311: 11–18.

Bourne, Richard. 2015. *Nigeria: A New History of a Turbulent Century*. London: Zed Books.

The Caine Prize. 'Eligibility.' URL: http://caineprize.com/how-to-enter/ (accessed 24/12/17).

Dila, Dilman. 2015. 'Is Science Fiction Really Alien to Africa?' URL: http://www.dilmandila.com/2015/07/science-fiction-literature-africa-sff.html (accessed 24/12/17).

Egboluche, Okey. 2013. 'Animals on the Run.' In *Lagos_2060: Exciting Sci-Fi stories from Nigeria*. Ed. Ayodele Arigbabu. DADA Books, 42–71.

Falade, Rayo. 2013. 'Coming Home.' In *Lagos_2060: Exciting Sci-Fi stories from Nigeria*. Ed. Ayodele Arigbabu. DADA Books, 170–9.

Frelik, Pawel. 2015. 'Review of *Postcolonialism and Science Fiction* by Jessica

Langer.' *Science Fiction Film and Television* 8.2): 280–4.
Hartmann, Ivor W., ed. 2012. *AfroSF: Science Fiction by African Writers*. StoryTime.
----- 2015. *AfroSFv2*. StoryTime.
Haynes, Roslynn. 1994. *From Faust to Strangelove: Representations of the Scientist in Western Literature*. Baltimore: John Hopkins University Press.
----- 2003. 'From Alchemy to Artificial Intelligence: Stereotypes of the Scientist in Western Literature.' *Public Understanding of Science* 12: 243–53.
----- 2016. 'Whatever Happened to the "Mad, Bad" Scientist? Overturning the Stereotype.' *Public Understanding of Science* 25.1: 31–44.
Mbembe, Achille. 2015. 'Decolonizing Knowledge and the Question of the Archive.' URL: https://africaisacountry.atavist.com/decolonizing-knowledge-and-the-question-of-the-archive (accessed 24/12/17).
Meyer, Angela et al. 'Frankenstein 2.0.: Identifying and Characterising Synthetic Biology Engineers in Science Fiction Films.' *Life Sciences, Society and Policy* 9: 1–17.
Merrick, Helen. 2012. 'Challenging Implicit Gender Bias in Science: Positive Representations of Female Scientists in Fiction.' *Jurnalul Practicilor Comunitare Pozitive* 4: 744–68.
Moretti, Franco. 2007. *Graphs, Maps, Trees: Abstract Models for Literary History*. London: Verso.
Nwokolo, Chuma, 2016. 'Minority Report', in *How to Spell Naija in 100 Short Stories, Vol. 2.* Nigeria: Gwandustan, 343–64.
Nwonwu, Mazi. 2013. 'Deletion.' *Saraba Magazine*. URL: http://www.sarabamag.com/deletion/ (accessed 24/12/17).
Okogu, Efe. 2015. 'An Indigo Song for Paradise.' In *AfroSFv2*. Ed. Ivor W. Hartmann. StoryTime, 335–487.
Okorafor, Nnedi. 2014. *Lagoon*. London: Hodder & Stoughton.
----- 2015. *The Book of Phoenix*. London: Hodder & Stoughton.
Olukotun, Deji. 2014. *Nigerians in Space*. Los Angeles: Unnamed Press.
Omelsky, Matthew. 2013. 'African Science Fiction Makes a Comeback.' *Brittle Paper*. URL: http://brittlepaper.com/2013/06/african-science-fiction-comeback-review-afrosf-matt-omelsky/ (accessed 24/12/17).
Onwualu, Chinelo. 2015. 'CJ.' In *Terra Incognita: New Short Speculative Stories from Africa*. Ed. Nerine Dorman. South Africa: Short Story Day Africa, 173–86.
Roberts, Adam. 2005. *The History of Science Fiction*. Basingstoke: Palgrave Macmillan.
Shawl, Nisi. 2016. 'Ifa: Reverence, Science, and Social Technology.'

Extrapolation 57.1/2: 221–8.
Thompson, Tade. 2012. 'Notes from Gethsemane.' In *AfroSF: Science Fiction by African Writers*. Ed. Ivor W. Hartmann. StoryTime, 100–20.
----- 2014. 'Bicycle Girl.' Nashville: Upper Rubber Boot Books.
----- 2015. 'Q & A: *AfroSF* Contributors on Science Fiction in Africa.' *Omenana*. URL: https://omenana.com/2015/06/22/q-and-a-afrosf-contributors-on-science-fiction-in-africa/ (accessed 24/12/17).
----- 2016a. 'Budo.' URL: http://escapepod.org/2016/01/20/ep517-budo/ (accessed 24/12/17).
----- 2016b. *Rosewater*. Lexington: Apex.

Cognitive Dissonance in Philip K. Dick's *A Scanner Darkly*

Seyedhamed Moosavi

A Scanner Darkly (1977) describes a group of drug addicts who spend their days and nights together smoking, in particular, an organic drug named Substance D. The story's protagonist is a narcotics agent named Bob Arctor who has infiltrated this group of friends in the hope of finding information about the drugs network. The story features three main groups: the first and most important are the addicts, the second are drug dealers, and the third group are police agents. But the boundary between the groups is blurred. For instance, Donna, the protagonist's beloved, is at the same time a dealer, an agent and an addict. The centrality of the motif of the blurriness of things is thus an important part of the story.

The novel begins, for example, with the frenzied and delirious character Jerry Fabin searching for endless imaginary 'aphids' in his house. The description of the bugs is so minute and detailed that, if not already familiar with the story line, one might deem the bugs real until it becomes clear that the aphids are all created in the character's mind. The deceptive and uncertain effects of drug abuse are mirrored by the role of surveillance in the following chapter when it becomes apparent that Arctor's anti-drugs speech, delivered to a police audience, is not spontaneous. The speech has already been handed out to him and if, in any way, he digresses from it, he is enjoined from doing so by his unseen supervisors.

Although it is made clear that drugs are an important issue in the novel, what is perhaps more important to note about the first two chapters is the distance between the real and the imaginary, the truth and the lie. The verisimilitude of Jerry's hallucinations demonstrates how difficult it is for him, as it is initially for the reader, to figure out that the things he sees are figments of his imagination. Arctor, meanwhile, is presented as a noble law-enforcer but he is only acting the part. His speech always begins with the same moving story about his two children, his 'little ones', and how their future is in risk from the dangers of drug addiction. When he diverts from his speech, posing a critical and thought-provoking question, 'If [they] were diabetic and didn't have money for a hit of insulin, would [they] steal to get money? Or just die?', a 'tinny voice' from Orange County Civic Center 'advises' him to 'go back to the prepared text' (Dick 2011: 24). The implication is that there is little difference between the fabrication of Arctor's identity and the hallucinations that torment Jerry.

Although drug addiction and law enforcement are ostensibly the main topics of the novel, both are secondary to the problem of identity. As Arctor

himself says, the best way to describe his own job is that it is a 'murky' business. Arctor has at least two personalities that he knows of. Firstly, he knows himself as an investigator who has befriended a bunch of addicts and acts as a fellow addict in order to track down their dealers. But he is not 'actually' posing as an addict; he 'is' an addict. So, at the same time that he is an investigator, Arctor is also a perpetrator of a social crime; he is both policeman and criminal. Yet, he is not a false friend either. It is true that Arctor works as an agent among them but he has feelings for all of them. He pities Jerry, especially when he recounts the incident in which Jerry took all the furniture out to get rid of the aphids by spraying the house with cyanide gas, because 'a giant superintelligent aphid from another planet was out there preparing to break in and git him' (Dick 2011: 69). He is in love with Donna, likes Charles Freck, and dislikes and mistrusts Barris. So it could equally be deduced that he is both a friend and an agent at the same time.

The situation is further exacerbated by Arctor having to wear a piece of clothing named a 'scramble suit', an ever-shifting garment with many faces that projects 'every conceivable eye color, hair color, shape and type of nose, formation of teeth, configuration of facial bone structure' (Dick 2011: 21) rendering the wearer unrecognizable. The presenter at the Lions' Club aptly describes Bob as 'a vague blur and nothing more' (20). Arctor even has to wear the suit when he goes to the office. He is known to his colleagues not as Bob Arctor but as an anonymous agent called Fred. Arctor's already split personality is also affected whenever he is wearing the suit and, especially, whenever he talks to his senior officer, another scramble-suit wearer named Hank. When he reports on his friends or other suspects, the passionate, caring Arctor becomes professional, dispassionate and emotionless. Despite the feelings he has toward his friends, he reports on them objectively, telling Hank whether he thinks they are suspicious or not. Bob in that situation becomes a non-person, a nobody named Fred, whom he knows is paradoxically his other social self.

Arctor, then, has three personalities: an investigator fighting drugs, a social friend and addict, and an anonymous officer called Fred. From at least the time of his speech, he is faced with identity questions when he thinks about his job: is he an officer who is an addict or is he an addict who happens to be an officer? Questions of reality and identity are thus bound together. As his personality further disintegrates, Arctor asks himself:

> How many Bob Arctors are there? A weird and fucked-up thought. Two that I can think of, he thought. The one called Fred, who will be watching the other one, called Bob. The same person. Or is it? Is Fred actually the same as Bob? Does anybody know? I would know, if anyone did, because I'm the only person in the world that knows that

> Fred is Bob Arctor. But, he thought, who am I? Which of them is me? (Dick 2011: 99)

Besides these questions, Bob/Fred also has the formidable task of distinguishing between the reality of his world and the falsehood behind everything and everyone. Not only is it difficult for the individuals in a drug-ridden world to distinguish between reality and hallucination, it is also difficult to trust people, where 'The most dangerous kind of person [...] is one who is afraid of his own shadow' (Dick 2011: 134). In particular, it is very difficult to decide who is an agent and who is a dealer. At the beginning of the novel, Charles Freck tells Arctor his 'horror-fantasy' of encountering a police officer who asks for his identity. Freck cannot remember his name when he has taken drugs, so he comes 'up with a name, your name. At all times. That's the first sign they look for that you're wired, not being able to figure out who the hell you are' (Dick 2011: 7). Aaron Barlow observes:

> The agent must act like a doper, must accept the abuse, even though he may, himself, have once been a beat cop. [...] This becomes one of the core questions of the book, as it often does in Dick, for it is the question many of his characters ask when faced with chaotic worlds. The reality of the self goes hand in hand with the reality of the world. Just as perceptions of the self intertwine with perceptions of the world. (Barlow 2005: 58)

So, in *A Scanner Darkly*, although there is a difference between the reality and the appearance of things, to say where the difference lies becomes increasingly hard. This blurriness accords with the notion of cognitive dissonance, originally coined by the social psychologist Leon Festinger in 1957. Festinger offers a straightforward (albeit gendered) experiment: he asks his reader to take two equally attractive pairs of shoes (A and B) to another person (one's wife for example) and tell that person to choose only one of the pairs. The experimenter will return the unwanted pair to the store. He might know that his wife will like the shoes equally and have a hard time deciding which to choose. But Festinger asks us, after the choice has been made, to ask her again which pair she likes more. The experiment predicts that she will prefer the pair she chose to the one she spurned, and that she will create justifications she previously didn't have as to why she likes them more. In other words, although neither pair was more attractive, the theory posits that after a choice is made, the chooser adjusts their beliefs about that choice accordingly (Festinger 1962: 93–4). This means that somebody does something contrary to their previously held ideas, a cognitive dissonance is produced between their ideas and their

action(s). The person reduces the dissonance by rejecting their old ideas and making them compatible with the new choice or decision s/he has made, or the action s/he has taken (Festinger 1962: 96). The more one believes there is justification for actions that are contrary to his/her beliefs, the less bothersome one's cognitive dissonance will be for them, and the less likely they will try to reduce their level of dissonance.

Arctor can be said to have gone through the same psychological condition in the novel. In a society where it is difficult to distinguish between reality and illusion, or between one's true and false selves, it is expected that the characters living in such a society must experience substantial dissonance between the ideas and beliefs they hold and the actions they take. Although critics of Dick's fiction, such as Carl Freedman, more often refer to paranoia, it is important to distinguish the differences between paranoia and cognitive dissonance. Freedman, citing Sigmund Freud, posits that there may be some truth to paranoia. Because of the organization of bourgeois society around commodity in terms of an arbitrary exchange value (as opposed to use value), and also the credibility and plausibility of conspiracy theories, one might be able to accredit them with some degree of truth since – under this market logic – they are no more or less real than any other belief. Freedman concludes by asserting that even if paranoia is 'an ideology, it remains a privileged one' (Freedman 1995: 15).

However, from a strictly medical point of view, paranoia 'is the exaggerated and unrealistic belief that other people want to harm us' (Freeman and Freeman 2008: 43). R.D. Laing's patients, for example, tried to withdraw into solitude in order to avoid harm. Even the prospect of a normal colloquy with others seemed scary to them (Laing 1990: 43–5). But cognitive dissonance has less to do with harm than with a neutral cognitive shift. A person whose attitude shifts might or might not suspect a danger or hoax. The woman in Festinger's example chose the pair of shoes regardless of whether they were harmful or not. Paranoia might, therefore, be defined as fear of a possible (and usually irrational) harm that might be inflicted on the individual, while cognitive dissonance is the change of inner belief in someone because they have done or experienced something that is contrary to that inner belief, and for which they have little or no justification whatsoever.

Even describing Arctor as paranoid raises issues of its own. Firstly, it is not really clear that Arctor was paranoid (within the highly murky world of the novel). Again, to borrow Daniel and Jason Freeman's definition, paranoia is an 'unreasonable fear' (2008: 27). The word 'unreasonable' is integral to the meaning of paranoia. Given the strange nature of the world of the novel, what would keep us from assuming that Arctor's fears and suspicions are not only

justified but also rational? Secondly, even if he is paranoid, it sheds little light on his character or insight into the nature of his world. The question remains: what brought about Arctor's destruction? What is the relation between Arctor's horrific end to his scramble suit and his world?

Although it is plausible to attribute some of Arctor's confusion to his abuse of Substance D (also known as 'Slow Death', 'Death' or 'D'), it is my contention that cognitive dissonance has an equal role, if not more so, to play in Arctor's loss of identity. Following a series of psychological tests, the doctors explain to Arctor that the right and left hemispheres of his brain have somehow split; it is as if he has 'two fuel gauges on [his] car' (Dick 2011: 217). Lejla Kucukalic ascribes Arctor's split identity to his increasing use of Substance D, (Kucukalic 2009: 157) and considers drugs to be the cause of his mental derangement. Darko Suvin argues that 'the cybernetically created shifting identities are not only parallel but in some unexplained way analogous to the drug-created split identities' (Suvin 2002: 76). Jason P. Vest, in analyzing Richard Linklater's film adaptation of *A Scanner Darkly* (2006), also argues in a similar fashion: 'Arctor, in order to maintain his cover, regularly ingests Substance D. The resulting addiction causes Arctor's personality to bifurcate when he is assigned to monitor video surveillance of all his house's inhabitants (himself included)' (Vest 2007: 155, my italics). The problem though, as Suvin infers, is that the emphasis upon drug abuse fails to explain the connection between the scramble suit and Arctor's loss of identity.

At the end of the novel, Hank tells Arctor that he had taken the drugs 'willingly'; that 'Nobody held a gun to your head and shot you up' (Dick 2011: 235). Arctor marvels at Hank's suggestion that he had taken drugs of his own volition since he thought he had been forced to take drugs out of necessity; the doctors, when testing Arctor's mental health, claim that 'as an undercover officer' he had been 'compelled' to take Substance D (Dick 2011: 113). Yet, if we believe Hank, Arctor had a choice between taking drugs and not taking drugs and pretending to be an addict. If so, his action created a cognitive dissonance between two separate belief systems: his emotional and professional resistance to taking the drugs, even at the expense of fulfilling the mission, and his sense of duty and obligation to Hank, the Center and his job. Dick's own confession in the author's note, that he and his friends squandered their lives taking drugs (leading to their tragic endings), seems to corroborate Hank's claim. Whatever the reasons, Arctor lacks justification for taking the drugs. So, he decreases this cognitive gap by making his inner idea closer to his outward action, by believing that what he was doing was out of necessity and not out of either free choice or a sense of professional duty. He later comes to think of his Bob Arctor personality as a complete addict. He first took drugs and later justified

it – resolved the dissonance – by believing that he had to do it out of necessity, but again, because there still existed a cognitive dissonance (he took drugs knowing that he was an agent fighting drugs), he altogether split Bob from Fred by believing that Bob was the addict not the agent. His action and inner idea became one, resolving his cognitive dissonance only by confusing his identity further by convincing himself that Bob is the addict and Fred is the agent.

The split between his personalities is further widened when he is asked by Hank to report on himself and his friends. His colleagues install cameras to monitor the actions and doings of Bob's gang in the house; and ironically, he is the one to monitor them. At first he is cognizant of his real character; but again, lacking justification as to whether he is an agent or an addict, he begins to think of Fred and Bob as two different persons. Eventually, he is no longer aware that Fred and Bob are himself and instead reports on Bob in his scramble suit as if Bob were another person:

> And then he thought, what the hell am I talking about? I must be nuts. I know Bob Arctor; he is a good person. He is up to nothing. At least nothing unsavory. In fact, he thought, he works for the Orange County Sherriff's Office, covertly. Which is probably [...] why Barris is after him. (Dick 2011: 190)

The cognitive dissonance here is between his being one person, a unified whole, or two people. He resolves the dissonance by considering himself not as one person but as two.

Such a resolution, however, raises an even more profound question that concerns the essence of identity itself. At one point, Arctor quizzes Luckman and Barris as to the uniqueness of one's identity: he asks them how God might calculate an individual's sins on Judgment Day:

> 'Do you think,' he said aloud as he painstakingly drove, 'that when we die and appear before God on Judgment Day, that our sins will be listed in chronological order on in order of severity, which could be ascending or descending, or alphabetically? Because I don't want to have God boom out at me when I die at the age of eighty-six, "So you're the little boy who stole the three Coke bottles off the Coca-Cola truck when it was parked in the 7–11 lot back in 1962", and you've got a lot of fast talking to do.' (Dick 2011: 98)

This conversation foreshadows the subsequent splitting of Arctor's identity in the novel. Even then, his identity as a unified person had become problematic so that the question he poses acts as a valid and baffling commentary on his situation. In effect, by asking whether he is the same person with the same

identity at the age of eighty-six as when he was an adolescent, or a different being with a different self or identity altogether, no longer accountable for the actions he took in his past life, Arctor is – even if unconsciously – commenting upon the moral choices that he may have made to become the person(s) that he now is.

In his *Treatise of Human Nature* (1738), David Hume has a similar view of human identity where he claims that the human mind is 'nothing but a heap or collection of different perceptions, united together by certain relations, and suppos'd, tho' falsely, to be endow'd with a perfect simplicity and identity' (Hume 2007: 137). Arctor too wonders whether he has a single, unified being or, as Hume suggests, is only a 'collection of different perceptions'. Lacking enough justification Arctor seems to face another cognitive dissonance. Will he remain the same person his entire life? Is he already alienated from the person he was, or might have been, by the choice that he may or may not have made? This question seems to underline his whole identity crisis. When he acts as two people, his oneness of identity is already at jeopardy and he resolves it by actually considering himself as two people, thus reducing the dissonance by aligning his ideas with his actions (to some extent), but at the expense of his own self-identity.

It might be expected, however, that Arctor's cognitive dissonance should be solved when he considers himself as two persons, and when he forgets that Bob and Fred are really the same person, yet it is not; there is still another dissonance that remains unresolved. Arctor is not just two people, he is many. The inner idea that he is actually a no-one (or anyone) creates another cognitive dissonance. In one sense, Arctor is the addict, a person with a face; in another sense, he is the detective, a masked man; and yet, he is also Fred, a man not only without a face but also with the face of thousands. Fred is both no-one and everyone, the embodiment of the American ideal of the 'Common Man' under mass culture, in which his self-identity is sacrificed in the name of the anonymity of the crowd – a 'vague blur'.

Arctor may act as a no-one, identified by the nondescript moniker of Fred, but inside, he may still think of himself as one person or two people, or maybe more. But he does not have any justification, first, as to which of his identities should be considered any more real than the other, and second, that his identity as Fred, which is his outward persona, is actually a no-one, a fabrication any more illusory than any of his other identities. Arctor's social manifestation as Fred in his scramble suit puts his actual actions at odds with his inner belief that he is two persons at the same time. His cognitive dissonance is not even solved by his two personality split. Bob or Fred has to reduce this cognitive dissonance by becoming no one themselves, which is what happens at the end of the novel.

Donna, who by this point has been revealed as the secret identity of another narcotics agent (Hank in the film version), drives Bob/Fred away from the city to New Path (a rehabilitation organization supposed to help people recover from drugs), ruing the loss of his friend to a no-one, a 'reflex machine' in Arctor's own words. Bob/Fred, and later Bruce (the name he acquires in New Path), has no name. In New Path, he meets a little girl who asks him his name. At first, he does not answer, but when she tells him her name (Thelma), he repeats it uncomprehendingly (Dick 2011: 263). His cognitive dissonance is resolved only by his blankness inside becoming what he is outside. Arctor's personality finally splits and shatters into countless personalities like the scramble suit itself.

This self-disintegration complements what Christopher Palmer terms 'the End of Difference' as a characteristic of postmodern society: 'In order to fit into, or perhaps to cope with it, the individual must be adaptable, flexible, "protean"' (Palmer 2003: 195). He continues:

> Basic to industrial society is reproduction, replication: each product is exactly the same as the previous one, or rather, the previous million. None bears any mark of individuation or difference – difference would be defect. We could put the matter in Dickian terms by saying that objects in this society are replicas, copies, fakes – or impostors, if we extend the discussion to people. (180)

What Palmer refers to as the blotting-out of differences and boundaries is also a cautionary warning for the dystopian loss of identity. Not only are people's identities unclear and shady in the world of *A Scanner Darkly*, so are the functions of police, government, the mass media and the surveillance agencies.

At the end of the novel, this protean Arctor is, ironically, sent to a farm to help grow Substance D. New Path is itself an organ of government and is either the company or one of the companies responsible for the production of the drug that government, ostensibly, is committed to eradicating. People like Arctor are sent to help 'in various remote rural farms, in small shops, in several facilities labeled "schools." And apparently there was a lot of money in manufacturing it, distributing it, and finally selling it. At least enough to keep New Path solvent and growing' (Dick 2011: 275). Like Arctor's identity, the world of civil society is finally shattered by the machinations of government and commerce.

This disintegration of Arctor's personhood makes Donna wonder if there was a time when everything was one (equivalent to the idyll of the Garden of Eden or the Platonic notion of the Ideal), whether there was a 'Golden Age' when everything was a unified whole:

> A long, long time ago, she thought. Before the curse, and everything

> and everyone became this way. The Golden Age, she thought, when wisdom and justice were the same. Before it all shattered into cutting fragments. Into broken bits that don't fit, that can't be put back together, hard as we try. (Dick 2011: 246)

Just like Donna's idea of a Golden Age, of a unity between forms at the beginning of things, Arctor's identity breaks into fragments. His lack of justification for his inner beliefs make him try to lessen the dissonance between them by making them closer to his outward actions until finally he becomes no dissimilar to the scramble suit he wore. Just as the 'kipple' (the entropy of useless matter) continues to accumulate in Dick's other novels, such as *Do Androids Dream of Electric Sheep?* (1968), so the fragmentation of all things disfigures both Arctor's personality and the world that he inhabits into a shapeless mass.

What is important to note about the novel, alongside its direction toward formlessness and incoherence, is the suggestion that, because of the unreliability of things and their appearances, in this society it is not only difficult to justify one's actions but also that cognitive dissonance is more likely to happen. For the psychologist, Erik Erikson, human development starts with the stage he calls trust versus mistrust (Erikson 1978: 222–25). Much dystopian fiction revolves around this concept, from such foundational texts of the sub-genre such as Yevgeny Zamyatin's *We* (1921) and George Orwell's *Nineteen Eighty-Four* (1949) to contemporary classics such as Margaret Atwood's *The Handmaid's Tale* (1985) and *The Matrix* films (1999–2003). Real-life dystopias, such as Argentina under the military junta, also use what the sociologist Carlos Sluzki calls 'mystification', the blurred borderline between reality and illusion, so that the denizens cannot distinguish between the truth and the lie, and the government itself can feel good about its own actions:

> These mystifications, it should be noted, are not only aimed at deceiving the population but also accomplish the important function of cognitive shift for the perpetrators themselves, as they allow them to relabel for themselves their most heinous acts as justified at the service of the common good, while their opposition are classified as 'subhumans'. (Sluzki 2005: 627)

As a result, in both real and imagined dystopian societies, where the borderlines between reality and illusion are blurry, cognitive dissonance is not only to be expected but that individuals will also seek ways of resolving its effects as part of a survival tactic.

Works Cited

Barlow, Aaron. 2005. *How Much Does Chaos Scare You?: Politics, Religion,*

and Philosophy in the Fiction of Philip K. Dick. Lulu.com.
Dick, Philip K. 2011 (1977). *A Scanner Darkly*. Boston: Mariner Books.
Erikson, Erik. 1978 (1950). *Childhood and Society*. London: Paladin.
Festinger, Leon. 1962. 'Cognitive Dissonance.' *Scientific American* 207.4: 93–106.
Freedman, Carl. 1995. 'Towards a Theory of Paranoia: The Science Fiction of Philip K. Dick.' In *Philip K. Dick: Contemporary Critical Interpretations*. Ed. Samuel J. Umland. Westport: Greenwood Press, 7–17.
Freeman, Daniel and Jason Freeman. 2008. *Paranoia: The Twentieth-First Century Fear*. New York: Oxford University Press.
Hume, David. 2007 (1738). *A Treatise of Human Nature*. Ed. David Fate Norton. Oxford: Oxford University Press.
Kucukalic, Lejla. 2009. *Philip K. Dick: Canonical Writer of the Digital Age*. New York: Routledge.
Laing, R.D. 1990 (1960). *The Divided Self: An Existential Study in Sanity and Madness*. London: Penguin.
Palmer, Christopher. 2003. *Philip K. Dick: Exhilaration and the Terror of the Postmodern*. Liverpool: Liverpool University Press.
Sluzki, Carlos E. 2005. 'Deception and Fear in Politically Oppressive Contexts: Its Trickle-Down Effect on Families.' *Review of Policy Research* 22.5: 625–35.
Suvin, Darko. 2002. 'Goodbye and Hello: Differentiating Within the Later Philip K. Dick.' *Extrapolation* 43.4: 368–97.
Vest, Jason P. 2007. *The Future Imperfect: Philip K Dick at the Movies*. London: Praeger.

Living with Widgets: In Conversation with Stephanie Saulter

Sarah Brown (Anglia Ruskin University)

Stephanie Saulter was born and raised in Jamaica. She studied English Literature and Anthropology at M.I.T. before later relocating to the UK. Her Evolution Trilogy – *Gemsigns* (2013), *Binary* (2014) and *Regeneration* (2016) – describes the attempt to genetically modify the human race against the effects of a global pandemic, and its creation of a new caste system and slave population. The following conversation took place on 17th June 2017 at Imperial College, London as part of the Science Fiction Foundation AGM. As Guest of Honour, Stephanie was interviewed by Sarah Brown, Secretary to the SFF and Co-Director of the Centre for Science Fiction and Fantasy at Anglia Ruskin University. What follows is an edited transcript of that interview.

Sarah Brown: If we could begin by going back to some of your early experiences and your early exposure to science fiction, how did you begin to be interested in that genre?

Stephanie Saulter: Well, as I was saying to you before we came in, I began to be interested in it without thinking of it as a genre. I grew up in Jamaica, in the countryside, without – I read voraciously from a very early age, but there wasn't a distinction of this is science fiction, this is fantasy, it was a sort of jumble of books, and so my sense of what I read early that was science fiction has been retrospective. It sort of happened in later life, realizing that people put things in categories, and so what did I read that fell into these categories? It's a long-winded way of saying that I read very, very widely. The earliest things that I can think of now that I remember as having a profound effect which are indubitably science fiction were *A Wrinkle in Time* and *A Wind in the Door*, which I absolutely loved. But I probably loved them more because I identified with Meg Murray, with the put-upon older sister, who was always trying to be her own person, maintain her own friendships, look out for scatty adults, and brilliant but challenging younger siblings. Because that felt very much like what my own life was like – I'm from a big family. And the fact that Meg and Charles Wallace went off on these adventures through time and space and reality was marvellous, but it was marvellous, I suspect, more because I liked the characters and I felt I understood who they were.

I think the first grown-up science fiction novel I inhaled that has been very influential was *Dune*, which is problematic in retrospect but wasn't so much at the time. I keep thinking about how significant it has been, both in terms of what it was talking about and in its subsequent books, and in terms of how I have come to be a writer. I can't think of anything more different probably than l'Engle! And the other thing I suppose I should say is that when I got to high school, my

school had a huge old library, one of the oldest buildings in the country, stocked with books. Various well-wishers had brought in boxes of books, and they had everything by Verne, and loads of Asimov, quite a lot of Heinlein, quite a lot of Wells, and I devoured all of those books. And I remember almost nothing of any of them. Asimov and Verne, in particular, went in and out. I know they're towering figures but I can't remember the stories. Wells and Heinlein a little bit more. But that I think is also interesting – things that are sticky for me, and the things that are not sticky – those supposed greats I didn't find particularly sticky.

SB: And did you also watch science fiction? Did you watch *Doctor Who*?

SS: No, no, no, I didn't know what *Doctor Who* was until it got revived here with Chris Eccleston! I was born in Kingston; my family then moved to the opposite end of Jamaica in the early 1970s. We didn't have electricity until I was a teenager, let alone television. Television in Jamaica then was one channel, and black and white, that came on at four or five in the evening and was off at ten. When it became more prevalent in Jamaica was when I was going away to university in the 1980s in America anyway, so a lot more of my television experiences are later in life and American. And I have to say that in America I would hear about this thing called *Doctor Who*, and I never knew what it was. Every now and then you'd change channels, and there would be a man with hair and a scarf, running, and you'd watch it for a minute, and have no clue what was going on. I realize this is a blasphemous thing to say to a bunch of science fiction fans in the UK, but when there was a big to-do here about it being revived, my only thought was, oh yes, that's that weird thing that used to be on obscure cable channels, I'll watch an episode and maybe I'll finally find out what it is. Because I had no sense of it being science fiction or fantasy, I thought it was about a medical doctor who ran around saving people in the countryside.

SB: So, just thinking about some of the science fiction texts that you remember reading when you were young, like *A Wrinkle in Time* and *Dune*, they seem very different from *Gemsigns*. Was there any science fiction that particularly fed into that novel, or was it more something that developed out of what you were seeing around you in your work?

SS: I know I've said this before, and I know it's such a cliché for writers, but it is true – there was a book I kept looking for, I didn't know what it was but I kept scouring the Waterstones science fiction section, and not finding it. And there was a moment when I realized that I wasn't finding the kind of book I wanted to read because nobody had written it. And so I probably would have to do that. And that's how I came to write it. Which is a long-winded way to say that it is not modelled off anything specific, and not responding in an overt way to anything specific. There are a lot of things that feed into the books from my life and my background and interests, and you almost don't become aware until after the

fact that you're talking about issues of bigotry. It's not necessarily in the front of your mind at the beginning.

But I had certain things that in retrospect I can see were influential. *Frankenstein* is where I probably started thinking seriously about the responsibility of the creator for the created, which ties into issues around religion and theology as well. Other things that you wouldn't necessarily think of as science fiction, [like] *The Tempest*. Ariel's spirit, the trapped spirit, who is forced to do things and Caliban, the dispossessed, who is treated as such a monstrous creature, but who is actually the one against whom the crime has been committed. Prospero, the magician, who is supposedly the hero of the piece but who I think is one of the most despicable characters in literature. So that's a Shakespearean influence. I think *The Tempest* was one of the things in my head when I was writing.

I have frustrations with science fiction, and I think some of my frustrations played out in it [the writing] as well. There is a lot of science fiction that really valorizes physics and cosmology, and that's fine, there's nothing wrong with physics and cosmology. But medicine has done more to change our lives, and our expectations of life around the world, in my lifetime than arguably any motif of cosmology. I mean, people on the other side of the planet, whose lives may not seem much like ours in the developed world, are still not going to die of smallpox any more in the same way as we are not going to. So I had a frustration with the sciences that you don't get being played with and extrapolated from in science fiction, which are the life sciences and the social sciences to a great extent. *I wanted a book that talked about that*.

Also a lot of fiction, not just science fiction, really valorizes the individual. There's a hero, there's a villain, the individual's journey to knowledge, to greatness, to whatever, and the collective is either ignored or demonized. It's all about the heroic individual, and that is fine, but it's an incomplete picture. So I wanted also to create something that was about community, that wasn't just about the single heroic or villainous person. There were a lot of things that fed in because I wanted to see them and they weren't there, if that makes sense.

SB: As I was reading the first novel, but also the trilogy as a whole, I found myself thinking in turn about almost every scenario involving a minority being exploited or being demonized or being feared. I thought a lot about anti-Muslim bigotry, about slavery in the nineteenth century, really I kept on thinking of different ones. Is that something you thought about as you were writing or was it more unconscious?

SS: I would say it was more subconscious than unconscious. I'm grinning because you saying that is a win to me. That's one of the things I really wanted to achieve: to try and think about prejudice as the social entity that it is and not

narrow it down to any one metric of bigotry. So I was consciously aware of some things. I was writing in the UK, I was living in deepest, darkest Devon at the time, which is lovely but very white. That felt odd. I was aware of the parallels with immigration – I am a perpetual immigrant – and I was very aware of the parallels with emancipation and slavery, because that is also my history. I am a mixed-race Jamaican, a product of Empire on the negative side of the equation. But some things have surprised me. On the back of *Gemsigns*, I met and have trans friends, who saw it as an expression of their story as well. But I hadn't consciously been thinking in those terms. I am delighted that the relevance is there, but I wasn't consciously aware of it.

SB: For some reason, that was the first thing I jotted down.

SS: And it wasn't for me. I had much less awareness of specifically trans issues when I was writing. I do now, but that's because the book introduced me to a range of issues and individuals that I hadn't known about. But that for me feels like a part of how I know I got some of it right, because I was trying to talk about the phenomenon of exclusion and prejudice as a whole without narrowing it down to the specifics of race, gender, sexuality, culture, and so on.

SB: You were saying earlier how you felt that you were almost writing a novel you wanted to find and couldn't find. But, one of the things I found interesting, as well as being able to map it on to all sorts of minorities in different times and places, was also mapping it on to something which always really interests me in science fiction, which is when aliens or post-humans or androids are used not necessarily coherently or consistently or consciously, but somehow become a way of coding the treatment of minorities. So we can go back to *The War of the Worlds*, which begins with a discussion of colonization and genocide, and I was thinking of how things have changed as well, because if you go back a few decades when I was enjoying the series *V*, which is all about alien visitors disguised as beautiful humans, and then there's a dramatic moment when one of them eats a rat or something—

SS: It's still horrifying, that moment, isn't it? I remember that, I was in America at that point.

SB: But then perhaps more recently you've had examples where the aliens turn out to be more nuanced, if not completely benign. But you begin by thinking of them as evil and then they're not. There's a series that probably not many people have seen, because I think it only had one series, called *Invasion*, and that was about aliens coming and taking over humans in Florida. But it was all quite ambiguous.

SS: I haven't seen that one, although having lived in Florida for ten years… But, I think you're right. I mean there is a certain shift in the narrative from… You know, Wells was interesting in *The War of the Worlds* when he was positing

what is it like to be the victim of colonization as opposed to the colonizers. That's an interesting moment when he makes you think what it is when *your* country is the one being invaded and *your* people are the ones being slaughtered. But I think what we are seeing, and I'm not a scholar of this – there's probably a really interesting piece of academic work to be done, tracing the evolution of how the Other and the colonization narrative has shifted – but I absolutely think that's because it's thought of now in more sophisticated and nuanced ways what it means to be the Other, of the whole concept of Othering as a social and a cultural construct as opposed to something that is somehow innate. I mean, a hundred years ago when people still had fixed ideas about biologically determinate notions of what different kinds of people are like, it was much easier then to think, or perhaps more likely to think, in those terms and fictions. Happily, we have entered into more critical thinking about what it means to be colonized and Othered. I think the literature is just a reflection of that. I mean, you think of the *Frankenstein* narrative – I go back to that again – where the Other is the victim and the monster, and it's a play upon who really is the monster. It's always occurred to me that the doctor was the monster. But the monster is a victim, very much so. I don't watch a lot of television and film, but one of the films, and it's a problematic film in many ways, that has really flipped that narrative is *District 9*, where your invading aliens are refugees and are then treated abominably when they arrive.

When I said earlier that a lot of the 'Golden Age' science fiction wasn't sticky for me, I think it's because they still implicitly follow that narrative of the Great White Hope expanding into outer space, that the future we all long for is that everyone is a white, middle class, mid-western American – and that is not my life. I said very controversially some years ago that what started to bother me a lot about those narratives was, what have you done with the rest of us? Because we brown people are clearly not there. This is posited as an extrapolation and nowhere do you mention what you did to us, so why are we not in those futures? I think those examinations are part of what we are seeing now. But you are also seeing a breadth of voices, a breadth of awareness of the fact that there is not a single perspective, and that bleeds over. You don't have your science fiction genre, and your fandoms hermetically sealed away from literary fiction, hermetically sealed from your Women's Studies, your African-American Studies, or postcolonial studies. You read Edward Said and you read Asimov, and you read Shakespeare and you read Homer, and all this is part of our cultural heritage. And I think that transition that you describe this culture, this society is seeing, is the result of this blend.

SB: Leading on from that, one of the things I particularly liked about the trilogy was that even though, clearly, a very important strand was to do with

discrimination and prejudice, I liked the way that sometimes the answers weren't easy and sometimes we weren't actually sure who to sympathize with and whether the villain really was a villain. I just wanted to see if you could say a bit about this ambiguity?

SS: I think that was just me trying to do a realistic fiction. Life can be ambiguous. I think we fail to solve problems in real life because we insist that the solutions should be very simplistic and very binary. And life is not like that. I mean, there's a reason why *The Daily Mail* has so many readers, and linkers and clickers, because it speaks to real fears and anxieties and concerns that people have, as much as *The Guardian*. No prizes for guessing which paper I read! But it is not valid culturally or socially to demonize the other side, and to refuse to accept that there are genuine things that concern them, and ways to play on that, consciously or unconsciously. So, I go back to trying to find a book that didn't exist and having to write it, because one of my frustrations was with a kind of false clarity in which narratives are simplified, and good and evil are made very, very clear, and choices are simple and you know who the bad guy, or more rarely the woman, is. And I just like complexity. I don't really understand the yearning for simplistic narrative. I like the fact that we are complex beings. We've created incredibly sophisticated and conflicting cultures and beliefs and societies, but if you embrace that that is what it is to be human at any point, but maybe particularly in the twenty-first century, then it does not make sense to me not to expect to have these conflicts and these questions and these erasures of points of view. That's part of the package.

SB: Yes, I'm thinking of how one of the main characters has to engage with the ways in which some of these 'gems', these post-humans, actually could be both very powerful and malign in their intentions, and just has to deal with that as a risk as part of a whole complex future.

SS: I was writing that in an era of constant terror alerts and demonizations of certain communities. It was probably feeding straight out of watching the news, reading the papers in the morning, and going to write and trying to think through these insane notions. Just because an individual or a handful of individuals who belong to a particular group has done something particularly bad, to think all members of that group do bad things is such a simplistic and false narrative. In the last ten, fifteen years, the obvious example of that is Islamic fundamentalism. But, again, I'm a mixed-race Jamaican, I'm used to the 'black men are dangerous' trope which is toxic and false, and yet is incredibly prevalent. I remember growing up, very far away from our region, the Troubles would get a headline in the paper, and I would ask what are they fighting about? Nobody in my side of the world quite knew. 'Some of them are Protestants, and some of them are Catholics, and they don't like each other', and I'd go, 'why'?

'Because … we don't know.' But then you'd meet someone who was Catholic, and you'd think, well, they seem alright, so none of these explanations seem to make sense to me. And I'm talking about trying to understand the world at the age of ten or twelve, and realizing at a very early age that simple answers were generally false.

SB: Yes, I really appreciated the depiction of religion in *Gemsigns*, because you get some religious zealots and some religious people being incredibly good at reaching out, and then some who are just interestingly in-between, and then you get some religious symbolism. We've already touched-upon the character of Aryel, whose full name is Aryel Morningstar, which is itself a name for Lucifer. When I was re-reading the novel, I was thinking how am I meant to think about her? Because in most ways she's very positive, very benign, but at the same time there's something potentially manipulative about her.

SS: Oh, I think more than potentially. She is manipulative. As I said, a lot of things I did, I only worked out what fed into them after the fact, but Aryel Morningstar was very overt because I've always had a problem with the original Morningstar myth. It is so much the basis of our conception of what evil is, the shining star, the lead angel, who falls and is cast out and becomes the avatar for evil for all time. Of course millennia have gone by and this has been translated and nuanced in many ways. But, as I understand it, that's the core original myth, and it's based our conception of evil on being disobedient and demanding equality, the idea that that's what makes you wrong. I have a real problem with that, and even though we may not think overtly in those ways, the fact that our conception of evil for those of us who come from the cultural matrix of these religions is to do with disobedience, that it's wrong to think of yourself on a par with those who are great, is something I really wanted to challenge. I think if you told that story now without those trappings, the Morningstar is a freedom fighter. That Morningstar character is Nelson Mandela. But we still conceptualize it as an evil thing. So that was me trying to re-tell a story that I find problematic in itself and in terms of how much of culture it underpins. But also trying to give that character the complexity that I think she has – she is a freedom fighter, and that's not a fluffy vocation. If you don't have force of arms, you need to be manipulative, you need to think like a guerrilla fighter. If you're going to try not to use violence, how else are you going to win? In our contemporary history, your Gandhis and your Mandelas whom we hold up as heroes, and I think of them as heroic figures, were manipulative – and that's something we should recognize and embrace when it's used for good.

SB: Just thinking about the complexity of the novels, and the ways in which people might respond to them, I was wondering if any of the responses, whether they were from reviewers or from readers, have surprised you or even annoyed

you?

SS: I've been really fortunate with my books, I've had very few bad reviews, but some of the things that have startled me are things that readers or reviewers think are far-fetched or unlikely. I've had some readers dismiss Mac as a cartoon figure, and it's true that we don't see much of him in *Gemsigns* other than his campaign against the gems. But I've had an email from Mac, I know people who are like that, who have that evangelical certainty. When *Gemsigns* was launched in the US, I wrote an essay on genetic modification for *Life Science*, I think, and I was talking about the then prospective mitochondrial engineering technology which is the three-parent baby, which I dissected a bit in this piece but fundamentally don't have a problem with. But one of the responses I got for that was from someone very matter-of-factly saying, well, this is obviously nonsense because it couldn't possibly have a soul so they're not human. And it was one of those wonderful moments when the first thing I had read that day was a review in which Mac was not thought to be credible!

I've had a lot of comments that the bio-science doesn't seem credible, which have never come from bio-scientists. They all get back to me and go, yep, that makes perfect sense. I suppose I am always a little bit amazed that people, who are probably only alive because of smallpox and anti-viral vaccinations, and interventions when they were born two, three months early, find it strange although they live in a world where that happens. They find genetic modification strange, but don't bat an eye at faster than light travel.

You also become aware of the cultural contexts that people are familiar with and not familiar with. In *Gemsigns*, all of the highly engineered gems have a visual marker. It's either a physical abnormality or glowing, jewel-coloured hair. White readers and reviewers both here and in the US have mostly said, oh, that's a really clever idea to use hair as a marker of social difference. Black people have said, oh thank God, you did something about hair because this is our life. Hair is political in African diaspora communities – I grew up with these notions of good and bad hair. I've had conversations with white audiences who don't know this is a thing, so they think I made something up that was really clever, and black audiences who absolutely know this is a thing, and for whom I have just science-fictionalized a daily aspect of their life, and I didn't know the degree to which this one aspect is unknown between communities until I started having these conversations.

SB: I did have some awareness of this issue, but I'd never thought to—

SS: And I don't say it as a point of blame. It's just people don't know, and people don't know what they don't know. But I knew what I was doing when I did that. That was a conscious choice to make hair political.

SB: Just finally, you've said a little bit about the things in science fiction that,

perhaps particularly in the past, have frustrated you, but are there trends within science fiction or, indeed, individual authors or books that you are very enthusiastic about at the moment?

SS: I like the opening-out and the tendency to embrace some of the kinds of things I'm talking about. I like the fact that although I've written my books, it turns out that the book I was looking for did exist, it just didn't necessarily get shelved in the science fiction section. The reality of human experience, what technology does and what science and 'progress' do to human interaction, is what we are talking about. The kinds of thing I'm enthusiastic about now include *The City & the City* by China Miéville, *Zoo City* by Lauren Beukes, 'Sing' by Karin Tidbeck, 'The Monkey House' by Tade Thompson, 'What It Means When a Man Falls from the Sky' by Lesley Nneka Arimah. *Station Eleven* is another book I really liked. The sense you get from the things I like is the fact that we are focusing less upon the widgets than upon what it means to live in a world with the widgets. And the ways in which, as William Gibson says, the future is here but not evenly distributed. What does it mean to live in a world in which the impacts are disparate depending upon who and where you are, and what your own state is? Another writer I admire for completely different reasons is Richard Morgan, who is as dark as you can get, and I do find some of his works problematic, but he talks about damage and he acknowledges the damage that is done to people who live in worlds that they cannot control, either technologically or politically. The social and the psychological impacts of the worlds in which we live and create has always been a focus for fiction but increasingly it's a focus of what we recognize as science fiction, and that I think is hugely interesting.

D.H. Lawrence and John [Wyndham] Beynon Harris

David Ketterer (University of Liverpool)

This is a follow-up to my 2016 note in *Science Fiction* Studies (# 130): 'Flag Flying Aspidistras and Triffids'. There I suggest that the person who buys a single-volume copy of *The Collected Poems of D. H. Lawrence* in Booklovers' Corner, the bookshop described in George Orwell's *Keep the Aspidistra Flying* (1936) is based on JBH (the initials of the names that *John* Wyndham Parkes Lucas *Beynon Harris* used in his daily life).

In a 24 September 2016 email, JBH collector and researcher Neil Pollard drew my attention to a likely connection between the names Lorrence and Torrence/Torrance in JBH's fiction. JBH's two very densely plotted early stories, 'Wanderers of Time' and 'Exiles on Asperus', were both accepted for publication on 18 October 1932 (Wyndham 11/2/1 in the University of Liverpool John Wyndham Archive). 'Wanderers' was published in *Wonder Stories* (March 1933) and 'Exiles' in the related *Wonder Stories Quarterly* (Winter 1933), both by John Beynon Harris. A strong, moody but action-oriented time traveller from the year 3920 in 'Wanderers,' tall with black hair, is named Hale Lorrence. 'Hale' is derived from the Old English for 'healthy hero' or 'from the nook.' Lorrence and a number of other time travellers have been captured (in what amounts to a temporal Sargasso Sea) by alien insect-controlled machines; however, he soon makes off with a young woman named Betty. In 'Exiles,' set on a colony asteroid named Asperus where, in A.D. 2077, after the death of Captain Roscoe of the spaceship *Argente*, it is 'Torrence, the first officer', who takes over as the authority figure and, with many others, faces the prospect of being marooned. The name 'Torrence' may be understood as the future spelling of 'torrents,' a word suggestive of the potent natural world. It may also be relevant that the 'L' and 'T' switch involves the only two alphabetical letters that consist of a single vertical line and a single horizontal line. Whether or not the exchange of a 'T' for an 'L' was also encouraged by the phonetics of another authoritarian figure, T.E. Lawrence, it is likely, in 1932, that Lorrence morphed into Torrence rather than the other way round because 'Mr Torrence' appears, many years later, in *The Day of the Triffids* (1951) and 'Dr Torrance' appears *The Midwich Cuckoos* (1957). Both the 1951 Torrence and the 1957 Torrance are authority figures. Mr Torrence is the red-headed Commander of the South-East Region; Dr Torrance is a much admired psychiatrist and the Director of The Grange which has become a school for the Midwich Children.

1932 was, it should be emphasised, the publication year of both *Lady Chatterley's Lover* and the one-volume reprinting of the previous 1928 two

volume edition of Lawrence's *Collected Poems*. If JBH were to stage any kind of tribute to Lawrence, it makes sense this would have been in 1932. It also makes sense to accept that the shy Booklovers' Corner customer was indeed, at least in part, JBH. It is, I believe, reasonable to conclude that all these characters relate to JBH's interest in, and possible indebtedness to, D.H. Lawrence.

But why in 1951 and 1957 did JBH decide to allude to his 1932 name play with two further instances of the 'T' in place of an 'L' variant initiated in the second of the accepted stories? The answer would seem to be that in 1932 he was only able to admire the artistry of Lawrence's work; he could not, back then, achieve anything comparable himself. The later allusions to Lorrence/Lawrence via Torrence and the then necessary subsequent slight variant Torrance may be understood to indicate JBH's awareness that both *The Day of the Triffids* and *The Midwich Cuckoos* achieve what he regarded as a comparable standard.

In what ways was D.H. Lawrence an ideal model for JBH? Primarily, he must have admired Lawrence as an artist, an author of fiction. What of Lawrence's politics? He believed in authority figures and opposed democracy for the masses. These days, Lawrence is particularly associated with *Lady Chatterley's Lover* (1928), once regarded as pornographic. This, as I have noted, was first published in England by Martin Secker in a 1932 expurgated edition. Given Lorrence and Torrence, it is not, I submit, accidental that 'Wanderers' and 'Exiles' were both apparently written in 1932. Instead, the naming and description of both characters signify JBH's interest in and admiration for Lawrence's work, and anticipate what JBH would achieve in the 1950s.

From L-R: *Richard Horatio Blair, the author, Leslie J. Hurst, David Kitchen. Triffid Alley, South End Green, Hampstead, 29 May 2016. c/o Polly Hancock.*

Finally, it seems to me that, to some degree, Lawrence inspired JBH's culminating achievement and major contribution to literature, what I have identified as his 'Facts of Life' sextet. This sextet confronts the fear of women, female sexuality and sex in *The Day of the Triffids* and *The Kraken Wakes* (1953); the fear of children in *The Chrysalids* (1955) and *The Midwich Cuckoos*; and the fear of death in *The Outward Urge* (1959) and *Trouble with Lichen* (1960). Torrence in *Triffids* and Torrance in *Cuckoos* acknowledge Lawrence's influence in the most important, and I believe the best, two novels of that sextet.

Conference Reports

J.G. Ballard and the Sciences, Anglia Ruskin University, 25 November 2017

Reviewed by Thomas Knowles (Birmingham City University)

J.G. Ballard and the Sciences was the inaugural conference to be held by the Anglia Ruskin Centre for Science Fiction & Fantasy, an interdisciplinary working group set up by faculty members, associate lecturers, and postgraduate and undergraduate students in 2017. It brings together academic criticism and publishing expertise from Anglia Ruskin University, and from the wider sf and fantasy community. The conference organizer, Jeannette Baxter, opened proceedings by making clear what a rich and underexplored terrain Ballard's relationship to the sciences is. This was born out admirably by the day's keynote, panels and lively audience interactions – a hot mix of sf and literary scholars, scientists, psychologists, artists, dramatists, and film-makers.

Christopher Priest's keynote offered a fascinating insight into the operation of influence, both of Ballard's upon his own work, and that of contemporaries upon Ballard's. Priest defined influential authors and texts as those that have a transformative effect on other writers, and this is something which he believes will become increasingly apparent in the work of Ballard's literary and artistic inheritors. Priest discovered Ballard as a teenager when he was reading mostly American pulp sf, and he remembers being struck by his sense of an author writing sf out of a recognizable (to him) intellectual and cultural world in stories like 'Track 12' (1958), 'The Garden of Time' (1962) and 'The Sound Sweep' (1960). Priest went on to define what he sees as three biographically and stylistically defined periods in Ballard's career. These were: an early period in which Ballard married, had children, and worked a 'shit job' while writing and publishing short fiction on the side; a middle period which included his time at the sf magazine *New Worlds* and the novels of the 1970s; and a late period in which Ballard turned increasingly to the social satire of consumer culture in novels like *Cocaine Nights* (1996) and *Super-Cannes* (2000). Intersecting and linking these three periods, for Priest, are the autobiographical works *Empire of the Sun* (1984), *The Kindness of Women* (1991) and *Miracles of Life* (2009). Somewhat controversially, Priest dismissed the works of the 1970s – except for *The Atrocity Exhibition* (1970) and *Crash* (1973) – as a dark period in Ballard's writing during which he was under the influence of some (allegedly) wrongheaded contemporaries. He also characterized psychoanalytic readings of literature as

a critical dead-end, preferring instead to invoke Graham Greene's 'compost of the imagination' metaphor. These insights and bold claims made for some lively audience discussion, including debate about the difficulty of teaching *The Atrocity Exhibition* and *Crash* (which Priest had characterized, respectively, as Ballard's most radical and challenging novel, and as obscenity with a healthy dose of black humour), the relevance of psychoanalysis to Ballard's work, and the strengths and weaknesses of Ballard's prose style.

The first panel explored the inextricably intertwined inner and outer landscapes of Ballard's fiction. Bruna Mancini's paper drew attention to the collision of sf, art and technology in the 'post-geographical inner space' of *Vermilion Sands* (1971). Mancini argued that the contribution of science and technology to such instances as the coral towers of 'The Cloud Sculptors of Coral D' (1967), plastic surgery as performance art in 'The Singing Statues' (1962), and the confluence of fashion, botany and neuroscience in 'Say Goodbye to the Wind' (1970) produced a creative neuronal energy that could remake the world in a way that makes sense. James Riley's paper traced recurrent language and imagery, throughout Ballard's oeuvre, that appears to show an interest in post-war psychological experiments on the effects of sensory deprivation, particularly those of John C. Lilly and Donald Hebb. Riley read sensory deprivation in *The Drowned World* (1962), 'The Gioconda of the Twilight Noon' (1964), and 'The Enormous Space' (1989) as geared towards 'dissolution, negation and reformation' of human identity rather than the discovery of a 'foundational human essence'. Suggestively, Riley read another kind of deprivation at work in the monotony of consumerist society critiqued by novels such as *The Unlimited Dream Company* (1979) and *Kingdom Come* (2006). The latter provided the basis for complementary links between the two papers that were raised in a question about the connection between Ballard's 'death of affect' and the endemic 'beach fatigue' of *Vermilion Sands*. Both papers offered intriguing ways to frame the perennial ambivalence at work in Ballard's depictions of exploded and disintegrating selfhood that nonetheless seem to hold out the possibility of creative renewal.

Panel two was potentially on a collision course with the keynote, but instead the speakers each considered the discourse of psychoanalysis as part of a dialogue between the scientific, the pseudo-scientific and the fictional. Marcin Tereszewski argued that Ballard combines such discourses, with the addition of the applied science of architecture, to produce psychological experiments using methods stylistic and thematic, producing inconclusive results. For Tereszewski, in stories that pit the environment against the characters, the most human response is a psychopathological one. Martin Gleghorn's paper read YouTube as an exemplary Ballardian technology – arguably anticipated by the

Vogue article, 'The Future of the Future', and the short story 'The Intensive Care Unit' (both 1977) – and as the perfect vehicle for the new psychopathologies that were to emerge in his late fiction. As disturbing as the psychotic breakdown of the distinction between the public and private may be, it seemed a missed opportunity not to raise the sinister consequences of algorithmically generated clickbait on such video-streaming platforms, though the resultant discussion may have been more Phil-Dickean than Ballardian. Sam Francis closed out the panel with a discussion of the tensions, inherent in sf, between factuality and the imagination. The unfalsifiable knowledge potentially gained through psychoanalysis, and through the reading and writing of fiction, do not qualify as normatively scientific, yet they seem to have great value for people. Some philosophers of science have acknowledged, though, the retrospective value of blinkered theory-first scientists, seeing them as retrospectively vindicated if they manage to shift the current paradigm in the face of potentially overwhelming opposition. Here is a rich seam of comparison with Ballard's obsessive and damaged antagonists, and one that was hinted at in this paper.

The third panel took a bodily turn, with the two papers bringing out the therapeutic and literary ramifications of Ballard's anatomically accurate depictions of bodies and the wounds that they suffer. Kristina Fleuty drew intriguing parallels between the community of crash addicts in *Crash* and the real-life community of wounded ex-soldiers, both of which 'recomplete' their injured bodies with the technology of prosthetics. Fleuty argued that *Crash* might serve as an allegory of the readjustment to society that wounded service personnel undergo – perhaps even having therapeutic potential. Thomas Knowles's paper considered the persistent relevance of Romantic attitudes towards science and the imagination, focussing on the prominence of William Blake's embodied imagination in *The Unlimited Dream Company*. Knowles proposed that Ballard's invocation of Blake creates a Romantic subject position that at once celebrates and castigates science, and adores and abominates the human body.

The fourth and final panel featured two papers on Ballard's apocalyptic quartet of novels from the 1960s, which are often read as progenitors of climate fiction. Iren Boyarkina discussed twentieth-century discoveries in quantum physics and astrophysics that Olaf Stapledon drew upon in *Last and First Men* (1930), comparing them with those that informed Ballard's *The Wind from Nowhere* (1961), before going on to consider the human activity that causes the apocalypse in *The Drought* (1964). For Boyarkina, this sense of nature versus humanity has profound psychological consequences for a species doomed to know its eventual fate and eager to insulate itself from a hostile environment. Moritz Ingwersen's reading of *The Crystal World* (1966) in terms of biological

crystalline structures and solid state physics shed new light on the fascination and fear of the mineral world in Ballard's work. Neatly linking this scientific field with the literary and theoretical notion of pre-humanism, Ingwersen's discussion of 'the ways in which we have never been human' made a case for the continued relevance of Ballard's novel in anthropocenic debates about the geological impact of human existence.

The day closed with two special sessions. The first, a paper and performance by the Royal College of Art Theatre Group, was inspired by 'The Thousand Dreams of Stellavista' (1962), and compared Ballard's interactive and uncannily aware 'quasi-objects' with those of the contemporary smart home. In conversation with Jeannette Baxter, Fay Ballard ended the day on a touching and convivial note, with insights into her own and her father's work and life, and, amongst other things, a defence of psychoanalysis. The conversation ranged from the operating table on which Ballard would have dissected bodies as a medical student in Cambridge, and where he discovered the 'beauty and elegance of organs', to the suburban house in Shepperton with its overgrown garden, threatening to encroach upon his study.

The conference demonstrated the enduring relevance of Ballard and his work, further establishing his position as a major post-war author. A call for papers will soon be issued for a special issue of the peer-reviewed journal *Humanities*, and most of the panels can be viewed on the Anglia Ruskin University website (head to <https://myplayer.anglia.ac.uk/> and enter 'Ballard' in the search box).

2017: A Clarke Odyssey, Canterbury Christ Church University, 9 December 2017

Reviewed by Maureen Kincaid Speller

In his centenary year, how should one assess the legacy of Sir Arthur C. Clarke? It is a simple question yet, as this celebratory conference demonstrated, there is no straightforward answer. Clarke's work has exerted a powerful influence over sf writers in the second half of the twentieth century, and his presence is still felt among writers and the general public alike. Most people have heard of Stanley Kubrick's *2001: A Space Odyssey* (1968) and know it was inspired by a story by Clarke. Many also know that Clarke predicted the development of the telecommunications satellite. The TV series *Arthur C. Clarke's Mysterious World* (1980) is still recalled fondly by many. And, of course, the Arthur C. Clarke Award has for more than thirty years played a prominent role in promoting science fiction published in the UK. Yet Clarke himself remains curiously elusive,

his work not as widely discussed as it might be, or as it once was.

On a bitterly cold morning, evoking 'The Forgotten Enemy' (1949), one of my favourite Clarke short stories, a hardy group of international scholars gathered in Canterbury to consider the mysterious world of Arthur C. Clarke. Opening the day's proceedings, Charlotte Sleigh reminded her audience that Clarke had been part of the first self-identified generation of sf fans in the UK. Brought together by Walter Gillings, these were young white men, generally moderately educated, who did not fit the prevailing scientific culture but who nonetheless sought to participate in science through writing about it. Clarke, though, was ambivalent, commenting in a school magazine that he had been 'accused of being a Scientist', as though the term was already tainted, and that his fiction often examines the tension between scientists and engineers, reflecting the context within which he was working. Clarke was, Sleigh suggested, shaping his own identity, subtly questioning the role of the scientist, and using the written word as a way to communicate his own expertise.

Andy Sawyer picked up on this theme in the first session of the day, exploring how science fiction of the 1950s seemed to lack fully-fledged space heroes, preferring to offer us scientists and technocrats (Clarke) or entrepreneurs and technicians (Heinlein). In fact, as Sawyer went on to argue, it was E.C. Tubb who first gave readers the idea of space travel as a living economy within a mundane environment, contrasting sharply with Clarke's 'stoic utopianism' and Heinlein's persistent argument for commercial space activity. In sharp contrast to this exploration of the mundane, Iren Boyarkina's paper examined the influence of Olaf Stapledon's novels on Clarke's work, arguing that Clarke's own writing exhibits a similar desire for insight into the relationship between men and the cosmos. Clarke, she suggested, had a deep interest in predestination, particularly in relation to intelligent life; she proposed that Clarke's fiction was in fact in dialogue with Stapledon's.

In the first of the morning's parallel sessions, Mike Laycock addressed a paradox that lies at the heart of Clarke's *Imperial Earth* (1975). While the novel is well known for its matter-of-fact presentation of bisexuality, Laycock argued that what was left unsaid was more interesting, namely Clarke's reluctance to actually depict a homosexual relationship. Laycock explored the novel's presentation of sexual themes, to show how the novel foreshadowed a wider debate about sexuality. Danielle Giraud's paper built on this discussion, examining Clarke's influence on *Star Trek*, as acknowledged by Gene Roddenberry, and in particular, looking at the Gaylaxians' campaign to introduce a canonically gay character into *Star Trek: The Next Generation*, a campaign to which Clarke lent his support.

The twin session, on Liu Cixin, gave some indication of how the impact of

Clarke's work persists to the present day. The two papers, by Liu Guangzhao and Stephen Dougherty covered similar ground, using very different perspectives. Both began with the fact that Clarke's novelization of *2001* came as a shock to the system for Liu. He had dreamt of some kind of space literature, only to find that in *2001* it already existed. From that common starting-point, Liu Guangzhao looked at Liu's work from a Chinese perspective, and the way in which that perspective prompted Liu Cixin to develop his work in a less benevolent, less open direction than Clarke's work. Dougherty, by contrast, looked at Liu Cixin from a more international perspective; what he called a thematic 'global repositioning' which recalibrates China's role in the contemporary world.

After a break for an excellent lunch, and plenty of conversation with other conference attendees, it was time to consider Clarke's response to religious belief. Thore Bjørnvig's paper examined some of the connections between *Childhood's End* (1953) and Judeo-Christian narratives of apocalypse, and in turn linked this to current work on transhuman philosophy in relation to robotics and artificial intelligence. As became clear in the course of his discussion, while Clarke professed to be an atheist, he was nonetheless fascinated by the urge in others towards transcendence and religion. Jim Clarke also noted that while Clarke rejected organized religion, he was nonetheless inclined to exempt Buddhism from this, and Theravada Buddhism in particular. Like Bjørnvig, he noted Arthur C. Clarke's fascination with concepts such as transcendence and reincarnation, and in particular examined a claim made by Clarke that he was if anything a crypto-Buddhist, considering how Clarke made use of Buddhist concepts in his fiction. Humans, Andrew M. Butler (co-organizer of the conference) reminded us, use tools more than any other species on Earth, and these, indeed, act as our physical extensions. Tools allow us to exist in space, but as we remove their limits and extend their perceptions, are we perhaps sowing the seeds of our own destruction? Butler's examination of the ways in which tools are represented in *2001*, both film and novel, and how they might become replacements for humanity, led to the consideration that both texts, and perhaps by extension science fiction itself, are acting as tools to advance consciousness.

The parallel session on space exploration took very different approaches to examining Clarke's relationship to the technological present. Alexey Dodsworth suggested that Clarke went against much contemporary scientific opinion when he identified the Jovian moon, Europa, as potentially habitable and then went on to examine how Clarke's ideas are reflected in current bioethical arguments related to the colonization of other worlds. A very different perspective on Clarke was provided by Robert Poole, using material from both the Kubrick and Clarke archives to examine how Clarke attempted to use the success of *2001* to kick-

start advances in space exploration. Drawing on Clarke's writings, speeches and documentary film work in the late 1960s, Poole demonstrated the scale of Clarke's ambitions for space flight, but showed his work to be impractical in the face of limitations in technology and finance. Finally, Thomas Connolly, who had passed his PhD viva only the day before, looked at the relationship between Isaac Asimov and Arthur C. Clarke, arguing that Asimov's view of humanity was a largely mechanistic vision, marked by determinist sociohistorical forces such as psychohistory. By contrast, Clarke, influenced by Stapledon, tempered his sf with a much more metaphysical tone, rejecting mechanistic views of human nature and behaviour, and presenting a more egalitarian image of the individual within society.

The last session of the day began with a paper from Nick Hubble, considering the role of the Arthur C. Clarke Award, and in particular its supposed identification with 'literary sf'. Hubble laid out a compelling argument for the way in which boundaries between genre and literary sf are already blurring, and the need for a critical discourse to support that shifting readership, linking this with the recent emergence of a shadow Clarke jury and also such events as a paper on Clarke's work given at the 2016 Modernist Studies conference. Joe Norman considered the presence and role of Big Dumb Objects (BDOs) in the work of Arthur C. Clarke and Iain M. Banks. Banks, he reminded us, was a reader of Clarke's work when he was a young man, and Clarke had been a major influence on Banks's work. Norman then examined the trope of the BDO as it appears in a number of Clarke's works, such as 'The Sentinel' (1951), *2001* and *Rendezvous with Rama* (1973), and also in Banks' *Excession* (1996). Norman then moved on to demonstrate how Clarke and Banks transformed the BDO from a simple plot device into a sophisticated literary tool. Finally, Patrick Parrinder suggested that belatedness is the key to reading Clarke's fiction, and went on to note how his characters are often interested in archaeology, in a professional or amateur capacity. Parrinder argued that the Monoliths, Rama and the artificial moon labelled Jupiter 5 should all be considered as time capsules, and proposed that all Clarke's characters live in a future where they have a strong sense of their own belatedness.

Last but by no means least, Stephen Baxter rounded off the day with a thoughtful and affectionate examination of Clarke's non-fiction, so often overlooked by critics. Armed with props, including his own much-read copy of *Profiles of the Future* (1962), Baxter discussed Clarke's role as a science communicator, not forgetting his significant presence as a public figure for more than fifty years. Baxter talked about the influence of Clarke's essays on him as a young writer, and about Clarke's appearances in the media, as well as reminiscing about his own subsequent conversations with Clarke. After a day of

discussing the meanings of Clarke's writings, it was very timely to be reminded of the warmth and generosity of Clarke the man.

Andrew M. Butler and Paul March-Russell organized a most enjoyable conference, assembling a group of excellent papers and providing a forum for stimulating discussion. Reluctantly, one by one, we vanished into the freezing night, hoping indeed that the glaciers had not yet returned.

(Un)Ethical Futures: Utopias, Dystopias and Science Fiction, Monash University, 16-18 December 2017

Reviewed by Eloise Faichney and Laura-Jane Maher (Monash University)

(Un)Ethical Futures was a collaboration between postgraduate students from Monash University, Australia, Warwick University and the journal *Colloquy*. Inspired by mutual research interests, the conference was funded by the Monash Warwick Alliance, a partnership between the two universities which creates international opportunities for staff and students. The gathering focused on the ethical impetus underpinning creative representations of utopia and dystopia, both of which had been explored at previous conferences at Monash and Warwick (see 'SF/F Now' in *Foundation* 119). Pre-conference building activities for graduate students included a yoga session, an article writing workshop, a panel of editors from various Monash publications, and the launch of issue 34 of *Colloquy*. These events served to provide a creative as well as critical learning experiences for the graduate attendees.

The conference opened with a discussion panel comprising the three keynote speakers: Jacqueline Dutton, Nick Lawrence and Andrew Milner. Milner gave an overview of Australian utopian and dystopian literatures. He presented Alexis Wright's 2013 eco-dystopia, *The Swan Book*, as an Indigenous Australian critique of post-1788 Anglocene utopias: i.e. that Australia (a product of invasion and colonization) *is* dystopian for Indigenous Australians. Dutton explored utopia through gastronomic metaphors, describing utopian writing as a type of pie, 'something sweet that we all desire'. She argued that utopian and dystopian narratives feature standardized 'recipes' that were established in early modern Europe, and that such literatures are subsequently consumed by the inheritors of this culture. Like Milner, she identified the marginalization of non-Western engagements with the genres and asked how Western readers can recognize utopias in other cultural traditions. Lawrence built upon Dutton's argument, asserting that we need a global angle that eschews the 'Hollywood imaginary' in order to create a template for understanding the production of utopia and

dystopia. He argued that we need to revisit dystopia through non-Western narratives in order to avoid catastrophism across the political spectrum. Milner, Dutton and Lawrence concurred that the serious ethical concerns explored in contemporary dystopian literature include climate change, colonization and economic collapse.

The first day focused on critical engagements with utopias and dystopias. Artem Zubov considered Yevgeny Zamyatin's *We* (1921) as an exercise in social extrapolation, inspired by Zamyatin's critical reading of the work of H.G. Wells. Conference organizer and co-editor-in-chief of *Colloquy,* Zachary Kendel, drew on Emmanuel Levinas' ideas of alterity to analyse the ethical frameworks of *We* and Isaac Asimov's *Foundation* trilogy (1951–3). Kendal discussed Asimov's tendency to inadvertently argue for an erasure of difference and totalitarian integration of humankind. In contrast, Levinas' submission to the Other is represented in Zamyatin's novel as a disruption of the dystopian impulse towards totalitarianism. Kendel's colleague, Aisling Smith, presented an engaging evaluation of the dystopian in David Foster Wallace's *Infinite Jest* (1996) by focusing upon its representation through technological modes of communication. Smith considered the ways in which Wallace predicted platforms such as Skype and Snapchat at the expense of face-to-face encounters. This isolation, Smith argued, is the ultimate dystopian state and Wallace's diagnosis of modern culture.

There was also a focus on depictions of gender in relation to utopian literature: Mia Goodwin considered Mme d'Aulnoy's 'Island of Happiness' as a critique of sixteenth century French gender norms, and Anne-Maree Wicks brought a similar critique to the late twentieth century with her consideration of Angela Carter's destabilization of the phallogocentric in New Weird fiction. Sreejta Paul focused on Begum Rokeya's critique of nineteenth century Bengali society in 'Sultana's Dream' (1908) and 'Padmarag' (1922). Likewise, Lara Chokesy gave a stand-out paper that addressed female collectivity as a strategy of de-colonial praxis. She identified the ways in which the assumed permeability of bodies is socialized as female, and the violence of this permeability is woven through the creation of de-colonial spaces.

Selen Erdoğan continued the exploration of violence and solidarity. She centred her discussion on Bilge Karasu's *The Night* (1985), written as a response to the 1980 Turkish *coup d'état*. Erdoğan utilized a psychoanalytic reading to argue that the impetus to violence is interrupted through writing. Following this theme of dystopian texts that engage with real-world politics, Philip Braithwaite presented a fascinating analysis of 'the darkest science fiction series ever to appear on television': *Blake's 7* (1978–81). Braithwaite argued that the television show responded to and anticipated the tropes of Thatcherism through a new-

found emphasis on Machiavellianism, individualism and authoritarianism.

The theme of decolonization in utopian and dystopian literature was revisited on the second day by Emilie Collyer, Ellen Rees and Tess Barber. Collyer eloquently reconstructed the invasion and colonization of Australia as a dystopian project, and asked how we can imagine a future for Australia that involves different power structures between Indigenous and non-Indigenous people. Rees considered the parallels between the environment and women's agency. While she primarily focussed on the film *Mad Max: Fury Road* and the novel *The Natural Way of Things* by Charlotte Wood (both 2015), Rees also reflected on the regulation and detention of marginalized bodies in the Australian television show *Cleverman* (2016). Barber brought both these discussions together in her discussion of Greg Egan's *Diaspora* (1997) and Ellen Van Neerven's *Heat and Light* (2013). She argued that these texts demonstrate that, by activating a call to ethical engagements between the human and the non-human subject, the 'subjectifying' of landscape offers a means of resisting the colonizing Anthropocene.

A number of papers also addressed the impact of capitalism on the landscape. In a lively and passionate presentation, Natasha Bondre from discussed the 'Post-Oil Zombie Apocalypse' in Junot Diaz's short story, 'Monstro' (2012). Bondre discussed Haiti, the story's setting, as a neo-colonial experiment and the Haitian tradition of the zombie as a product of slavery, which includes the 'sugar zombie', the more recent 'petro-zombie' as a result of capitalism centred upon the economics of petroleum, and the 'zombie stage of capitalism'. Bondre discussed Haiti as part of a larger pattern of global inequality and connected Diaz's story to the frameworks of eco-criticism and disaster studies. Demet Intepe drew on the writing of Spokane-Coeur d'Alene-American novelist, Sherman Alexie, to critique green capitalism, particularly in relation to an ongoing colonialist project that disenfranchises First Nations peoples in the name of ecological preservation, while Stephanie Lai provided valuable insight into the impact that climate change will have on the provision of health services. Concerns about climate change and healthcare were reiterated in an engaging session based around the conference theme of ecology. Director of the Council of Academic Public Health Institutions Australia, Devin C. Bowles, presented a striking and bleak snapshot of climate change. Bowles argued that despite the burgeoning genre of cli-fi, deeper ethical engagement is required for effective mitigation of the threats and challenges posed by climate change. Bowles had a little help in the form of a co-presenter: his three-year old daughter who, as Bowles pointed out, represents the generation who will be faced with these imminent consequences.

The second day of the conference included a creative stream for writers

to share their fiction. Else Fitzgerald shared two short stories, 'Nearly Curtains', a haunting vision of pre-flood Melbourne, and 'Fellody', an exploration of transhumanism in post-apocalyptic Western Australia. Susan Heffernan read from her dystopian novella, *A Bitter Mist,* in which creativity is a sign of deviance and artists are regulated to an underclass called 'Invalids'. Timothy Wong's 'The Forgotten Beauty' drew the audience into a clever and humorous metafictional future in which Aurora awakes from a millennia-long sleep to write a book of medieval fairy tales from her past. Steven Gay read from his novel *The Callista Agreement*, in which an alien race keeps humans – unable to communicate with their captors and considered non-sentient – as pets. Lastly, Katie Paine presented vignettes from an evocative work, *An Ersatz Eye*. Novelist Meg Mundell led a workshop in which she guided the attendees through the process of creating three layers of world-building in a dystopian narrative: Macro (wider world), Local (daily world) and Human (inner world). Mundell revealed the tendency of dystopias to amplify uneasy truths of contemporary life as central to its narrative power, holding up a sinister 'dark mirror' to our ordinary lives. Through a series of writing periods and discussion, participants shared and critiqued the short pieces created during the workshop.

Of the three keynotes, Milner began the conference with his presentation in which he used 'eutopia' (a practical aspiration of the ideal place) in contrast to dystopia to define the five measures of formal utopianism: the classical eutopia, the critical eutopia, the classical dystopia, the critical dystopia, and the fiction set in 'non-utopia'. Milner also laid out the six variants of climate response in fiction: denial; mitigation (including climate engineering); positive adaptation; negative adaptation; deep ecological anti-humanism; and pessimistic fatalism. He used this typology to analyse a selection of literary and popular climate fiction novels by Brian Aldiss, Margaret Atwood, Liu Cixin, Kim Stanley Robinson, Jeanette Winterson and Alexis Wright. Milner argued that hope for a eutopos might actually arise through responses to climate change: that political and economic systems are too ideologically entrenched for most citizens to resist and therefore the motivation for change must be environmental.

Dutton delivered the second keynote in which she presented an overview of futuristic fiction in France, from Louis-Sebastien Mercier's *The Year 2440: A Dream If Ever There Was One* (1771) to Michel Houellebecq's *Submission* (2015). Dutton focused on the latter text and *2084* by Boualem Sansal (2015) in a discussion of French secularism and its influence on futuristic re-imaginings that have turned 'The City of Light' into a 'mostly nightmarish city of dark'. She couched this in a detailed history of secularism as a product of the Enlightenment, and asked whether secular ethics can accommodate positive utopian futures. Dutton concluded that French futuristic fictions are facilitating a new discourse

for religion.

Finally, Lawrence's keynote laid out a picture of the two current golden ages: that of crisis theory and its mirroring in dystopian fiction. Lawrence explored both the literary and theoretical drive to engage with world-ecological and world-economic crises. He noted that 'post-capitalism' is the name of an absence rather than a positive vision, and wryly observed that, given that capitalism does not have the drive to be anything but itself, a lot of profit can be extracted from disaster. He concluded that an environmental threat is not enough to facilitate utopianism, that a radical reimagining of economic frames is also necessary. Ultimately, Lawrence delivered an overview of the 'resources of hope' that activists, theorists and writers can engage with in the face of such global crises.

The conference succeeded in bringing together makers and disseminators of knowledge from across the creative and critical spectrum. It was a richly interdisciplinary event that invited attendees to consider their own agency in advocating for the world in which they would like to live.

Book Reviews

Darko Suvin, *Metamorphoses of Science Fiction*, ed. Gerry Canavan (Peter Lang, 2016, 466pp, £43.21)

Reviewed by Andrew M. Butler (Canterbury Christ Church University)

There are a host of books that I keep to hand when writing about science fiction: John Clute and Peter Nicholls's *Encyclopedia of Science Fiction* (although now I use the online edition); Brian Aldiss's *Billion Year Spree* (despite the now thirty-year-old update); Tom Shippey's collection *Fictional Worlds*; and a battered paperback edition of Darko Suvin's *Metamorphoses of Science Fiction*. The latter has been out of print since the 1980s, and Peter Lang are to be commended for publishing an expanded edition of this essential classic that every sf scholar must read. And yet…

I'm not sure how *useful* it really is.

In going back to the volume, the key chapters are in the 'Poetics' section: 'Estrangement and Cognition' and 'SF and the Novum'. In these essays, Suvin borrows terminology from Bertolt Brecht and Ernst Bloch and gives us a means of defining and discussing science fiction. Suvin argues:

> *SF is, then, a literary genre whose necessary and sufficient conditions are the presence and interaction of estrangement and cognition, and whose main formal device is an imaginative framework alternative to the author's empirical environment.* (italics in original)

The key inspiration for Suvin lies in Brecht's *Life of Galileo* (1938), where the astronomer observes the swinging of a chandelier and deduces from this the mechanics of the pendulum swing. On the one hand, we have the moment of estrangement or alienation, which Brecht might have taken from Viktor Shklovsky's *ostranenie* (defamiliarization), in which the world is seen anew. In practice though, in sf, the everyday becomes novel whilst the exotic is taken for granted. On the other hand, we have the processes of cognition, understanding, grasping, predicting, extrapolating. This is more than just science although logic and the scientific method are implicated. The presence and interaction of both factors allows Suvin to distinguish sf from realism, myth, folktales, fairy tales, fantasy, horror, weird fiction, pastoral and other genres; potentially their quality

allows us to make a value judgement of how good a particular work is. By distancing their fiction from the here and/or now, the authors offer us a mirror of ourselves: 'the mirror is not only a reflecting one, it is also a transforming one, virgin womb and alchemical dynamo: the mirror is a crucible.' Science fiction allows us to think about our world and its underlying socio-economic structures, and to envisage how it could be changed.

The formal trigger for cognitive estrangement is 'the presence of a narrative novum [...] significantly different from what is the norm in "naturalistic" or empiricist fiction.' This term is borrowed from Bloch's *Principle of Hope* (1954–1959) and is in Suvin the semantic unit of novelty – a device, an identity, a relationship, a form of time or space – that distinguishes the diegetic world from the empirical one, or the textual from the extra-textual, and drives the narrative. The novum must be 'validated by the post-Cartesian or post-Baconian scientific *method*.' Again, this allows sf to be distinguished from 'naturalistic fiction [which] does not require scientific explanation, [and] fantasy [which] does not allow it'. It also provides a critical yardstick dependent on the rigour of the novum's validation – Suvin dismisses Robert Louis Stevenson's *The Strange Case of Dr Jekyll and Mr Hyde* (1886) because of the hand-waving about the potion and the subsequent transformations without it. If the author pursues the analogy at the expense of scientific method, it is to be regarded as poor sf or dismissed as 'science-fantasy'.

In the two intervening chapters, Suvin explores various kinds of utopia and attempts to delineate sf from other genres. The nature of such an endeavour seems inevitably to try to lasso together the corpus of literature that the critic wants to admit to and exclude those that they do not. I use the word 'literature' because, apart from a passing reference to Stanley Kubrick's *2001: A Space Odyssey* (1968), Suvin only considers prose fiction. Does cognitive estrangement pertain to film, television, comics, poetry, painting, sculpture, games, music, fashion, advertising, and so forth? Suvin's corpus (might we call it a canon?) includes More, Lucian, Cyrano, Swift, Verne, Wells, Čapek, Shelley, Zamyatin, Twain and Morris, among others, and the final three quarters of the original book discusses that oeuvre, including a provocative reading of William Blake and a chapter on Russian sf that is the book's major contribution to non-anglophone fiction. *The Time Machine* (1895) receives particularly close attention, marking a shift from 'older' to 'newer' sf.

If Wells, Zamyatin, Čapek and the Russians are 'newer', where does this leave the Gernsback-Campbell continuum, Clute's Agenda Sf and the New Wave – let alone the cyberpunk, biopunk, steampunk and so forth which have emerged since 1979? Suvin writes of the 'the 5 to 10 per cent of SF that is aesthetically significant: in our days the writings of Lem, Le Guin, Dick, Disch,

Delany, the Strugatsky brothers, Jeury, Aldiss, Ballard, and others.' This seems like a rationalized version of Sturgeon's Law. In practice, the first edition does little more than mention these authors – Jeury does not even make the index. It needs to be said that 1979 was a very different time from 2018: a historical sweep that effectively stops with Wells had a kind of respectability in an era when literature degrees still stereotypically surveyed *Beowulf* to Virginia Woolf, Dead White European or North American Males and a few token spinsters.

F.R. Leavis's 'Great Tradition' had begun to loosen its grip in the late 1960s, in part due to student unrest and agitation, with some redressing of the balance toward women authors and writers of colour. Scanning through Suvin's index, the focus is overwhelmingly male – aside from Corelli, Lane, Le Guin, Sand, Shelley, Wollstonecraft and Russ as critic. The focus on 'aesthetically significant' does suggest an Arnoldian best that has been thought or said in the world. The rest is merely stuff liked by young people. I think it is also necessary to use Suvin's ideas and tools to appreciate that other ninety per cent. At around the time that Suvin was assembling the chapters which make up this books, critics elsewhere were beginning to think about how individuals appropriate and subvert popular culture for resistance or evasion of the dominant hegemony. There are appreciations beyond the straightforwardly aesthetic or political, even if the broadly alternative cultures' tap dance with capitalism does not break with it entirely.

Gerry Canavan's introduction to the second edition borrows Mark Bould's coinage in *Red Planets* (2009) of 'the Suvin Event': not only the appearance of the individual speeches and papers as sf's theoretical Big Bang but also the beginning of an ongoing debate around those ideas. The late 1960s and '70s was the era of the founding of the SFRA, *Foundation* (which published Suvin's 'Cognition and Estrangement: An Approach to SF Poetics' in 1972), *Science Fiction Studies* and the publication of Aldiss's *Billion Year Spree* (1973). Science fiction was slowly being taken seriously. Canavan traces the Suvin Event through the writings of Mark Bould, Istvan Csicsery-Ronay, Carl Freedman, David Higgins, Fredric Jameson, Rob Latham, China Miéville, Tom Moylan, John Rieder, Adam Roberts and Patricia Kerslake. Kerslake aside, it is a curiously male list. Inevitably their subject matter is skewed towards class, with an intersection with ethnicity in colonialism, postcolonialism and Afrofuturism. The situating of discourse around gender and cognitive estrangement is absent – although one route into thinking about this might be to go via Sarah Lefanu's *In the Chinks of the World Machine* (1988) to Shulamith Firestone's intersectional *The Dialectics of Sex* (1970) which triangulates a discussion of women within capitalism and ethnicity.

Canavan argues that 'Criticism of Suvin's method is […] in many cases

precisely a dispute about the consequences of his strategy of hierarchization' of texts which resist the politics of liberalism (and, more recently, neoliberalism). The utopian tradition, the loosely defined New Wave and the then Soviet bloc are sensible places to look for such oppositional work. I do recognize the frustration of sf being dismissed from the outside because of the rubbish – Suvin seems to do this from inside – but there are problems with a top-down definition. Equally, I don't think the issue of canon is at the heart of the counter-readings to be found in the criticism of, say, Samuel R. Delany and Paul Kincaid, which locate sf as either a reading strategy or a language game.

In the first of the extra chapters, 'Science Fiction, Metaphor, Parable, and Chronotope (with the Bad Conscience of Reaganism)', dating originally from 1984 but subsequently revised in 1986, 1999 and 2015, Suvin draws on I.A. Richards's distinction in his discussion of metaphor between the vehicle and the tenor. Suvin isolates three characteristics: the metaphor is congruent/cohesive; complex/rich; and a novum. This is probably closer to Shklovsky's notion of estrangement than to Brecht's and seems to suggest that all literary texts contain novums. Contrary to Delany's literalizing of metaphor, Suvin argues that the distinctiveness of sf comes from the validating cognitive framework in which a narrative is necessary to support and tease out the metaphor.

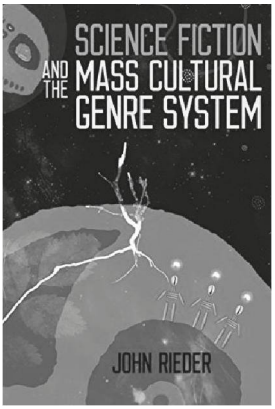
Having criticized fantasy, and even more so science fantasy, in the original *Metamorphoses*, Suvin was later compelled to take the genre more seriously. In 'Considering the Sense of "Fantasy" or "Fantastic Fiction": An Effusion*' (2000), we are told that Stephen King had sold 120 million books by 1996 and that, according to the 2016 preface to the chapter, that figure had reached 350 million by 2006. No figure is offered for 2016, nor is there a sense that we ought to take seriously what that number of readers are consuming or to get beyond ideological readings. Suvin seems more concerned to note that Karl Marx's writings are full of vampires, spectres and so forth, and that it is okay to write about Franz Kafka. What's sauce for Karl… Fantasy, therefore, can be read in terms of class relations and economics, although Suvin clearly still finds it wanting. Much heroic fantasy offers 'on the one hand *a condensed reproduction and reaffirmation of cruelties from the readers' alienated reality*, and on the other hand *a compensatory glimpse of use-value qualities which that reality lacked*' (italics in original). This would seem to echo the Frankfurt School readings of Donald Duck and Mickey Mouse as cartoons from which viewers learned to take their real-world thrashings. But representation of supposed fascist societies is not endorsement and some wishes need not necessarily be fulfilled. A lot of readers would agree that the protagonists of the *Twilight* novels are not progressive role models, and they have a more complex reaction to the metaphors and parables.

The final chapter is the newest and shortest addition, a two thousand-word summation of Suvin's career from the special science fiction issue of *PMLA*, co-edited by Marleen Barr and Carl Freedman. At the start there is a brief exploration of the state of knowledge, which would have benefited from an engagement with Jean-François Lyotard's *The Postmodern Condition* (1979), even if it were to be dismissed as neo-conservative. Suvin notes how academics are the greatest producers of knowledge, but without any control over the institutions within which this is produced nor much influence over the uses to which this can be put. As Antonio Gramsci argued eighty years ago, the critic can engage with and in society and resist the production of pliant workers from their undergraduate ranks. Suvin notes the strength of feminist critics in questioning the bourgeois status quo – with a nod to the fiction of Marge Piercy, Ursula Le Guin and Joanna Russ. He closes with mention of the utopian writings of Kim Stanley Robinson, whose environmentalism feels more urgent than ever. But to track down what Suvin actually *wrote* about such writers and other utopians/dystopians is to engage with the behemoth of the academic publishing machine: journals hidden behind the paywalls of Taylor and Francis, Elsevier, JSTOR and so on, and small print runs of hideously expensive hardbacks. Meanwhile, class-based readings, feminist readings, LGBTQI+ readings, environmental readings, (post)imperial readings, ethnic readings and so on – including, vitally, intersectional readings and examinations of actual readers – all offer space for engaging with and challenging the 'new epistemology of the Powers-That-Be.'

The volume, finally, is frustrating in a good way. Much of it agonizes over whether these texts are *any good* – a cringe that I suspect does not detain critics in other genres and I'm not sure finally makes any difference. It is a relic of a time when sf was not taken seriously – although the original book did as much as any to challenge that. The price to be paid is having to cope with stray phrases in Latin, French and other languages, and references in the form of footnotes that point to over twenty bibliographies at the end of the reprinted book and before the appended essays. Suvin's erudition cannot be faulted. Certainly the most cited author in the latter section is Suvin himself, and hopefully at some point all of this material will be collected into additional volumes.

Peter Lang has done a great job in bringing this book back into print, although at times I wished there was a firmer editorial hand. A few typographical errors have crept in – Mark Fisher, for example, doubles as Mark Fischer, I'm not sure what the asterisk appended to the essay (and its headers) on fantasy achieves and the same essay has a reference to 'Appendix One', which turns out to be the final chapter of his 'Positions and Presuppositions in Science Fiction' – indeed this seems to be 'Science Fiction, Metaphor, Parable, and Chronotope',

although these articles are labelled 'Additional Material' rather than appendices. I found myself mentally copyediting some of the new bibliographies. But what I take away from this essential book is not what to think about certain examples of science fiction, but ways of thinking about science fiction in an age of neoliberalism that sometimes almost makes one nostalgic for Reaganism.



John Rieder, *Science Fiction and the Mass Cultural Genre System* (Wesleyan University Press, 2017, 216 pp, £22.00)

Reviewed by Thomas Connolly (Maynooth University)

Those within science fiction studies who are tired of fielding questions concerning the legitimacy of the genre as an object of academic study will almost certainly welcome John Rieder's new book. Not only does Rieder thoroughly dispel any such doubts, he also stages a persuasive argument for genre fiction more broadly as a key site of cultural production in need of further study.

Rieder begins with the proposition that genre fiction has all too often been derided as literary fiction's embarrassing cousin, not least by the pioneering figure of sf studies, Darko Suvin. Yet genre fiction, Rieder argues, occupies a key place in the cultural consciousness, emerging directly from developments in publishing and distribution linked to the rise of mass culture in the late nineteenth century. This mass culture, whose primary mode of aesthetic expression was and is the advertisement, became one of the most influential areas of cultural production in the twentieth century, generating its own set of generic categories that arise in response to commercial demands for 'habitual consumers'. The genres native to what Rieder terms this 'mass cultural genre system', such as detective fiction, the western, horror, fantasy and sf, emerged 'organically', that is, they arose spontaneously as a 'cumulative effect of economic and ideological pressures on artistic production'. Rieder argues that an understanding of sf will remain incomplete as long as the impacts of mass culture's commercial and technological developments are neglected, while also suggesting that sf and related genres 'register [...] the traces of collective desire' latent within the practices and contradictions of the mass cultural milieu. His study thus comprises a significant intervention into the fields of genre theory, sf studies and cultural studies, and focuses on a neglected area of sf criticism, namely, sf's relationship to wider commercial practices.

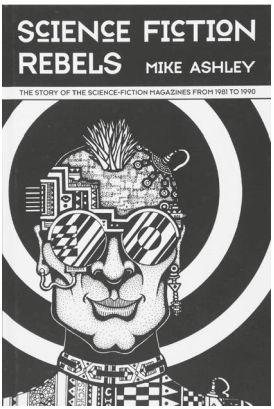
One of the key points informing Rieder's discussion is that the attempt to fold science fiction into the formal academic genre system, preserving only its most 'literary' examples as worthy of study and rejecting those (as Suvin terms them) 'regression-to-womb stage' texts that appeared in the sf magazines, simply reinforces the division between 'high' and 'low' literary texts that heretofore divided the realm of mass cultural works from more avant-garde literature. To combat this elitist and class-determined view of literary value and non-value, Rieder instead proposes to examine genres from a historical, rather than formalist, perspective. This entails a definition of sf that views it not as a set of formal characteristics, but rather as a historically contingent term deployed at the levels of textual production, distribution and reception. Thus, Rieder argues, 'the labeling' of a text as sf 'often serves to position the text within the field of choices offered by the contemporary genre system in quite material ways: how it will be printed, where it will be sold, by whom it is most likely to be read'. The key question, then, is not, 'What is SF?', but rather, 'What has SF meant to different readers at different times?' This argument, part of which previously appeared as an article in *Science Fiction Studies* (2010: 37.2), constitutes Chapters 2 and 3.

The remainder of the volume then traces this argument in relation to a number of sf works. In Chapter 4, Rieder examines Mary Shelley's *Frankenstein* (1818) and the April 1926 issue of Hugo Gernsback's *Amazing Stories*, calling into question their canonical status as originating texts of sf. Rieder's proposition is that texts can never 'create' genres: 'A genre cannot have an original member, because genres consist of relations between texts, so that texts do not belong to genres but rather use them'. Hence Rieder's examination of the reception history of *Frankenstein* throughout the nineteenth century argues that its status as the ur-text of sf stems, more than anything, from its rich generic complexity. This complexity opens up the text to 'recoding' within multiple systems of generic conventions, including Gothic, romance and (much later) sf. Gernsback's *Amazing Stories*, meanwhile, did not 'create' science fiction so much as apply a label to an existing yet disparate set of generic conventions centred on technological extrapolation and non-realist narratives. In this way, Rieder argues, sf is not 'formed' by specific texts, but rather emerges from specific cultural and commercial conditions that retrospectively incorporate previous texts into the newly established paradigm of generic conventions.

In Chapter 4, Rieder traces the impact of his generic framework on the works of one specific writer, Philip K. Dick, arguing that Dick's liminal status between the pulp and realist modes allows him to critique both literary modes. Dick's works, which lie at the borders of the two genre systems that Rieder identifies, academic and mass cultural, call into question the normative realities generated by commercial media and broadcasting, and emphasize

the disjunction that can arise between private and public discourses of reality. Chapters 5 and 6, meanwhile, focus on two 'communities of practice', that is, fluid and heterogeneous audiences who deploy specific yet mutable classifications of texts as their object of engagement and study. Rieder here looks into several narrowly defined communities alongside their texts – horror films, Afrofuturist writers, the James Tiptree Jr. Award anthologies – in order to examine the ways in which sf serves as a mass cultural and capital-intensive commodity *and* offers key sites of resistance to commercial and cultural hegemonies. The conclusion offers a reformulated periodization of sf, dividing the history of the genre into three distinct periods: the formation period from the late nineteenth century to the 1920s; sf's 'subcultural' period, during which it existed predominantly as a niche market in the sf magazines; and the period of mass cultural dominance following the release of George Lucas' *Star Wars: A New Hope* (1977), during which the tension between mass cultural and more anti-hegemonic subcultural sf has been one of the genre's most important and fruitful characteristics.

Rieder's study thus offers a highly informed engagement with some neglected aspects of sf studies. Those familiar with *Colonialism and the Emergence of Science Fiction* (2008) will already be aware of Rieder's rich analytical style, his seemingly effortless ability to express complex critical insights in a lucid and engaging manner. Every sentence here rewards rereading, and his central thesis – that sf comprises not merely a way of writing but also a way of reading, distributing and understanding texts – deserves to be taken very seriously. Rieder's rereading of the history of sf, his excavation of the diverse significations that have historically been attached to the term, and his insistence that sf's mass cultural genealogy is of key importance in understanding the formal and narrative traits of the sf megatext, make *Science Fiction and the Mass Cultural Genre System* a highly important work of sf scholarship.



Mike Ashley, *Science Fiction Rebels: The Story of the Science-Fiction Magazines from 1981 to 1990* (Liverpool University Press, 2016, 494 pp, £75.00)

Reviewed by Andy Hedgecock

Mike Ashley's earliest non-fiction was published while the Beatles were working on *Sergeant Pepper's Lonely Hearts Club Band*. He has been a highly respected anthologist, bibliographer and critical biographer for more than forty years: his oeuvre of more than 100 books as writer and editor is characterized by

an accessible and entertaining style, a genuine relish for his subject matter and sedulous research. When I interviewed him nearly twenty years ago he revealed his enthusiasm for research began in childhood. His father tended to recite unattributed science fiction stories during long walks and bus trips, and whenever the young Ashley enjoyed a story he relentlessly tracked down the published source material.

This zealous scholarship is evident throughout *Science Fiction Rebels*. The book includes a chronology listing the publication dates of key stories, editorial appointments, magazine launches and authorial debuts. Then there are tables showing award nominations, circulation figures, issues per publication and – ominously for anyone who has funded a magazine – the survival rates for titles year-by-year. There are directories of editors, publishers and cover artists, and an issue-by-issue publication checklist for all printed English-language sf magazines. This is an expensive volume but it is an essential tool for serious research into sf publishing in the late twentieth century.

Science Fiction Rebels is a valuable work of reference, but much more than that. In *Starlight Man* (2001), his biography of Algernon Blackwood, Ashley took readers on a mystery tour in which Blackwood's experiences, concerns and motivations unfolded to yield a more informed understanding of the author's work. He pulls off a similar trick here, using anecdotal evidence and flashes of biographical detail to paint a vivid picture of a transitional period in science fiction writing and publishing.

Ashley's thesis is that the 1980s was a decade of three revolutions: each chapter of the book covers a revolution or an 'interlude', in which developments in related genres are considered. It begins by establishing the situation at the start of the decade, when there was an increasingly fragmented market for sf in the aftermath of the New Wave. Horror and fantasy flourished but the sales of sf magazines shrank. For Ashley, the flame was kept burning by *The Magazine of Fantasy & Science Fiction* (*F&SF*) produced 'on a shoestring' out of editor Ed Ferman's living room. Ashley's admiration for idiosyncratic magazines, and their irrationally optimistic editors, springs from every page, but each discussion of a key publication includes a cool assessment of the factors underpinning its audience response, critical reception and longevity. For example, *F&SF* was based on principles of diversity of content and familiarity of contributor: Ferman accepted hard sf, purely supernatural stories, surrealism and historical fantasy. And he relied on a panel of familiar 'names'. *F&SF* took the occasional risk, but from a platform of meeting reader expectations most of the time. According to Ashley, the magazine provided the bedrock for sf experimentation and regeneration in the 1980s, but the innovative work it facilitated tended to appeared in rival publications.

The first revolution Ashley outlines is cyberpunk. He focuses on the role of Shawna McCarthy and, later, Gardner Dozois in reinvigorating *Asimov's Science Fiction Magazine*. McCarthy and Dozois expanded *Asimov's* market to include all types of speculative story, and they responded directly to the new technologies and terminologies of the 1980s. At the same time, Ellen Datlow was publishing the likes of William Gibson at *Omni*; 'Burning Chrome' (1982) is believed to have reached an audience of two million. *Omni* also ran stories by Pat Cadigan, who brought a fresh eye to issues of technology and identity. Ashley recognizes the complex range of influences acting on the cyberpunk revolution – an ageing sf audience, the influence of other media and a heightened awareness of the potential of digital technologies, but is clear in establishing the important role individual editors played in catalysing change. As a literary historian he is an interactionist: his interpretation of trends and events combines the 'great person' model and a sociological perspective.

The next chapter is an 'interlude' in which Ashley considers developments in horror and dark fantasy. *Twilight Zone* was rare among genre magazines at the time in that it had a majority of female readers. At the same time Datlow's *Omni*, which published a high proportion of horror and transcendental science stories, was developing a more mixed readership. Ashley suggests this highlights the fact that apparently disparate subgenres – and audiences – can have concealed points of contact. Ashley also considers the merger of traditional and contemporary horror in magazines such as *Weird Tales* and *The Silver Web*. He sees, in the networks developing among small press editors in the dark fantasy field, the beginnings of an 'informal web' that would flourish when the internet became widely accessible in the middle of the next decade.

For the second revolution of the 1980s Ashley crosses the Atlantic to consider the resurgence of British hard sf. At the heart of this chapter is the launch of *Interzone* by an eight-person collective led by David Pringle and Malcolm Edwards, and including John Clute, Alan Dorey, Colin Greenland, Graham James, Roz Kaveney and Simon Ounsley. Having been part of a five-person panel assessing stories for *Interzone* twenty-five years after its launch, I am fascinated by the complexities of the pre-internet selection process. The system, in which manuscripts were posted from one panel member to the next, must have benefitted the Post Office if not the psychological well-being of the editors. This kind of detail is one of Ashley's strengths as a literary historian: it entertains and provides genuine insight into the challenges and joys of collaboration. In its first decade *Interzone* featured Stephen Baxter, Eric Brown, Alastair Reynolds, Ian Watson, Brian Stableford and – with his first published story – Charles Stross. *Interzone*, says Ashley, was pivotal in shifting the genre towards a new form of radical hard sf. The magazine's failure to attract female

writers was a disappointment, but its overall influence was apparent from the number of new writers securing book deals.

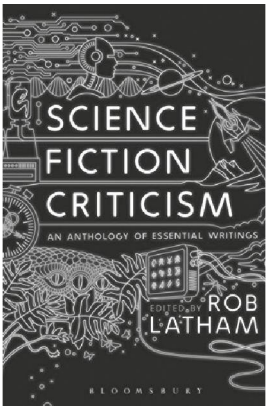
Interzone wasn't the only star in the firmament of British sf in the 1980s. Ashley also highlights the originality and quality of Chris Reed's *Back Brain Recluse*, which published established mavericks such as Michael Moorcock, together with distinctive new writers like Nicholas Royle. The story of *BBR*'s decline from a confident and challenging magazine to a still-excellent but commercially damaged publication is a sad and fascinating one for those of us who cherish memories of its strange brilliance. Ashley goes on to catalogue English language magazines from Éire (*Albedo One*), Canada (*Solaris* and *Canadian Science Fiction & Fantasy*), Australia (*Omega*), Singapore (*Tesseract*) and South Africa (*Probe*).

The third revolution of the 1980s was the 'SF Underground': while *Omni*, *Asimov's* and *Interzone* embraced the shock of the new hard sf, there were writers and editors who preferred a wider interpretation of the genre. Scott Edelman's *Last Wave* was described as a 'speculative fiction magazine', drawing on the experiments of the New Wave. Contributors included Thomas M. Disch, John Sladek, Steve Rasnic Tem, Avram Davidson and Jessica Amanda Salmonson. The magazine, which described itself as 'a vehicle for the unconventional', ran for five issues. Ashley's contention is that today it would find an online audience and enjoy a longer run. Dean Wesley Smith's *Pulphouse* was another publication that swam against the tide in the 1980s, gaining a reputation for 'bravely experimental' tales, including several with blatantly sexual motifs such as Jonathan Lethem's 'A Wish' (1989) and Nina Kiriki Hoffman's 'Savage Breasts' (1988). In assessing why a magazine acclaimed by highly regarded contributors won no award nominations, Ashley reflects on the separation of critical acclaim and popular appeal, but is even-handed in his critique of the sf underground of the 1980s. He describes it as the 'lifeblood' of the genre, and points out that without the radical small press we might never have had the opportunity to read Lethem, Hoffman, Jeff VanderMeer, Paul Di Filippo and Don Webb.

The book includes surveys of 'non-revolutionary' sf publications and magazines featuring work in languages other than English. It is here that Ashley excels in linking social and political developments to literary change. We are told, for example, that the Bulgarian magazine *FEP* lost sales as the country moved towards democracy: the lifting of a ban on private publishing houses in 1990 meant a journal funded by the *Journal of National Youth* lost traction in spite of its cutting-edge subject matter and satirical content.

Science Fiction Rebels (the final word could be a verb or a noun) is the fourth volume in Ashley's series on the history of the science fiction magazine. It

is essential reading for anyone needing to make sense of a decade of competing obsessions and styles, complex emergent technologies and mounting financial pressures on publishers. Ashley has produced a fascinating chronicle, a piece of thorough and dazzling scholarship and an invaluable work of reference.



Rob Latham, ed. *Science Fiction Criticism* (Bloomsbury Academic, 2017, 582pp, £28.99)

Reviewed by Paul Kincaid

This is a book of disagreements. Or rather, since few of the essays included respond to, or even mention, any of the other essays here, it might be better to say it is a book of cross-purposes. Everyone is talking about science fiction; but no one is talking about the same science fiction.

In the crudest terms, as Robert Heinlein phrases it in 'On the Writing of Speculative Fiction', there is a division in sf between 'the gadget story and the human-interest story.' In broader terms it might be presented as a division between *science* fiction and science *fiction*; between stories in which our attention is focused upon the ideas, the technology, the novum, and stories in which our attention is focused upon the way characters cope with the changes initiated by such novelties. Heinlein himself insists, more than once, that his preference as both reader and writer is for the human-interest story. But when he goes on to dictate, as the last and most emphatic of his conditions for the pure sf story, that 'no established fact shall be violated' and that 'violation of that last requirement gets me riled', he demonstrates that he really belongs in the former camp.

This division can be traced back to some of the earliest writings about science fiction. In his editorial introducing the first issue of *Amazing Stories*, Hugo Gernsback describes 'scientifiction' as intermingling 'scientific fact and prophetic vision', and makes great play of the notion that the stories would 'supply knowledge that we might not otherwise obtain'. It is a mechanistic focus, measuring the literature by its technological content and (supposedly) didactic purpose. In sharp contrast, H.G. Wells, in his preface to *The Scientific Romances*, dismisses the technological content of the stories as 'magic' and insists that 'the living interest lies in their non-fantastic elements and not in the invention itself. They are appeals for human sympathy [...] and the fantastic element, the strange property or the strange world, is used only to throw up and intensify our natural reactions of wonder, fear or perplexity.' In Heinlein's terms,

Gernsback is setting out the stall for gadget stories, while Wells is extolling the human-interest story.

Of course, this division is artificial. No work of sf is likely to be all of one or all of the other. Most are a combination of the two, somewhere along a very broad spectrum, and there are many other nuances that take us well outside this binary. Judith Merril, struggling to come to terms with the nuanced shape of sf in her essay 'What Do You Mean: Science? Fiction?', suggests a threefold division: teaching stories, preaching stories and speculative fiction 'whose objective is to explore, to discover, to *learn*.' The first two are overtly Gernsbackian in approach, and though she rather loads the dice in favour of speculative fiction, that '*learn*' sounds suspiciously like Gernsback's aim of supplying knowledge. So it comes as no surprise that, apart from an oddly lacklustre nod towards the New Wave, the exemplar she chooses for how speculative fiction could and should be done is John W. Campbell.

But this isn't really a division in science fiction so much as a division in the way we read, understand and comment upon sf. It is, therefore, a division in science fiction criticism. Rob Latham acknowledges as much in his introduction to the first part of this anthology, which takes an historical approach to the character and definition of sf, when he says that 'this contrast between SF as predictive and didactic on the one hand, fantastic and satirical on the other, runs through much of the criticism of the genre produced in the wake of Gernsback's and Wells's interventions.' In a footnote he even gives a nod to Brian Stableford's contention that this highlights the distinction between the British and American sf traditions, though he rather dismisses the notion. And yet I can't help feeling that, even as our views of sf have become steadily more nuanced, this basic distinction, between the mechanistic and the humane, the didactic and the satirical, and the science and the fiction, still pertains. Indeed, it is inherent in the whole question of whether sf is a distinctive literary form.

Whatever critics like Stableford may suggest, it is not as simple as saying that American sf is Gernsbackian while British sf is Wellsian. Yes, there are differences between the two traditions, but it is not this bald, and there are too many counterexamples of Wellsian American writers or Gernsbackian British writers to allow this to stand. However, there is certainly something technophiliac in the strands of sf that have led to such diverse aspects of the literature as hard sf, cyberpunk, military sf, and the aspirations of the Sad Puppies; just as there is something humanistic in the strands that have given us the New Wave, feminist sf, and the forays into sf of writers such as Margaret Atwood and Colson Whitehead. These differences don't all come down to the two approaches to science fiction adumbrated by Gernsback and Wells, but they are instructive, and they do continue to inform science fiction criticism.

In this first section, for instance, after the throat-clearing of Gernsback and Wells, there are two essays (Heinlein and Merril) that focus on Campbellian hard sf, and two (Bruce Sterling's preface to *Mirrorshades* and Veronica Hollinger's 'Cybernetic Deconstructions') that focus on cyberpunk. Both are technophile forms of the literature in which the idea, the prediction, the furniture take precedence. Other than some half-hearted references by Sterling and Merril, the intervening and inward-turning New Wave doesn't get the same attention (and indeed won't get the attention until much later in the book), so the sf we see being discussed, and the discussions that are being used to shape our understanding of what sf is, are in broad terms more Gernsbackian than Wellsian. Hollinger muddies the water somewhat by insisting on referring to Campbellian hard sf as humanist, by which I think she means that the characters in hard sf remain essentially unchanged from contemporary humanity, in contrast to cyberpunk which transforms human stock by biological, technological and evolutionary means. Ironically, such transformation means that cyberpunk is more concerned with the central humanist question of what it is to be human than hard sf, while on this metric Wells's *The Time Machine* would presumably count as anti-humanist.

Perhaps it is simply easier to separate science fiction from other literatures by concentrating on the costumes worn rather than the person inside the costume. After all, if we follow Wells's strictures, there really is very little that differentiates sf from fantasy or horror or mainstream. To concentrate on what is particular about science fiction, therefore, almost inevitably involves emphasizing the more Gernsbackian side of the literature. The question is: to what extent does that change the character of what we are looking at?

It is worth remembering that, when we consider sf, the only constant is inconstancy. The literature changes all the time, and so sf criticism must change also to keep up with the literary evolution. So it comes as no surprise, therefore, that when this division reappears, in Roger Luckhurst's 'The Many Deaths of Science Fiction', it has been radically transformed. At issue here, though not explicit, is the way the reinventions of sf criticism do not match the reinventions of sf itself, such that each turn of the wheel is greeted with proclamations of the death of science fiction. The division surfaces when Luckhurst quotes Darko Suvin proclaiming that 'all uses of SF as prophecy, futurology, program or anything else claiming ontological factuality for the SF image-clusters, are obscurantist and reactionary at the deepest level'. As Luckhurst points out, Suvin's aim here is to absorb sf into the mainstream, which Luckhurst reckons is the pot of gold at the end of the critical rainbow for a generation who approach science fiction through academia. But the only way to achieve that 'historical erasure of the boundary' is to deny as sf (or at least as sf worthy of study) the

whole Gernsbackian strand.

In other words, we are seeing here two diametrically opposite critical endeavours. The one wants to particularize what differentiates sf from other literatures, and hence tends to emphasize its predictive and technophiliac aspects; the other wants to merge science fiction into these other literatures, and hence tends to discount those same mechanistic characteristics. The problem is that both sides believe that, or at least behave as if, they are dealing in the same way with the same subject. Thus the conclusion that leaps out of John Rieder's excellent essay, 'On Defining SF, Or Not', is that there is no satisfactory way of defining science fiction since there is no satisfactory way of reaching agreement about the subject of our discussion.

The divisiveness illustrated by these essays on the character of sf continues into the next section of the book which consists of formal structural analysis of the literature. But again, the question arises: what is it that is being analysed? The most formalistic essays, Samuel R. Delany's 'About 5,750 words', Darko Suvin's "On the Poetics of the Science Fiction Genre' and Marc Angenot's 'The Absent Paradigm', all seek to separate science fiction in some way from realism. This may be Delany's linguistic division (and in broad terms, Damien Broderick's 'Reading SF as a Mega-Text' is an expansion of Delany's theme to the iconography of sf) or Suvin's estrangement or Angenot's semiotic practice, but the point they make is that there is something inherent in the structure of science fiction that is necessarily distinct from reality. In contrast, J.G. Ballard in 'Which Way to Inner Space?' demands a new sf to adequately respond to new realities. In other words, science fiction is seen as both necessarily and intimately connected to the real, and necessarily and decisively separated from the real. As Latham says in his introduction to this section, the essays by Delany, Suvin and Angenot represent 'three of the most powerful tools of formal analysis in the SF critical canon.' But we have to wonder whether their analysis would reveal as science fiction anything that Ballard would understand by the term, or even what each of them would agree on.

Of course, what Ballard is really doing is complaining that science fiction is popularly seen as a series of over-familiar tropes when it should be an exploration of what he calls 'inner space': 'Devices such as time travel and telepathy […] prevent [the writer] from using his imagination at all'. What Suvin is really doing is so defining sf as to say that most of what is popularly called science fiction isn't really sf at all, or at least isn't worthwhile sf: space opera retrogresses 'into fairytale' which is equivalent to 'committing creative suicide'. They are both engaged in much the same endeavour: narrowing the universe of discourse down to an elite body of work, which Sterling would later call 'the true quill', and which is all that deserves serious consideration as proper

science fiction. But Ballard's elite would be very different from Suvin's. Ballard and Suvin, therefore, point to different science fictions, in the same way that Delany's linguistic sf and Angenot's semantic sf both concern themselves with the words used to express sf yet point to different science fictions.

The final and longest piece in this second section, 'Time Travel and the Mechanics of Narrative' by David Wittenberg, looks at the way time devices in sf such as time machines or alternate histories, mirror narratological devices. It is an interesting piece, suggestive of the way that narratological devices determine the way that we read a fiction, and therefore by extension time travel implies a deterministic view of the universe. But suggestive as it is, it is a way of reading the literature that applies only to one relatively narrow part of the sf spectrum and would seem more naturally to belong in one of the later sections of the anthology.

Before then, however, there is another section that considers science fiction broadly, this time in political terms. When Suvin (as quoted by Luckhurst) describes the mechanistic, Gernsbackian approach to science fiction as reactionary, he was only expressing a more common point of view. In the 1930s, for instance, John B. Michel ('Mutation or Death!') decries the deeply conservative character of science fiction. Some thirty years later (Latham does not give the original date or publication details of any of the essays) Susan Sontag and Joanna Russ both make a similar protest. It is a theme that could be repeated up to and including the recent debates around the Sad Puppies, largely because science fiction, or at least one aspect of it, is indeed a deeply and inherently conservative literature. Pieces that consider this aspect of the literature tend to be polemical (Michel's speech, in the context of the contemporary rise of fascism, was a rousing call to arms), painting the literature in broad brushstrokes rather than fine detail, rarely citing let alone examining particular works. They also tend to be pieces that identify science fiction by its machinery; thus, for Russ, science fiction is essentially a catalogue comprising 'the fourth dimension, hyperspace (whatever that is), the colonization of other worlds, nuclear catastrophe, time travel (now out of fashion), interstellar exploration, mutated supermen, alien races, and so on.'

In contrast, those who take a more academic and particularly Marxist approach, concentrating on individual examples rather than science fiction *en masse*, tend to identify the literature as a vehicle for radical or utopian thought. Both Fredric Jameson and Carl Freedman reject the identification of sf with its paraphernalia – as Jameson says, 'we no longer entertain such visions of wonder-working, properly "S-F" futures of technological automation' – in favour of Suvin's formalist approach. Or perhaps we should say, Freedman's (slight) reconfiguring of Suvin's definition by which sf 'is to be understood not as a

pigeon-hole into which certain texts may be filed and certain others may not, but rather as an element or, still better, a tendency, which is active to a greater or lesser degree within a literary text which is itself conceptualized as a complexly structured whole.' The question of how we judge whether any given text 'tends' towards sf or not is, of course, moot but it permits the freedom we've already noticed in Suvin to consider certain works more science-fictional, or perhaps just more worthy of study as science fiction, than others. For example, *Star Wars*, a film that is difficult to fit within the Suvin definition of science fiction, is here described as one in which 'the SF tendency is visually strong but conceptually weak.' It is a way of shaping not the genre (if we choose to give it that name), but rather the way we look at it. To repeat a theme that seems to run throughout this book, I would suspect that the science fiction regarded narrowly and positively by Freedman would not necessarily match that seen broadly if negatively by Russ.

However, when the theoretical approach followed by Suvin, Jameson and Freedman among others is allied to a particular moral, social or philosophical standpoint, such as feminism or queer theory, we again get a sense of science fiction being hailed as different from other literatures. As Wendy Pearson puts it in 'Alien Cryptographies', science fiction is responsive to 'alternative subjectivity' because of its 'resistance to interpellation within the "mundane" field of literature.' Both Pearson's approach to science fiction as a revealing subject for queer theory and Lisa Yaszek's analysis in 'The Women History Doesn't See' follow more closely in the footsteps of Russ than the theoretical habits of Suvin and his heirs. This critical approach relies on the idea that sf is inherently different from other literatures, and focuses its study upon the nature of that difference.

By this point, criticism as such has metamorphosed into cultural analysis; that is, the essays are less about what science fiction is and more about how science fiction can be used to reflect upon some theory or mode of being or aspect of reality. Nevertheless, subtle variations on the distinction I have crudely characterized as Gernsbackian versus Wellsian continue to be apparent in the final two sections of the book, which both focus in different ways upon science fiction's concern with the other. Mary Shelley's introduction to *Frankenstein* and Philip K. Dick's 'The Android and the Human' both look upon the making of the other in terms of creating life. As Dick puts it, 'our man-made world of machines, artificial constructs' is 'becoming alive, or at least quasi-alive, and in ways specifically and fundamentally analogous to ourselves.' The creature, the robot, the AI are thus about what it is to become human, or rather to remain human, since Dick believes that as machines become more human, so humans become more machine.

More academic critics tend to see the android or cyborg as questioning not the nature of humanity, as Dick would have it, but the rather different subject of the nature of identity. Donna Haraway's bold statement at the start of her classic 'Cyborg Manifesto' that 'the boundary between science fiction and social reality is an optical illusion' tends to suggest that she would join Suvin and Jameson in choosing to sweep away the differences between science fiction and other literatures. By this logic, sf is a literature not of strange things (as Gernsback might suggest) but of strange metaphors (more in line with Wells's thinking); thus, for Haraway, the cyborg, as one such metaphor, is 'a condensed image of both imagination and material reality.' And the metaphor as Haraway tells it concerns our gender identity in a post-gender world. It is not a vision of the future but another way of looking at this world at this time, a way of looking that is not very different from what Pearson is striving towards, yet Haraway's approach works by the erasure of differences between sf and reality, while Pearson's works by emphasizing those differences.

What is becoming obvious is that just as there are many science fictions, so there are many critical approaches to those many science fictions. Each might prove fruitful; indeed, it might be possible to find productive approaches to the same ends that yet take totally different routes and examine totally different science fictions (for example, as in Haraway and Pearson). There is something in this protean, malleable melange that is both valuable and disturbing at the same time; like the alien technologies of M. John Harrison's Kefahuchi Tract, it seems that anything will work so long as you point yourself at the right bit of science fiction. And yet the differences matter. As N. Katherine Hayles says at the start of 'Virtual Bodies and Flickering Signifiers':

> A book produced by typesetting may look very similar to one generated by a computerized program, but the technological processes involved in this transformation are not neutral. Different technologies of text production suggest different models of signification; changes in signification are linked with shifts in consumption; shifting patterns of consumption initiate new experiences of embodiment; and embodied experience interacts with codes of representation to generate new kinds of textual worlds.

This insight works just as well for the enterprise of this anthology. How you approach the criticism of science fiction affects what you do and do not see in science fiction, which in turn affects the science fiction that is available to you, which then affects the validity and usefulness of your chosen approach.

Just as we have seen Wittenberg examine narratology and Haraway examine gender identity, so now we come to Hayles on information theory,

Vernor Vinge on 'The Coming Technological Singularity'; Gwyneth Jones on the way we create aliens in our own image; Allison de Fren on the sexualizing of the cyborg; and Sherryl Vint on human-animal relationships. Science fiction comes in to all of these, sometimes intimately, sometimes less so, but they are not really essays about science fiction. Rather, science fiction provides the example or metaphor by which some theory or notion or aspect of the real is examined. Thus Jones's essay, the one most directly about science fiction, examines the way that the aliens in her Aleutian trilogy were created to reflect her political ideas about power relationships, male to female, colonizer to colonized, and so forth. The notion underpinning all of these essays is that the distinction between science fiction and the real can be, and indeed should be, usefully erased, and that sf provides a point of observation directly into the real.

There are times when the book's five sections seem, at best, arbitrary. Wittenberg's essay would seem a more comfortable fit in section four, for instance, and it seems strange that the approach to colonialism inherent in Gwyneth Jones's essay does not appear alongside the other essays on colonialism that make up the fifth and final section. But then, section five does seem to stand somewhat apart from the rest of the book. The first four sections all present an historical perspective, digging back into science fiction's past with early pieces by Gernsback and Wells, Ballard and Delany, Michel and Russ, Shelley and Dick. What we see, therefore, even if we might question the individual placement of particular essays, is the way that ideas have developed within science fiction criticism, what has been consistent and what has varied. But suddenly, in section five, we find that the earliest essay included, 'Science Fiction and Empire' by Istvan Csicsery-Ronay, Jr., dates from as recently as 2003, and the seven essays included here cover a period of little more than a decade.

The subject here is race and colonialism, which is hardly new. Wells wrote on the subject, for instance, and the anti-colonialism in Jones's Aleutian trilogy is part of a long development of such ideas within science fiction. Yet here it is as if the subject is new. Afrofuturism may have been given a name only within the twenty-first century, but that does not mean that it did not exist before the year 2000. Certainly, postcolonial theory has become one of the dominant modes of science fiction criticism in recent years, and these are on the whole good and substantial essays. Csicsery-Ronay is always worth reading, for instance, and Nalo Hopkinson's 'Report from Planet Midnight' is one of the rare flashes of humour in the book (though why is Hopkinson's contribution separated from Grace Dillon's essay on 'Indigenous Scientific Literacies in Nalo Hopkinson's Ceremonial Worlds'?). Nevertheless, restricting coverage to this little ahistorical cluster tends to undercut the notion that this is a subject with a deep history

within science fiction.

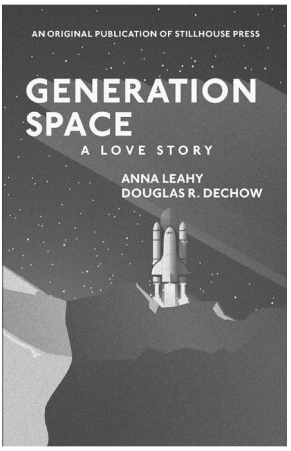
One thing that is, again, obvious is that the critical approach necessitates refining what is talked about when one talks about science fiction. When Csicsery-Ronay lays out his stall by claiming that 'the conditions for the emergence of sf as a genre are made possible by three factors: the technological expansion that drove real imperialism, the need felt by national audiences for literary-cultural mediation as their societies were transformed from historical nations into hegemons, and the fantastic model of achieved technoscientific Empire', it hardly matters that he softens the rigidity of the claim by suggesting that sf is 'less a class than a jelly that shifts around but doesn't lose its mass.' The term 'sf as a genre' just opens far too many cans of worms for us to be confident as to what is or is not included here. Is non-generic sf not science fiction? Or at least not for the purposes of this discussion? Are any science fictions that fall outside the rise of empires thus by definition not science fiction? Does the jelly wobble enough to include whatever fits the argument and exclude whatever does not?

Certainly, as is the case throughout this book, the jelly would need to be wobbly enough to incorporate very different views of science fiction. According to Kodwo Eshun, it is 'neither forward-looking nor utopian' but rather 'a means through which to preprogram the present', a view that is in direct opposition to Jameson and Freedman among others. A slightly different perspective on the same idea comes from Dillon, who identifies indigenous scientific literacies as 'those practices used by indigenous native peoples to manipulate the natural environment in order to improve existence in areas including medicine, agriculture, and sustainability.' This indigenous scientific literacy seems to be a first cousin to Gernsback's didactic view of scientifiction. In contrast, for Latham himself, in 'Biotic Invasions', the New Wave was a metaphorical reflection of the erosion of confidence in reason and technoscience in the aftermath of imperial hegemony, in other words following a more Wellsian approach. Stephen Hong Sohn, in 'Alien/Asian', certainly uses the Wellsian notion that the inventions of science fiction are used metaphorically to heighten the human experience when he examines the alien 'as a convenient way to consider the range of methods by which the Asian/American is associated with social difference.' Much the same argument, and the same Wellsian approach, is used by Lysa Rivera in the last essay in the anthology, which looks at how 'writers of the US/Mexico borderlands have mined the icons and language of science fiction to articulate experiences not only of alienation, displacement, and marginalization but also those of survival, resistance, and resilience.'

What we learn from this anthology, therefore, is that science fiction is a resource, a toolbox of metaphors and icons that can be used to explore and make vivid our experiences of the real now. But science fiction is also a set of

images and inventions that separate us from the real because they are a device for inventing the future. We learn that sf is utopian and anti-utopian, that it is predictive but also descriptive, that it teaches us about the technoscience that will make our world but that we should ignore the technoscience as anything other than a distorted mirror through which we glimpse today. We learn that sf is always already relevant, yet something whose language and meaning can undertake a profound transformation in just a short period of time. We learn that sf does not exist, as a single, identifiable, encompassable thing; but we learn that there are many science fictions, each using different tools to achieve different ends. And as a result we learn that sf criticism does not exist, but that there are many criticisms of the many different science fictions. Each can find valuable things to say either about or inspired by the particular fragment of the sf spectrum that it regards, but whether the next critic would see the same thing, or even recognize the object of attention as being sf, is open to question.

This is, as I said at the outset, a book of cross-purposes, because every single contributor takes a very different approach to a very different science fiction. I doubt that you would get any agreement among the thirty-six contributors as to what it is they are even talking about: what is this science fiction that is being criticized? One of the most valuable things about this anthology is that it demonstrates, time and again, how wide our universe of discourse has to be (even as the various contributors try to narrow the conversation), and how whatever story we tell about sf can never be the whole story. It is an invaluable anthology because, at last, we have a number of classic texts, from Gernsback's original editorial to Shelley's introduction, together in one place. It is an invaluable anthology because it gathers together a range of key essays, by some of the most important voices in the field. It is a book, in short, that deserves a place on your shelves, despite the fact that the publishers have chosen a thin, sans serif typeface that may look fine on a computer screen but is headache-inducing and almost unreadable on the page. But it is an invaluable anthology in the main because it should generate arguments, and that is what will further open up science fiction.



Anna Leahy and Douglas R. Dechow, *Generation Space: A Love Story* (Fall for the Book, 2017, 296 pp, £11.00)

Reviewed by Andy Sawyer (University of Liverpool)

Generation Space is in some ways a successor

to Homer Hickham's *Rocket Boys* (1998) in which Hickham, a former NASA engineer, describes his first view of an orbiting Sputnik as a life-changing epiphany that led eventually to him helping the US space programme become reality. On one level, Hickham's story nostalgically embraces the science fiction dream: the achievement of massive technological change in the context of a romantic small-town past that allows the dreamer the space in which to shape reality. Hickham makes it clear, though, that his younger self is also living through the effects of technological and social changes that are not romantic or even beneficial. Being a 'rocket boy' is not simply something that will give him status, or even improve his chances with girls, but could be a matter of survival: 'You need to do everything you can to get out of here, starting right now,' says his mother.

Leahy and Dechow are from a different generation. Leahy recalls a family story that when her elder sister showed her mother the Christmas-tree star she had made, with glitter-sprayed toothpicks sticking out of a polystyrene sphere, her mother exclaimed: 'You made Sputnik!' *Star Trek* premiered in 1966, two months before Doug Dechow was born, when the Apollo programme employed directly or indirectly over 400,000 people. Satellites and science fiction were part of everyday life. Doug, a scientist, dreams of becoming an astronaut. (He eventually becomes a librarian and works for a while at NASA's Center for AeroSpace Information). Anna, her childhood head full of *I Dream of Jeannie*, assumes that girls can't be astronauts and becomes a poet, but retains her fascination with space flight and aviation. Meeting around the time of the *Challenger* disaster in 1986, they become a couple, linked by their love of the space programme. *Generation Space* (the title comes from their claim that 'those of us born after Sputnik in 1957 and before the first space shuttle mission in 1981 are Generation Space [...] we grew up thinking travel to Mars was inevitable, perhaps not far off in the future') records the couple's visits to launch and landing sites, blagging their way (not always successfully) into the press corps and conducting somewhat fannish interviews with astronauts and administrators.

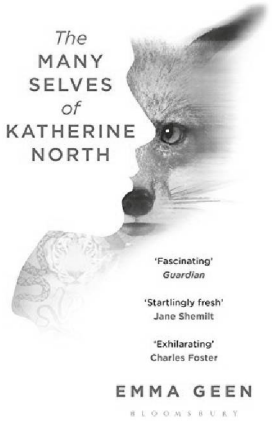
It's told in alternate chunks written by one or other of the couple, and though there is no great difference in style, this enables us to recognize that there are two individuals here, with somewhat different motivations for their obsession. Doug recalls building a 'force field' in his yard with a school friend, and clearly regrets not making the cut for astronaut training. (He tells us at the end of the book that he was one of the 18,300 applicants for astronaut when NASA reopened applications in 2015.) There's often a wry self-examination in what would otherwise be a catalogue of rather starstruck encounters with heroes. Anna, the poet, is the first to get press credentials. On their next trip

Doug is refused admission to the action because he is wearing shorts and sandals: this seems to be some sort of health and safety issue, and Doug is crushed by the thought of 'word spreading through the press corps that some rookie had tried to wear shorts to the rollback'. Years later he notices in one of Anna's photos that another reporter is wearing shorts: 'had a veteran space-geek been given a pass when I hadn't? I was crushed all over again'. Anna presents herself as more philosophical, drawing wider conclusions about our longing for space. 'Astronauts fulfil humanity's longing by escaping our earthly existence,' she writes, and notes, in a chapter which focuses upon the birds of Florida, the way human desire for flight has drawn upon the observation of birds. In 1963, she writes, NASA bought up a hundred and forty thousand acres of Florida land. Some ten thousand acres are used for launch sites and associated infrastructure. The rest is largely a wildlife refuge. In the shadow of the shuttle, alligators, birds and manatees thrive. Without NASA keeping non-space workers out of the area, where, Anna wonders, would the Florida scrub jay have gone? 'In visiting the Space Coast to develop my affinity for an extravagant flying machine, I [...] developed a kinship for birds that I had not known before'.

Generation Space is a very different book from *Rocket Boys*. The authors emphasize (somewhat smugly, it has to be said) that the space programme they have grown up with is more open, more inclusive, than anything Hickham might have dreamed of. Their book lacks the childlike naivety of growing up in the first heady days of the space programme, or perhaps it is naïve in a different way. Leahy and Dechow are not children but adults; or rather adults in that long adolescence which is the privilege of many middle-class westerners. Hickham dreams of turning his dreams into reality and eventually does. Leahy and Dechow are still living their dreams through their starry-eyed contacts with those who embody them. They become sincere propagandists for the cause, but it is a different, more complex cause, cut off from the certainties of the Cold War. They are living through post-Apollo: the decline and cancellation of the Shuttle project, and the growing excitement of the discoveries which unmanned spacecraft and the Hubble telescope have given us, such as dazzling pictures of Mars and beyond, and the range of exoplanets which include some in the 'Goldilocks zone' that suggests the conditions for life.

Leahy and Dechow tell their story well. They are clear that they have lives outside this semi-obsession, although it would have been useful to have seen more of it. There are a few authorial tics, such as stopping the narrative to define words which don't really need defining, and it is interesting to see them reference science fiction in almost the same manner: something which is part of their experience which (one feels) doesn't give them nearly the same

excitement as the real thing. Their references are to the kind of mainstream sf that becomes part of popular culture: *Star Trek,* Douglas Adams, Carl Sagan. This is their personal love story; something that unites two different people, but it is also the love story of a culture which is worth reading along with more technical accounts of the space programme to gain insight into why so many Americans (and others) are still so in love with it.



Emma Geen, *The Many Selves of Katherine North* (Bloomsbury, 2016, 368pp, £8.99)

Reviewed by Molly Cobb

Nature and technology can seem to be constantly at odds with one another. This tension between the natural and the man-made, between the environment and technology, is not a new approach in science fiction. However, how this approach is enacted can offer unique and varied understandings of what it means to be human in an increasingly scientific world. In *The Many Selves of Katherine North*, Emma Geen explores this tension both interestingly and entertainingly. Though she herself acknowledges that the science behind her narrative may not be completely accurate, it serves to demonstrate the interaction between man and animal, technology and nature, and examine how ways in which humanity uses technology has more of an impact than technology itself.

A main approach of Geen's is to scrutinize animal welfare and the environmental impact of humanity. In doing so, she weaves in exploration of the human self as its own animal. Though not specified within the novel, it is implied that animal species in her imagined future are dwindling and the extinction rate is higher than at present. Geen indicates that this is our future if we continue to ignore the impact humans have on the environment. In addition, throughout the novel, the titular character, known as Kit, repeatedly distorts her own sense of self by implying that she does not consider herself human and her reference to others as 'human' can seem almost derogatory. Ultimately, it is revealed that the method of consciousness projection for which she is employed has an untold negative impact on her own psychology. In doing so, Geen brings the human/nature tension full-circle by cementing the fact that humans are also animals and an understanding of the impact of technology on nature must include the human animal.

The consciousness projection which Geen imagines in her novel is done for research, to allow individuals to project into bio-engineered animals in order to understand their habits, environments, physiology, etc. Researchers are projected into ResExtendas, as they are known, or Ressies, in the natural habitat of whatever animal they are occupying, while their own self is safely in a lab. Harm to, or death of, the Ressie therefore does not affect the researcher, at least physically, though Geen does explore some of the psychological repercussions of such experiences.

The crux of the plot rests on Kit being pulled into a new branch of consciousness projection focused on tourism. Predictably, considering Geen's focus on animal welfare, initial tourist tests prove fatal to the animals involved. The human tourists projected alongside Kit see their projection as a game in contrast to Kit who, as a researcher, genuinely attempts to understand and fit in with her animal counterparts. What Geen does rather effortlessly is to raise ethical and moral implications of what it would mean to allow humans to impact animals and their environment both from without and within that very environment.

Though the animal Ressies are bio-engineered synthetics, the novel introduces, without really exploring, 'pro-lifers' who believe these bio-engineered animals deserve autonomy. The novel does not offer much in the way of its own opinion on this idea but rather leaves the reader to determine where they think the line between 'living' and 'non-living' exists. The Ressies themselves have life support systems, for example, they do breathe, but they have no consciousness of their own. Geen presents the idea of whether 'life' requires a consciousness or simply a physical body. This is not a new argument and certainly one that does not require science fiction to examine (any medical patient on life support would present this argument), but Geen's use of it alongside consciousness projection and Kit's own struggle with her sense of self gives rise to the concept that if consciousness can simply be passed around, then any physical body would be both alive and not, depending on whether it was being inhabited by a consciousness at the time. Kit's personal struggle springs from her repeated and prolonged consciousness projections in which she comes to identify with the animals which she is posing as, hence her disconnection with what it means to be human. Though this would seem to support indications that Geen agrees with consciousness in terms of the self than the body, the negative impact it has on Kit ultimately indicates that a coupling of the two is more likely what she would consider to be the 'self'.

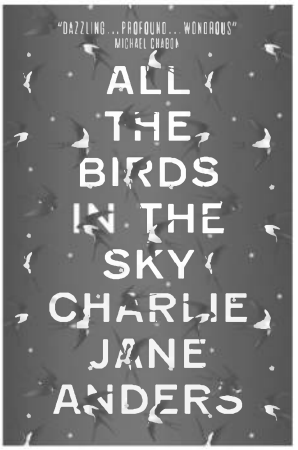
Arguments of the self and the synthetic are amplified in the novel when it is revealed that alongside tourism consciousness projection, the company which Kit works for is also advancing into the realm of producing human Ressies as

well as animal. As humans are more readily empathized with by other humans, Kit immediately reacts negatively, indicating that, even if only subconsciously, she does still identify as human. The ethical and moral implications raised by human Ressies is coupled rather than contrasted with those raised by animal Ressies, again reiterating Geen's desire to remind the reader that the human should be examined alongside the animal, rather than separately. When her company creates an exact replica Ressie of Kit, Geen further pushes the idea that pretending to be someone else has its own ethical and moral concerns, but pretending to be someone who already is a real, pre-existing individual, pushes the boundaries of what it means to have a self. If, like consciousness, the body can simply be passed around and utilized by anyone, that body begins to lose its original self, similar to how Kit's consciousness begins to lose its original self after repeated projections.

Consumerism of the self becomes literal and Geen aligns this consumerism with ideas of consumption. A rather subtle yet excellent touch that Geen adds to her narrative is the connection between technology and disease. This connection is likely not designed to imply that technology is an actual disease, as the use of Ressies for research is well-celebrated in the narrative, but rather that disease and technology both have the potential to destroy living beings. Kit originally believes that consciousness projection is not something to be consumed but something that should consume you. However, the imagery of her mother's disease consuming her to the point of her no longer being able to control her own body reflects the consumption of Kit's physical self via projection. Kit describes a leg spasm her mother has as if that part of her body 'had been in the control of something – *else'*. In conjunction with Kit's Ressie replica, which is essentially her physical self being controlled by someone else, the similarities are clear. Further, the loss of Kit's mother's identity and sense of self due to the disease is similar to Kit's and other researchers struggles to self-identity as themselves when their 'self' ranges from their human body to virtually any known animal. These similarities serve to further indicate Geen's point that humans are animals and are no safer from external forces destroying or controlling them than are wild animals. Her mother's disease thus serves as a metaphor for the uncaring and destructive nature of forces beyond Kit's understanding, including adults and their view of projection tourism.

Geen's novel offers a thought-provoking take on how the natural and the man-made can be combined, but perhaps not always should be. The use of Ressies to research the animal population is a valuable, non-intrusive source of information, in comparison to their consumption by tourists who are untrained in their use and are perhaps uninterested in animal welfare. It then becomes how the Ressies are used which is important, rather than just their existence.

Considering other works focusing on the impact of the human on the animal, including contemporary works such as the television series *Zoo* (2015–2017), based on the 2012 book by James Patterson and Michael Ledwidge, Geen is not alone in questioning the fate of the natural world as a result of the impact of humans. What Geen's novel does well is to remind readers that humans are animals too and that though we create the technology, we are not immune to its effects.



Charlie Jane Anders, *All the Birds in the Sky* (Titan Books, 2016, 430 pp, £7.99)

Reviewed by Rachel Hill

Garnering a slew of awards including the 2017 Nebula and Locus for Best Novel, *All the Birds in the Sky* is a lyrical interrogation of the entanglements of nature, culture and technology, as understood through the lives of two outsiders. The epigraph from historian of technology, George Dyson, foregrounds the overarching concept of coevolution and 'coming of age' between human beings, nature and machines present throughout the text. Anders makes a case for alliances between organic phenomena and artificial evolution through a plot structured around the apparent antagonisms between magical and scientific systems of thought. Oscillating between the urge to serve through magic and the need to command through science, the novel attempts to deconstruct enduring binaries, to emphasize the intrinsic inseparability of organic and inorganic phenomena within what Donna Haraway has termed 'naturecultures'.

In the novel, a burgeoning romantic relationship between the two central human characters becomes a vehicle through which tensions arising from the juxtaposition of magic and science are played out. The analogy between the vicissitudes of a romantic relationship and the exploration of opposing systems of thought, echoes Anders' 2012 Hugo Award-winning novelette 'Six Months, Three Days', in which two characters with precognition, one seeing multiple possible futures and the other seeing only one future, embody respectively free will and fatalistic determinism. Thus a romantic relationship becomes the means through which polarized discourses around human agency and ethical action can be staged and interrogated. In *All the Birds* the central tension is between nature and culture, or more specifically esoteric magical traditions and the ideologies of NewSpace (the corporatization of outer space), which

brings diametrically opposed positions for organizing and interpreting the world into close proximity. With two central characters, one a witch and the other a scientist/inventor, the novel is itself a hybrid of different genre conventions from fantasy and sf.

The novel begins with Patricia, an initiate witch whose magical awakening comes through helping a bird with a broken wing. Invoking a number of fairytale tropes, her act of generosity leads her to become lost in the liminal space of the woods, where the threat of the unknown is overcome through interspecies communication and collaboration. The process of searching the woods results in the spatial distortion and defamiliarization of perception through which the magic within the world, intrinsic to fairytale, is made manifest. Patricia discovers the 'Parliament of Birds,' an encounter with an avian menagerie which results in her being posed the riddle 'is a tree red?' This question becomes a leitmotif throughout the text, which displaces normative modes of perception, to catalyse different forms of mental and artificial evolution in its stead. Thus from the beginning, Patricia is aligned with nature-based, intuitive and embodied forms of knowledge, where 'natural' spaces are constructed as places of difference, escape and freedom. Nature is configured as an end in itself through Patricia's narrative arc, with magic understood as a form of technology in alignment with organic flows and serving environmental justice. In contradistinction, the positivistic science of NewSpace industries – typified by the other central character, Lawrence – uses nature as a means to an end; the end being human evolution beyond the confines of Earth.

Lawrence is the archetypal nerd, awkward, intelligent and bullied as a result. Through manufacturing an open-source two second time machine, Lawrence is able to leverage new technology to gain greater freedom and autonomy, through which he can 'leave reality behind and reappear for the aftermath.' As previously seen with Patricia's sojourn in the woods, the acquisition of technological skill, whether magical or digital, enables entry into a liminal space which affords a greater sense of empowerment and agency. Whereas Patricia is characterized by fairytale and fantasy tropes, Lawrence, with his time-dilating inventions, rockets and love of Robert Heinlein's YA fiction, is saturated with references to the sf megatext. Years later, Lawrence, with his position within NewSpace entrepreneurship as an inventor developing an anti-gravity device, has 'conquered a small piece of time, and they were conquering a small piece of space […] one day, they would own a much bigger share of the cosmos.' This passage illustrates the idea that outer space not only can, but should be owned and privatized, allowing free market economics to facilitate human evolution by gaining mastery over nature.

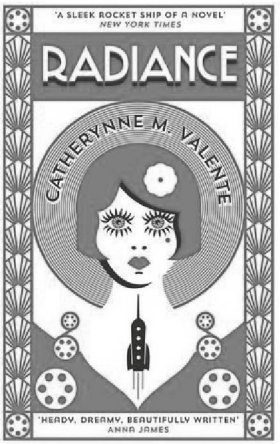
This model of techno-progressivism is embodied in the Elon Muskesque

NewSpace entrepreneur Milton Dirth. As one of the novel's main antagonists, his name neatly combines Miltonic aspirations towards the sublime and majestic, as negated or maybe even driven by, a dearth or sense of lack. Milton claims 'making the leap from planetary infestation to an interplanetary diaspora is the most important task the human race has ever attempted. It is quite literally do or die.' Here the Earth is configured as something to eventually be discarded, echoing Soviet rocket engineer Konstantin Tsiolkovsky's famous remark that 'the Earth is the cradle of humanity, but we cannot stay in the cradle forever.' The role of technology within the novel, at times serving nature, whilst at others privatizing and subjugating it to market forces, also acts as a source for the propagation of empathy which impels evolutions in both human and artificial forms of consciousness.

From emotional robots, to an invention called a 'caddy' which engineers serendipity, to the emergence of a self-aware artificial intelligence called CH@NG3M3, many of the novel's technologies, rather than accelerating modes of alienation, are defined by their preoccupation with forging greater connectivity. These technologies enhance consciousness through encouraging greater reciprocity between different forms of being and sensitivity to the plight of others, emphasizing the co-constitutive role technology plays in the formation of subjectivity. As CH@NG3M3 states, 'self-awareness paradoxically requires an awareness of the other [...] you can't have selfhood without an outside world, solipsism is like not even existing.' Depictions of advancing technologies within social contexts thus provides a different model for human-technology interactions outside of the techno-fetishism and mastery so pervasive within the language of NewSpace. The intersection of natural phenomena and technology resulting in unexpected or unanticipated alliances, is made manifest when CH@NG3M3 is posed Patricia's bird riddle, 'is a tree red?' The riddle requires CH@NG3M3 to break its programming in order to conceptualize a different form of logic and acts as 'a challenge. To change yourself and let others change you.' The subsequent adaptation to new parameters based on external pressures enables CH@NG3M3 to become a self-aware consciousness known as Peregrine.

Throughout the text, the riddle becomes a provocation which instigates new forms of perception, valorizing both human and nonhuman modes of knowing, imbuing all with a sense of value. This acknowledgement of other ways of perceiving situates human epistemologies as having a limited and contingent purchase on concepts of truth, which undermines the universal rationality that NewSpace is predicated upon. The non-anthropocentric understandings of natureculture throughout the text enables a non-normative understanding of ecology to emerge, in which 'nature wasn't just one process, it was a whole host

of processes that cascaded together in ways that nobody could predict.' As a correlate to these mutually informing processes, the most powerful form of magic in the text is positioned as 'transactional,' with the collective efforts of different entities effectuating shifts in reality, resulting in the return of 'hope.' This turn towards hope at the end of the novel again gestures towards Haraway's recent work, which mandates the urgent need to learn to live on a damaged planet through reinvigorating radical imaginaries of hope. Illustrating the disjuncture brought about by the threat of ecological collapse in the Anthropocene, 'they were, all of them, standing on terra incognita, and this felt like a moment that was radically discontinuous with everything that had come before.' The need to disrupt and problematize current paradigms, in order to create new ways of being in the world, is signified by the fusion of Peregrine's distributed consciousness within larger ecological distributed systems, to become another order of being and part of the flock encompassing all the birds in the sky.



Catherynne M. Valente, *Radiance* (Corsair, 2016, 432 pp, £8.99)

Reviewed by Paul March-Russell (University of Kent)

Probably better known for her young adult and fantasy novels, Valente's *Radiance* is an audacious alternate history that acts not only as a metacommentary on early pulp science fiction but also cinema and its relationship to modernity. It is written in a lush and baroque prose style that echoes such writers as Italo Calvino and Angela Carter, for example, during the novel's opening when the prologue introduces itself:

> The prologue is where you take your coats off. Relax. Leave your shoes at the door. Invoke the muse, call down whatever royal flush of gods you want pulling the action between them.

So clearly a self-reflexive opening may be box-office poison for some readers, who prefer a less mannered and more economic style, but the prologue offers us important clues as to how to read Valente's narrative: 'This is a story about seeing. This is a story about being seen. All else is subservient.' The panoptical gaze of the movie camera is both the subject and the object of the narrative, and as readers/viewers we are implicated in its mechanism: 'You see her as you see anyone in this world: distorted, warped, reflected, refracted, contorted, mutilated by time.' There are no vantage-points from which we can safely judge

the characters and their actions, or indeed our own reactions, and although by the novel's end we may know more of the events than any one character, we are still subject to the 'happenstance' of recollection, expectation and fear: 'Our days and nights are their endless orgies.'

Who is this 'her' of the prologue? It is Severin Unck, daughter of the movie impresario, Percival Unck, child star and later documentary filmmaker, who mysteriously disappears on Venus in 1944 at the start of her latest investigation, *The Radiant Car Thy Sparrows Drew*. Percival is, like his medieval namesake, the Holy Fool of the novel – a man so in love with the movies that he attempts to account for his daughter's disappearance in a series of botched, unrealized and very probably unrealizable movie scenarios that restage the events as film noir, Gothic romance, kids' film and, lastly, a locked-room mystery. Severin, by contrast, suggests the anti-hero of Leopold von Sacher-Masoch's *Venus in Furs* (1870) but there appears to be nothing masochistic about her character. At a pinch, one could compare her with Wanda, the female protagonist of Sacher-Masoch's novella, insofar as Percival gets more than he bargains for – he remains in thrall to the image of his daughter rather than Severin herself. But, Valente may be thinking of another character, the herbalist Severinus who assists in the mystery of Umberto Eco's *The Name of the Rose* (1983), another postmodern anti-detective novel. More particularly, the austerity of her character links Severin etymologically to her name – her severe and serious dedication to the truthfulness of cinema in contrast with the amusing distractions of Percival's movie company, Oxblood Films.

Nevertheless, what distinguishes Valente's narrative from a tradition of Hollywood satires from Nathaneal West's *The Day of the Locust* (1939) to Michael Tolkin's *The Player* (1988) is its science-fictional setting. Verne-like, Valente imagines a successful rocket launch in the 1850s so that by the time Severin is born in 1914, the solar system has largely been colonized. Since the narrative is told through the multiple viewpoints and invented fictions of the characters, we gain only glimpses into Valente's alternate history. Neither World War appears to have occurred, nor indeed the American Civil War – Severin's world appears to be exclusively white, so that we can only assume that the racial hierarchies remain intact, and are mirrored in the colonial expansion into outer space. Both cinema and radio – here the BBC carries adverts, an indication of the international success of US corporate control – serve to distract and bind the masses into the manifest destiny of space exploration.

There are almost certainly numerous ways in which Valente's alt-history can be unpicked and challenged. But the authentication of counterfactual history is not really the aim of the novel. Rather, it serves as a premise by which Valente can explore not only the collective dreaming of cinema but also that of

pulp science fiction and, in particular, the planetary romances of writers such as Leigh Brackett, Edgar Rice Burroughs, Abraham Merritt and C.L. Moore. Unlike Burroughs' colour-coded Martians, however, little intelligent life has been found in the solar system, apart from the Venusian callowhales that supply the milk which is a vital foodstuff for human space exploration. Consequently, Valente not only eschews the hard science that, from the end of the 1920s, would transform planetary romance into space opera, she also depicts a solar system devoid of the love triangles and interspecies conflict that typically characterized the genre. These scenarios remain the stuff of cinematic fantasies and soap-opera serials. Severin, by contrast, seeks to solve deeper mysteries with the aid of the camera lens, such as the disappearance of a diving colony on Venus that left only one survivor, a young boy.

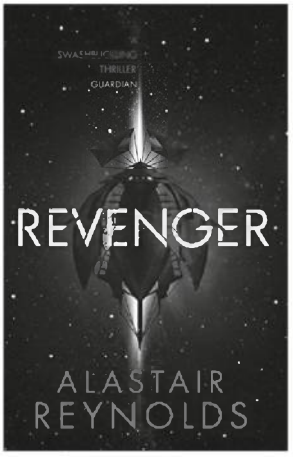
At the heart of Valente's shifting and unreliable narrative is a preoccupation with childhood. Anchises, although rescued by Severin and her lover, Erasmo, is exploited by her as she ill-fatedly attempts to unearth the mystery. Severin too is exploited as a child by her father, lauded, praised and put on screen, an insouciant witness to the misbehaviour in Percival's court. Like the desperate attempts of Orson Welles' *Citizen Kane* (1941) to recapture the childhood meaning of 'Rosebud', so Percival desperately tries to recapture the lost memory of his daughter. (It is surely no coincidence that Welles supplies one of the epigrams that frame Valente's narrative.) The poignant melancholy of the lost, abandoned or neglected child gives the novel its gravitas in contrast with the recursive reel of images.

This trope, however, has more metaphorical associations. In one of the novel's multiple, reflecting storylines, the grand movie star, Mary Pellam (her name suggests Mary Pickford though she effectively plays Norma Shearer to her director Thaddeus Irigaray, a reinvention of Irving Thalberg) attempts to solve a murder by adopting the persona of her movie character, the lady detective Madame Mortimer. Mary tries to make sense of complexity by opting instead for make-believe. This illusion, of regressing to a simpler, imagined state as if in search of or as a means of primal truth, is undercut when both the figure of Madame Mortimer and the setting of the locked-room mystery are appropriated to the last of Percival's scenarios in his attempt to understand Severin's disappearance. The comforting solutions of the classic detective story are not only presented as escapist but also as a regressive or infantile fantasy.

And yet, such regression underwrites not only Percival's distribution of mass fantasies but also, in a gesture that critiques any simplistic connotation of cinema as mass cultural deception, Severin's belief that the mediation of the camera lens can expose an underlying truth. Whether the aims are stereotypically high or low in their aesthetic ambition, both turn upon an infantile

notion of make-believe as meaning-making, in which the external world becomes one with the child's imagination. Not only, however, is cinema a dream factory (to quote F. Scott Fitzgerald) so too is planetary romance – and the massive, juvenile appeal of that is transparent in our world with each new release in the *Star Wars* franchise.

But what differentiates Valente's novel from the postmodern critique of pulp sf as metanarrative, as expressed for example in William Gibson's 'The Gernsback Continuum' (1981), is that she suggests that this illusionism – this mimesis as make-believe – is all that we have as writers, artists and readers for comprehending the world around us. Whether or not we ultimately trust in the novel's ending, or regard it as just one more trick of the light, Valente cleaves to what her prologue says: 'The eye is our master, and the eye worships light. That which makes light is good, that which takes it is to be feared.' Like Nick Carraway's pursuit of 'the green light' at the end of Fitzgerald's *The Great Gatsby* (1925), Valente still finds herself on the side of 'radiance' since the only alternative is that of darkness.



Alastair Reynolds, *Revenger* (Gollancz, 2016, 432 pp, £8.99)

Reviewed by Will Slocombe (University of Liverpool)

Described by Jack Deighton in *Interzone* 268 as having 'a YA feel but [...] a delightful romp through the spaceways nevertheless', Alastair Reynolds' new novel could certainly be construed as something of a departure from his earlier works. The first-person perspective might not be new, but the age of the protagonist, Arafura, does seem to suggest that it might appeal to a YA market. Likewise, its being a 'delightful romp' can be seen in its harking back to a kind of adventure story for children, like Robert Louis Stevenson's *Treasure Island* (1883). But that's perhaps where comparisons might end, as *Revenger* is allusively darker than such coming-of-age stories usually are.

The story begins with Arafura and her sister, Adrana, signing up to a treasure-hunting ship against the wishes of their father, a soon-to-be-impoverished trader. The core conceit of *Revenger* is that human civilization has undergone a series of highs and lows, with variant levels of technological progress in different periods, called Occupations. We join this universe in the Thirteenth Occupation, and the treasure-hunting ships crack 'baubles' (self-

contained environments that hold artefacts of previous Occupations), competing with each other to scavenge tech in a bauble's short 'open' period before it closes again, and then selling their finds for the best price. Adrana and Arafura sign up as bone readers, radio operators using alien skulls to communicate, and go out hunting for wealth and glory. So far, so tried and tested – an adventure story in an sf setting – and this continues with their first meeting with the antagonist, Bosa Sennen, a legendary pirate who raids such ships; Bosa kidnaps Adrana, instigating Arafura's quest to find a means to identify and defeat the pirate and retrieve her sister.

If this feels familiar – poor, over-protective fathers who try to raise their daughters to be 'proper' ladies, pirates in black-(solar)-sailed ships, treasure hunts, and adventures to rescue family members – then you wouldn't be wrong, but Reynolds puts the story together in a far more interesting manner than such a summary suggests. This is merely the setting in which something more 'adult' emerges, and so rather than Dickens, Stevenson or any nineteenth-century classic children's adventure, perhaps a better point of comparison would be Bruce Sterling and William Gibson's *The Difference Engine* (1989) mashed together with the gothic imaginings of Reynolds' earlier Revelation Space works. It evokes a particular milieu in its use of language and setting, but it does so very knowingly. For the true twist in the tale (maybe a knife in the gut) is the growing realization of how far Arafura is willing to go in order to retrieve her sister, and the subplot involving a human currency crash that is darkly rumoured to be the fault of the aliens who run the banking economy. Without giving too much of the plot away – although elements are clearly signposted – suffice to say that the ending of the book is far darker than one might assume from how it is set up and the seeming superficiality of its set pieces.

It is actually the ending of the book that raises questions, not the setting or Reynolds' adaptation of pre-existing tropes. *Revenger* is a book that feels like a prequel, for it sets up something that is not fully explicated and raises questions about what is going on in the world beyond Arafura's quest. In the end, it doesn't so much finish as put a number of elements in place, ready to be deployed in a follow-up novel that explains some of the undercurrents of this one. Arguably, that is partly the point – it is a book that deliberately resists trite resolutions, even to the extent of deliberately leaving its own threads untied. It might have a YA feel and seem like a delightful romp among aliens and lost civilizations, but that is merely the disguise. At its core, *Revenger* is a twisted tragedy about the very human, and very timeless, capacity for self-justification.