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SCIENCE FICTION: A CRITICAL GUIDE

Edited by
Patrick Parrinder

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Science Fiction

A critical guide

Edited by
Patrick Parrinder

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Editor's introduction

What do we mean by Science Fiction? What does it do, and why do so many people read it? What are its characteristic values, attitudes and procedures? Is it a creative force in our society, or merely a pathological symptom? How much of it is worth the attention of the ordinary 'non-scientific' or 'non-addicted' reader?

That these questions are frequently asked is a consequence of Science Fiction's current status as a highly popular and fashionable art-form. They are not easy to answer because SF is a confused concept and a confused field, varying from formula-repetition and institutionalized self-congratulation on the one hand to the most profound imaginative achievements on the other. This *Critical Guide* attempts a composite portrait of science fiction as a form of creative literature: not, that is, as a disembodied current of notions and ideas (e.g. about technological progress), nor as a 'sub-literature' which may only one day hope to aspire to literary status.

Though science fiction is now generally recognized as a literary form with its own history and traditions, its conventions and its major writers, critical pronouncements about it are still notoriously unreliable. Within the field overpraise is legion, reflecting the opportunism of publishers and the defensive clubbiness of editors, writers and fans. A paperback series edited by two well-known authors describes itself as 'the essential library of Science Fiction classics'. 'With one single story, X was instantly recognized as the world's best living science-fiction writer': writer Y, who put this in a paperback introduction to X's stories, has himself 'created an epic of nearly classic proportions' according to a publisher's blurb. Much of this is forgivable and easily discounted by those who know the field: SF writers are generous, exuberant fellows, the message goes, not much given to stabbing one another in the back. Critics who have tried to write of SF with more detachment have often fallen into an excessive primness of tone, as Kingsley Amis does at the conclusion to his pioneering and much-criticized survey *New Maps of Hell* (1961). 'At least a dozen current practitioners seem to me to have attained the status of the sound minor writer whose example brings into existence the figure of real standing', was how Amis summed up the genre. Science fiction *already* possesses its 'figures of real standing' (though, of course, it could do with a few more of them). But in the current critical climate it is still not easy for the layman to discover who they are.

With that in mind, the editor of a *Critical Guide* must reflect ruefully on Matthew Arnold's call for an authoritative 'hand to guide' the young poet through the confusion of contemporary literary values (Preface to *Poems*, 1853). It is my belief that to erect a definitive canon and lay down a series of final value-judgements is neither possible nor desirable in a field as dynamic and various as science fiction. What must be done, instead, is to work *towards* a consensus, which must always remain potential rather than actualized, and to demonstrate as far as one can the results of applying critical thought to the matter in hand. There is enough variety in present-day SF (not to mention present-day criticism) to make it highly unlikely that individual critics' attempts, however mutually compatible they may be, will fully coincide. A critical approach should aim, first of all, to state some widely acceptable truths and dispel some blatant falsehoods, and secondly, to show the grounds of its judgements and the consequences of its chosen methods. It is hoped that the *Critical Guide* does that.

The scope of this book may need some further explanation. In science-fiction criticism and scholarship the 'primitive accumulation' of facts is still being done, or has only very recently been done – as the flood of books and articles in the last four or five years testifies. The *Guide* does not aim at an exhaustive coverage of the literary field of SF, despite the largely chronological arrangement of its contents. The contributors are concerned less with surveying the bare facts of the genre than with interpreting their *significance*. With the exception of the essays on Verne and Wells, they have attempted to establish the common properties of science-fiction writing, whether in the treatment of a theme or in SF of a given period or nationality. Such common properties are stressed, by and large, at the expense of the continuity of the life-works of individual writers. Thus the *Critical Guide* does not set out to compete with the encyclopaedias and reference books of science fiction, on the one hand, nor with the growing volume of individual-author essays and monographs on the other. It tries to portray science fiction as a coherent system, not as a collection of facts or a random sequence of individual voices.

SF considered as a system – a small and recently colonized planet, let us say – itself belongs within much larger systems: the solar system of literary fictions, the galaxy of modern culture, the universe of human life as a whole. What are the peculiar features of the chosen planet, and how does it relate to the larger systems? These are the perennial problems of SF criticism, and it is not to be expected that the *Guide*'s contributors should be in complete agreement about them. Marc Angenot defines Jules Verne's science fiction as 'fiction about science in its global, historical effect, not in its scattering in specific discoveries'. Raymond Williams stresses SF's links with utopian writing and suggests that it is potentially a 'reworking, in imagination, of *all* forms and conditions'. Christopher Priest seems to repudiate this sort of critical pattern-building when he writes that the only completely reliable definition is that 'anything *labelled* as science fiction *is* science

fiction' – an assertion which will not prevent some readers from suspecting that parts of the SF planet have been infiltrated by alien stock, or, at the very least, have served as a landing-ground for stray meteorites.

The SF planet is held in orbit in the literary system by a balance of gravitational forces. Franz Rottensteiner identifies one of the forces at work when he declares that 'any writer who would write *only* science fiction can only be a minor writer' (would Dr Rottensteiner argue a similar case, one wonders, about Jane Austen?) Scott Sanders and Patrick Parrinder discuss the nature of characterization in SF – the supposed deficiencies of which have been repeatedly used, even by SF authors themselves, to deny the genre any 'real' literary status. J. A. Sutherland makes the point that the form of a science-fiction novel – like most other kinds of modern writing – is hardly ever the result of totally unfettered individual choice. Readers, publishers and the censorship laws all play their part in determining what has appeared, and will in future appear, under the SF label. And T. A. Shippey, in the course of his defence of the SF magazines, asks 'whether the compulsive element in SF is at all reducible by the conventions of literary criticism'. To claim that SF has established itself as a literary form would be a mechanical exercise if it did not entail some challenge to, and some modification of, those conventions.

The same is true, of course, of the conventions of science-fiction history and hagiography as well. More attention is paid in this book to British and European SF, and less, perhaps, to the American magazines – especially in their early years – than the reader may have grown accustomed to. It is my personal conviction that the recent flood of coffee-table books featuring the chromatic covers of *Amazing*, *Astounding*, *Weird Tales*, and so on owes as much to a 'nostalgia boom' embracing 1930's musicals, 1930's fashions and ageing Hollywood film-stars as it does to serious literary criticism. The pulps undoubtedly had a major influence on modern science fiction, as T. A. Shippey's essay makes clear, but they were no better (and no worse) than the original science-fiction stories that they were able to print.

To say this may be to raise the ghost of an all-too-familiar argument between 'fans' and 'academics' in SF circles. Since this book is largely written by academics it is perhaps not surprising that some of the contributors favour writers who have (in the non-academic words of Christopher Priest) an 'uneasy relationship with the genre'. But what good writer *ever* had an easy relationship with a genre, except in those moments when he could feel he had mastered it and made it his own? It is only by following through the tensions that the pre-existence of a literary form sets up – between the new work and the old, and between the writer's desires and abilities and the reader's expectations – that an author can hope to achieve the 'aesthetic shock' which transcends the petty jealousies (fans versus academics, Old Guard versus New Wave, America versus the 'Best of the Rest') that SF, like all forms of cultural

acitvity, breeds, When it does so, science fiction is no longer a hobby, a minority taste or a field to be dug over by the cultural archaeologist. It is a part of essential imaginative experience.

Note on the text

For ease of reading, notes and references to the ensuing text have been kept to an absolute minimum. Each essay is concluded by a bibliography of secondary material, and this should be consulted wherever a reference is in doubt. Novels cited are normally accompanied by the date of first publication, and, as most SF is now read in paperback form, chapter rather than page references are given for quoted passages.

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I should like to thank my fellow-contributors, and especially Raymond Williams who first gave me the idea of producing a book of this kind. Without the patient encouragement of Stephen Davies, formerly of A. D. Peters & Co., this project would never have come to fruition. Darko Suvin, editor of *Science-Fiction Studies* and a living embodiment of the practical utopianism inherent in the notion of international scholarship, has been an unfailing source of advice, inspiration and well-timed rebuke. Neither he nor anyone else is, of course, responsible for my own errors and omissions. Finally, I would particularly thank my wife Ewa, initially so bemused by my passion for SF, who ended up by taking my mother-in-law to *Star Wars*.

Patrick Parrinder
June 1978

Acknowledgement is made to *Science-Fiction Studies* in which the essay entitled 'The disappearance of character' by Scott Sanders originally appeared under the title 'Invisible Men and Women'.

Part I

Early landmarks: from the beginnings to 1900

The literary background to science fiction

Mark R. Hillegas

I

Any discussion of science fiction before Verne and Wells must necessarily begin with some agreement about the term itself. There have, over the years, been many attempts at a definition, but in my judgement the broadest, most accurate, and most comprehensive remains that of Kingsley Amis in *New Maps of Hell* (1961). At the heart of his definition is the concept that science fiction is a kind of narrative derived from 'some innovation in science or technology, or pseudo-science or pseudo-technology'. Contrasted with science fiction is fantasy, which pays no lip-service to fact but involves instead the supernatural or at least the obviously impossible. Science fiction according to this definition is not possible until the world-view shifts from a supernatural explanation of phenomena to a rational explanation based on known or hypothesized laws of the universe. The two forms are not always pure – fantasy can have science-fiction elements and science-fiction fantasy elements. Also to be emphasized is the fact that writers of science fiction have often drawn on literary traditions of fantasy.

response to the first scientific revolution, chiefly the new astronomy. Three voyages to other worlds, out of many, deserve particular attention: Kepler's *Somnium* (1634), Bishop Godwin's *The Man in the Moone* (1638), and Cyrano de Bergerac's *Voyages to the Moon and Sun* (1656). The classic, comprehensive treatment of early 'cosmic voyages' is Marjorie Nicolson's *Voyages to the Moon* (1948), to which, like all subsequent writers on the subject, I am greatly indebted.

Before turning to the first attempts in the seventeenth century at anything like science fiction, a few earlier works need to be discussed as a contrast with the new kind of imagination that begins with the first scientific revolution. Two works of Lucian, the second-century Syrian who wrote satires in Greek, illustrate the contrast. The first is his *True History*, which interestingly was initially published in English translation in 1634, the year Kepler's *Somnium* appeared in Latin. Mostly it is satiric fantasy, with a great deal of what today would be called obscenity. The *True History* involves a journey to the moon, but it is entirely an accident – Lucian's ship is picked up by a typhoon, whirled around at high speed, and lifted 1,800,000 feet into the sky. From there on he

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just sails to the moon: 'On the eighth day we sighted what looked like a big island hanging in mid-air, white and round and brilliantly illuminated, so we steered towards it, dropped anchor and disembarked.' Presto, the mariners are on the moon. It is a delightful book, and includes a meeting with the Greek heroes, a conversation with Homer (who had not been blind after all), and a giant whale whose stomach is inhabited. Besides an Island of the Blest, there is also an Island of the Damned, where the worst punishment is reserved for those who had written Untrue Histories. 'As my conscience was absolutely clear in that respect', writes Lucian, 'I was able to watch the poor fellow's sufferings without any serious fears for my future.'

The second, shorter work of Lucian's – its first paragraph is used by Wells as an epigraph to *The First Men in the Moon* (1901) – is the *Icaromenippus*. This time the traveller goes to the moon by design, having rigged for himself the wing of a vulture and that of an eagle. Besides Lucian, one might perhaps mention as in a sense predecessors of science fiction, various medieval visions of the heavens, the fantastic journeys of Rabelais's Pantagruel, or Astofo's visit to the moon in Ariosto's *Orlando Furioso*.

Another work – not science fiction – which inaugurates a tradition and also stands as part of the background to a good deal of science fiction is More's *Utopia* (1516). A diversely interpreted work, *Utopia* makes little sense unless one sees it as a kind of fiction, as C. S. Lewis pointed out in his *English Literature in the Sixteenth Century Excluding Drama*. It is, he wrote, 'a holiday work, a spontaneous overflow of intellectual high spirits, a revel of debate, paradox and (above all) of invention', a work looking forward to *Gulliver's Travels* but standing a long distance from Plato's *Republic*. In Book II, More's traveller, Raphael Hythloday, describes a democratic yet paternalistic agrarian society set on a crescent-shaped island, impregnable to foreign attack. In this communal state, people move at regular intervals between cities and farms, and food is stored in great warehouses, so that no Utopian need suffer starvation. Diversity of religious belief is permitted; gold and silver are despised and used for chamber pots and the chains of prisoners; and all people wear the same coarse clothing. But some of its features, such as slavery for the punishment for crime (including adultery) and restrictions on travel, would be repugnant to us today. Details from *Utopia* turn up in works as different as Wells's *The First Men in the Moon* and B. F. Skinner's *Walden Two* (1948). Utopian (and the mirror image, dystopian) elements are, of course, an important strand in much science fiction, particularly in the twentieth century.[1]

Kepler's *Somnium* is the first major example of anything like science fiction, and it is not science fiction in any way approaching pure form. In a dream the hero of the story, Duracotus, is transported to the moon by demons. But even in this supernatural journey there is some attention to scientific detail, notably the effects of gravitation and rarefied

air in space. With the description of the moon and its inhabitants, we get what Kepler the scientist considered possibilities, though they seem utterly fantastic to us. (The conception of the moon appears to have had some influence on Wells's *First Men in the Moon*, and at one point Wells mentions Kepler.)

Kepler's moon is very briefly described, and then not too clearly. There are two halves to the moon: the Subvolva, which I take to be the hemisphere facing the earth, and the Privolva, the side we never see. For all the moon, 'Whatever is born on the land attains a monstrous size. Growth is very rapid. Everything has a short life, since it develops an immense body.' The Privolvans are apparently nomadic – some walk on very long legs (which may suggest the *sorns* of C. S. Lewis's *Out of the Silent Planet*, 1938) – some have wings to fly, others use boats, and all can apparently survive long periods under water. The Subvolvan hemisphere is more settled, equivalent to our 'cantons, towns, and gardens'.

Several details, as I have noted, suggest *The First Men in the Moon.* One sounds like the dawn of a lunar day witnessed by Cavor and Bedford;

If anything is exposed during the day, it becomes hard on top and scorched; when evening comes, its husk drops off. Things born in the ground — they are sparse on the ridges of the mountains — generally end their lives on the same day, with new generations springing up daily.

The caves in which some of the inhabitants hide from the sun during the lunar day are another detail that dimly foreshadows *The First Men in the Moon.* All in all, though, I have a feeling that Wells's indebtedness to Kepler is fairly slight.

Much more coherent and very charming is the next significant moon voyage, Bishop Francis Godwin's *The Man in the Moone*, published four years later. It is the story of a shipwrecked Spaniard, Domingo Gonsales, who discovers birds, called 'gansas', which he trains to carry him into the air. They are rather strange birds: 'one foote with Clawes, talons, and pounces, like an *Eagle*, and the other whole like a Swan or water fowle'. Escaping from savages on an island, the hero ascends into the sky: 'It was my good fortune that they tooke all one way, although not just the way I aymed at.' The birds, to his surprise, migrate to the moon. One of the most effective sections of the journey is the sight of the earth hanging in space:

Then I should perceive a great shining brightness to occupy the roome, during the like time (which was undoubtedly none other than the great Atlantick *Ocean). After that succeeded a spot almost of an Ovall form, even just such as we see America to have in our Mapps. Then another vast cleernesse, representing the* West Ocean*; and lastly a medley of spots, like the Countries of the East Indies. So that it seemed unto me like no other than a huge Mathematical Globe, leasurely turned before me,*

wherein successively all the Countries of our earthly world within the compasse of 24 howers were represented to my sight.

What he sees leads Domingo to defend the Copernican theory.

Journeying for about twelve days (and without hunger, a common experience of many early space travellers), he finds himself hurtling towards the moon: 'Then, I perceived also, that it was covered for the most part with a huge and mighty Sea.' His description of the moon as he makes his approach seems to be fairly close to what observers in the seventeenth century had thought they had seen through their primitive telescopes.

When Domingo lands, he naturally discovers that the moon is inhabited. His description, though brief, portrays a simple utopian world. There is no waste of anything 'necessary for the use of man'; food of all sorts grows without labour; clothing, housing are provided virtually without labour, and that 'as it were playing'. All the women are extraordinarily beautiful, and no man desires any other than the one he has known. Naturally, there is no crime; the people, 'young and old, doe hate all manner of vice'. Occasionally, imperfect children are born, but they are shipped off to America.

The next major journeys to other worlds are Cyrano de Bergerac's *Voyages to the Moon and Sun.* The voyages, of which the first is the most interesting, are only marginally science fiction – chiefly they are satiric fantasies and delightful as such. Cyrano's first attempt to reach the moon is by a rather novel means. He fastens about him a number of bottles of dew, and, naturally, since dew rises, so does he. High above the clouds, he discovers he is not heading towards the moon, so he breaks some of the bottles of dew and lands instead in Canada. There he constructs another machine, activated by a spring; and, on his first attempt at launching from a rock, lands with a crash, bruising himself badly. Back in his room, he greases himself all over with beef marrow and returns to his machine, to which soldiers have attached fire-crackers. He jumps into his machine to break off the fire-crackers, but it is too late, and he finds himself shooting into the air. Eventually the firecrackers give out, but Cyrano keeps on going, since the moon in waning quarter sucks up the marrow of animals, and that is what he is covered with. Touch-down is in the Earthly Paradise, where Cyrano falls on the Tree of Knowledge. Briefly he joins the select company there of Adam, Eve, Enoch, Elijah, and Saint John the Evangelist. All goes well until he gets into an argument with Elijah, eats of the Tree of Knowledge, and finds himself suddenly in a land of beast men who walk on all fours. And so it goes. There is very little science in the voyage, except Cyrano's advocacy of the Copernican theory and speculation about a plurality of worlds. There are, however, some interesting inventions among the inhabitants of the moon, including movable houses and talking books.

For his Journey to the Sun, Cyrano constructs a more elaborate

device, a 6-foot-tall box topped by a glass icosahedron. It is not exactly clear how the device is propelled; apparently it drives air out the top and sucks air in at the bottom. Meanwhile, though, it works, and Cyrano goes on a very long journey to the sun, giving him a chance to expound the Copernican theory. He lands first on one of the sunspots, which are actually little worlds circling the sun – a very good place to leave him.

A work that has had considerable influence on science fiction is, of course, Swift's *Gulliver's Travels* (1726), though except for the Voyage to Laputa, it is not itself science fiction. Instead it is a brilliantly satiric and ironic extension of travel literature, and something of the tone of the work lives on in many subsequent science-fiction stories and novels. Few, I think, would dispute that the most influential incident in the book is poor, bluff, not-too-bright Gulliver's inadvertent revelation of the depravity and cruelty of Western civilization in his interview with the King of Brobdingnag. After all that Gulliver has to tell about 'conspiracies, rebellions, murders, massacres, revolutions, banishments', the king offers his famous judgement: 'I cannot but conclude the bulk of your natives to be the most pernicious race of little odious vermin that nature ever suffered to crawl upon the surface of the earth.' One of the most important places where the incident reappears is in Wells's *The First Men in the Moon* in Cavor's interview with the Grand Lunar – except for his physics, Cavor is about as bright as Gulliver. It also appears again four decades after Wells in Lewis's *Out of the Silent Planet*, in the interview with the Oyarsa of Malacandra.

The only real science fiction in *Gulliver's Travels* is the Voyage to Laputa in Book III. Set adrift because of treachery, Gulliver lands on the island of Balnibarbi, only to discover 'a vast opaque body between me and the sun, moving towards the island'. This is the Flying Island of Laputa, and Marjorie Nicolson has argued that Swift's use of it is a moon voyage in reverse. Laputa, whose underside is adamantine, is powered by a giant magnet. With the Laputans, who are impractical mathematicians lost in abstract thought, Swift is making fun of knowledge which brings no practical human benefit.

Much more important as science fiction is Voltaire's *Micromégas* (1752), which was influenced by *Gulliver's Travels* (Voltaire admired Swift greatly and knew him during his four-year exile in England). The hero, an inhabitant of Sirius who is 120,000 feet tall, travels to our solar system with the aid of his 'marvellous knowledge of the laws of gravitation and of all the forces of attraction'. Making use now of a sunbeam, now of a comet, he finally lands on Saturn, where he picks a companion, a mere pygmy 6,000 feet tall. Together they travel the solar system, stopping at Jupiter and Mars and finally arriving at earth on 5 July 1737. They walk the planet in thirty-six hours: 'So here they are back where they started, after seeing that pool, almost imperceptible to them, that is called the Mediterranean, and that other pond,

which, under the name of the Great Ocean, surrounds the molehill.' At first they find no sign of life, but then with the aid of a 'little microscope' – a diamond 150 feet in diameter – they finally detect a whale: 'The Saturnian, now convinced that our world was inhabited, very soon made the assumption that it was inhabited only by whales.' But further search reveals a ship on a scientific expedition, and one of its members, with a quadrant, measures the height of the Saturnian accurate to within a foot. Then he measures the Sirian, planting a 'big tree in a place which Dr. Swift would name, but which I shall take good care not to call by name because of my great respect for the ladies'.

The ensuing conversation with the mites of earth begins with a marvellous speech by Micromégas:

O intelligent atoms in whom the eternal Being has taken pleasure in manifesting his skill and power, you must doubtless taste very pure joys on your globe; for having so little matter, and, seeming to be all spirit, you must spend your lives in love and in thought; that is the true life of spirits. I have nowhere seen true happiness, but without doubt it is here.

But the philosophers shake their heads and tell him it is not true. Rather, except for a few not too well regarded men, humanity is an 'assemblage of madmen, wicked men, and unhappy men'. Micromégas then wonders what the philosophers, who are apparently among the select company of the wise, do with their time: 'We dissect flies . . . we measure lines, we assemble numbers; we argue about two or three points that we understand, and we argue about two or three thousand that we don't understand.' At this point the visitors leave the mites with a 'fine book of philosophy, written very small for their use'. Opening it, the mites discover the pages are blank.

In concluding this section, I should note that there are, of course, exceptions to the fact that most examples of science fiction in the seventeenth and eighteenth centuries are journeys to other worlds in space. With its research institute, the House of Salomon, and its predictions of such scientific wonders as submarines and aircraft, Bacon's *New Atlantis* (1627) is in part science fiction; but it is also part of the utopian tradition and, unfortunately, a fragment.

II

Another new variety of science fiction is the voyage to a world underground, which makes its first important appearance in the eighteenth century. It takes two forms: one is a journey into great caverns inside the earth and the other a journey into a hollow earth. A small section of Robert Paltock's *Peter Wilkins* (1750) is the first significant journey to a cavern world (Jules Verne's *Journey to the Centre of the Earth* is, of course, a later and much more important development of this form). Shipwrecked near the South Pole, Wilkins's boat is sucked into a cavern. The boat falls with incredible violence over a precipice, is

whirled round and round, then drifts down a river to a great lake surrounded by a wood. Indebted to *Robinson Crusoe*, Paltock has his hero set up camp in a grotto at the edge of the lake, taking supplies from his boat. The underground world is inhabited by flying men and women, and Wilkins marries Youwarkee, by whom he has numerous children. And that's about all there is to it. Paltock's book was familar to writers of the Romantic period, who often admired it; but except for the speculation about life within the great cavern, it cannot be considered science fiction.

The first important voyage to a hollow earth is Baron Holberg's *Journey of Niels Klim to the World Underground* (1741), a work which has been translated into at least thirteen languages and has gone through at least sixty editions. Although the work was initially translated into English in 1742, it is much better known to Europeans than it is to English-speaking people.

In 1664, after having passed his examinations at the University of Copenhagen, Niels returns to his native Norway and decides to clear up some points of natural philosophy by studying the nature of the earth. Lowered into a cave, he finds himself hurtling into the abyss when his rope breaks. At first he travels in complete darkness, but in time he comes out into the hollow earth, complete with its own sun, planet, and firmament. His initial thought is that he has arrived in the mansions of the Blessed, but he rejects the idea,

since I viewed myself armed with a harpoon, and dragging a mighty length of rope after me, knowing full well that a man just going to Paradise has no occasion for a rope or a harpoon, and that the celestial inhabitants could not possibly be pleased with a dress which looked as if I intended, after the example of the Titans, to take Heaven by violence.

Mature consideration leads him to believe 'that the conjectures of those men are right who held the Earth to be hollow, and that within the shell or outward crust there is another lesser globe, and another firmament adorned with lesser sun, stars, and planets.' Gradually his rate of descent slows and he becomes a satellite of the planet, Nazar, which he circles for three days:

For as without intermission I was whirled about the planet that was next to me, I could distinguish day from night; and observing the subterranean sun to rise and set, and retire gradually out of sight, I could easily perceive when it was night, though it was not altogether as it is with us. For at sunset the whole face of the firmament appeared of a bright purple, not unlike the countenance of our moon sometimes.

I find this a fascinating image, but I'm afraid it represents all that is science fiction in the book.

Niels lands on the planet Nazar when an attacking griffin he harpoons drags him down. The inhabitants of the various states of Nazar are all rational, talking trees, of whom the first he meets are the

Potuans. He starts off in trouble because, fleeing from a bull, he leaps into a tree, who turns out to be wife of a principal magistrate. After many adventures among the natives of Nazar, he gets exiled to the firmament, taken there by birds, called Cupacs, in the manner of Domingo Gonsales's trip to the moon. In the firmament he rises to be the Emperor of the Fifth Monarchy, but overreaching himself he has to flee, fortunately into the same hole by which he had arrived in the world underground. And so he arrives back on the surface of the earth. The book contains a great deal of satire, and in its details echoes works all the way back to Plato and Homer. Swift's influence seems to be pervasive, but *Gulliver's Travels* is a work of genius, while *Niels Klim* is merely competent.

After *Niels Klim* there are no important underground voyages until Jules Verne's *Journey to the Centre of the Earth* (1864). There is, however, a rather bizarre though minor utopian novel, the anonymous *Symzonia* (1820), which is important for its influence on Poe. It is based on the speculations of Captain John Cleves Symmes about a hollow earth open at both poles. Symmes first set forth his theory in a circular published in St Louis in 1818. Determined that the world should know of it as speedily as possible, he sent a copy of the pamphlet 'to every learned institution, and to every considerable town and village, as well as every distinguished individual of which he could gain any intelligence, throughout the United States, and to several learned societies in Europe'. The theory, instead of receiving the respectful attention he must have hoped for, became the subject of jest and ridicule in American newspapers, and men of science refused even to consider it. Undaunted, Symmes kept up the fight for more than ten years with letters to newspapers, pamphlets, and lecture appearances. His theory even got as far as the Congress of the United States, where a Bill was introduced in both House and Senate to finance a polar expedition to test its validity. The Bill didn't pass, but twenty-five senators voted for it.

'In the year 1817', writes the unknown Captain Seaborn in *Symzonia*, 'I projected a voyage of discovery in the hope of finding a passage to a new and untried world.' Seaborn sails south from New York, and after passing the ring of ice in latitude 70° to 80°, his ship moves toward the pole and an increasingly warmer climate. Imperceptibly the ship passes over the verge into the great opening which leads to the interior world. The heat becomes excessive, and the bewildered sailors nearly mutiny; but, quieting their fears, Seaborn is able to push on into the interior, where he discovers a utopian civilization technologically advanced beyond the outside world.

When Seaborn and the 'internals' overcome the language barrier, he is able to learn about their civilization and tell about his own. He learns that the selfish, greedy, and morally impure have been banished to a land near the northern polar opening. The exiles have lost their whiteness and become dark and misshapen, and Seaborn begins to suspect

that his people may be the descendants of the exiles. Seaborn is careful to hide the faults of his people, but the ruler eventually uncovers them, and like Swift's King of Brobdingnag, he passes a severe judgement that shocks the worthy Captain: 'I was petrified with confusion and shame, on hearing my race thus described as pestiferous beings, spreading moral disease and contamination.' Seaborn and crew are ordered to sail out of the internal world, never to return again.

Apparently Poe knew about Symmes's theory and was interested in it, although he never really developed the idea of a hollow earth. 'The Unparalleled Adventures of One Hans Pfaall' (1835), the 'MS. Found in a Bottle' (1833), and *The Narrative of Arthur Gordon Pym* (1838) indicate that Poe had knowledge not only of Symmes's ideas but also of *Symzonia.* When Hans Pfaall passes over the North Pole, he sees the polar depression. The writer of the document in 'MS. Found in a Bottle' is evidently describing a descent into the earth through the south polar opening. The mysterious ghost ship on which he is an unwilling passenger moves steadily southward: 'Perhaps this current leads us to the southern pole itself.' Finally the ship penetrates the ice barrier and falls into the abyss: 'Oh, horror upon horror! the ice opens suddenly to the right, and to the left, and we are whirling dizzily in immense concentric circles, round and round the borders of a gigantic amphitheatre, the summit of whose walls is lost in darkness.' In *Arthur Gordon Pym* Poe makes greater use of Symmes's theory and of the imaginary voyage, *Symzonia.* Like Captain Seaborn's *Explorer*, the *Jane Grey*, the ship on which Pym finds himself after harrowing experiences of mutiny and shipwreck, passes through the southern ice hoop into a warmer region. When Pym escapes from the island of the dark savages after the massacre of the crew of the *Jane Grey*, his canoe heads into a current moving southward. The temperature, as demanded by Symmes's theory and portrayed in *Symzonia,* increases constantly until it becomes excessive. At the end of the narrative, the canoe carrying Pym is drawn into the vast chasm of falling waters at the South Pole:

And now we rushed into the embrace of the cataract, where a chasm threw itself open to receive us. But there arose in our pathway a shrouded human figure, very far larger in its proportions than any dweller among men. And the hue of the skin of the figure was of the perfect whiteness of snow.

The white figure suggests the utopians of *Symzonia* while the dark savages living on the islands outside the abyss suggest the descendants of moral misfits banished from the interior word. And, of course, Verne's late work, *The Sphinx of Ice* (1897), picks up where Poe left off.

III

The nineteenth century sees the development of a number of new

science-fiction themes or devices. One of these has its first important expression in Mary Shelley's *Frankenstein* (1818), an immature work which nevertheless has been enormously influential. The theme is, of course, the creation of human life by supposedly scientific means – in this case, Victor Frankenstein's eight-foot monster. The story is romanticism at its worst, as is evident in the concluding paragraphs when the monster, having killed his creator, sets off across the polar ice fields:

I shall die, and what I now feel be no longer felt. Soon these burning miseries will be extinct. I shall ascend my funeral pile triumphantly, and exalt in the agony of the torturing flames. The light of that conflagration will fade away; my ashes will be swept into the sea by the winds. My spirit will sleep in peace; or if it think, it will not surely think thus. Farewell.

The novel, in presenting the dilemma of the monster in relation to Frankenstein, is a variation on Satan's response to God and at the same time a re-working of the Prometheus theme. It is also science fiction, since it is by his researches into the principles of life that Frankenstein is able to fabricate his monster from the dead bodies of human beings. This to me seems surely to be one of the sources for Wells's *The Island of Doctor Moreau* (1896). It has also been suggested that *Frankenstein* had some influence on his *The Invisible Man* (1897).

Another new form of science fiction appears early in the nineteenth century, the voyage to another world by optical means. During August and September 1835, a series of articles in the New York *Sun* employed scientific verisimilitude to perpetrate one of the most famous newspaper hoaxes of all times, Richard Adams Locke's 'Great Astronomical Discoveries Lately Made by Sir John Herschel at the Cape of Good Hope'. Better known today as the *Moon Hoax*, the story told how life had supposedly been seen on the moon by Herschel through a new type of telescope that brought the moon to within an apparent distance of 40 feet. The great public interest in the story and the widespread acceptance of its truth have too often been described to require repetition here. It is sufficient to note that the only thing in modern experience comparable to the *Moon Hoax* was Orson Welles's 1938 dramatization of H. G. Wells's *The War of the Worlds*.

In his portrayal of our satellite and its inhabitants, Locke made no effort to achieve the realism which characterized his account of Herschel's great telescope. The description of the moon is completely fantastic; and, as Professor Nicolson notes, it suggests the spectacular settings employed in several popular plays which were indebted to the stories of Godwin and Cyrano for their presentation of another inhabited world. Vast lunar forests, level green plains, beaches of brilliant white and ringed with green marble, blue amethysts ninety feet high, hills topped with orange and yellow crystals form the stage on which Locke's animals and flying men perform. There are one-horn goats, cranes with outrageously long legs and bills, biped beavers that use fire, miniature zebras and bison, and a strange amphibious animal,

spherical in shape, that rolls along the beaches. Most romantic of all the creatures on the moon are the flying men, who have 'wings composed of a thin membrane, without hair, lying snugly upon their backs, from the top of the shoulders to the calves of the legs'. These remarkable creatures are, as Poe remarked, a 'literal copy' of the glums and gawries, the flying men and women described in Robert Paltock's *The Life and Adventures of Peter Wilkins.*

Locke's peculiar mixture of verisimilitude and fantasy seems to have been imitated in Fitz-James O'Brien's 'Diamond Lens' (1859). In this story the narrator constructs a super-microscope which reveals a world in a drop of water inhabited by a beautiful girl. The kind of pseudo-scientific terminology employed to explain the Cape Town telescope appears in the description of the microscope while the names of famous microscopists are conjured up as are Sir John and Sir William Herschel in the *Moon Hoax.* The world in the atom is like Locke's world in the moon, completely fantastic and full of rich colours and strange shapes:

Far away into the illimitable distance stretched long avenues of the gaseous forest, dimly transparent, and painted with prismatic hues of unimaginable brilliancy. The pendent branches waved along the fluid glades until every vista seemed to break through the half-lucent ranks of many-colored drooping silken pennons. What seemed to be either fruits or flowers, pied with a thousand hues, lustrous and ever varying, bubbled from the crowns of this fairy bridge.

Although Animula, the beautiful girl in the atom, is a perfectly formed human being and hence unlike Locke's subhuman bat men, there are other strange creatures reminiscent of the *Moon Hoax*, including an apparently intelligent tree which the narrator sees handing fruit to the lovely Animula.

But Poe and Hawthorne develop several new themes in stories of higher quality and sophistication, if not of greater interest. It is convenient to discuss Hawthorne first.

'Dr Heidegger's Experiment' (1837) barely qualifies as science fiction and can be quickly dismissed. Water from the Fountain of Youth changes four old people into youths again, or does it? Hawthorne plays his familiar game of ambiguity:

Yet, by a strange deception, owing to the duskiness of the chamber, and the antique dresses which they still wore, the tall mirror is said to have reflected the figures of three old, gray, withered grandsires, ridiculously contending for the skinny ugliness of a shrivelled grandam.

More clearly science fiction, though anti-science science fiction, is 'Rappaccini's Daughter' (1837). Like *Frankenstein*, it is right out of the Romantic period. In this familiar story, Rappaccini, the 'tall, emaciated, yellow, and sickly-looking' scientist, raises his daughter, Beatrice, to be immune to the deadly scents of poisonous plants, but,

alas, poisonous to other human beings. Caring infinitely more for science than mankind, '[Rappaccini] would sacrifice human life, his own among the rest, or whatever else was dearest to him, for the sake of adding so much as a grain of mustard seed to the great heap of accumulated knowledge'. Beatrice, the only admirable character in the story, dies at his feet at the end of the story.

In 'The Birthmark' (1843) Hawthorne seems to equate science with magic and makes it out to be an evil tampering with nature – Aylmer destroys his beautiful wife by trying to remove a birthmark and thereby make her perfect. The story sounds even more like *Frankenstein* in its philosophy:

In those days when the comparatively recent discovery of electricity and other kindred mysteries of Nature seemed to open paths into the regions of miracle, it was not unusual for the love of science to rival the love of woman in its depth and absorbing energy.

Hawthorne's moral is that Nature permits us to 'mend, and, like a jealous patentee, on no account to make'. This is, of course, a familiar sentiment among many Romantics.

I would like to conclude this essay with a few stories of Edgar Allan Poe, surely the most important writer of science fiction in the nineteenth century before Verne and Wells. I shall first deal with two which are fairly effective and, like some we have just discussed, represent the treatment of other themes than the voyage to another world.

The first is 'The Facts in the Case of M. Valdemar' (1845). It deals with a man hypnotized at the point of death, only to be awakened seven months later. As the narrator makes his 'mesmeric passes', M. Valdemar is drawn from his trance, with the following results:

. . . [*Valdemar's*] *whole frame at once — within the space of a single minute, or less, shrunk — crumbled — absolutely* rotted *away beneath my hands. Upon the bed, before that whole company, there lay a nearly liquid mass of loathsome — of detestable putrescence.*

The story is clearly science fiction: it is, after all, built on what is at least a pseudo-scientific hypothesis.

The second story is 'Von Kempelen and His Discovery' (1849). Less macabre but also less effective, it develops an ancient idea, the transmutation of lead into gold, but gives it a certain scientific plausibility. Several references are made to the 'Diary of Sir Humphry Davy', and it is hinted that the great English chemist was attempting the same transformation. We are also shown the laboratory, a room ten by eight filled with chemical apparatus:

. . . *a very small furnace, with a glowing fire in it, and on the fire a kind of duplicate crucible — two crucibles connected by a tube. One of these crucibles was nearly full of lead, which was close to the brim. The other crucible had some liquid in it, which, as the officers entered, seemed to be furiously dissipating in vapor.*

The end product of the process is gold, gold 'without the slightest appreciable alloy', a fact which is discovered when the contents of a trunk, hidden under a bed, are analysed.

But in spite of the development of several new science-fiction themes in the early nineteenth century, the most common form remains the journey to another world in space.[3] Its most important manifestation is in Poe's flawed story, 'The Unparalleled Adventures of One Hans Pfaall' (1835). Before discussing it, brief mention should be made of his 'Mellonta Tauta' (1849), a satire in the form of an account of a balloon journey in the year 2848. Its science-fiction elements include dirigible balloons carrying 200 people, aircraft propelled by magnetically operated propellers, floating telegraph wires, and 300-mile-an-hour trains running on tracks 50 feet wide.

The new realism in the journey to another world made its first significant appearance in Poe's 'Hans Pfaall'. Poe, who understood the change which the journey to another world was undergoing, discussed the new realism in his Notes and found the old, familiar moon voyages wanting because they lacked 'plausibility'. Although he boasted of his own scientific accuracy, Poe did not write a first-rate story. One part of 'Hans Pfaall' is a parody of the seventeenth- and eighteenth-century lunar voyage, the other a realistic story of space travel; and the two are not successfully blended together. At first he planned an entirely serious story along the lines of complete verisimilitude and took the idea to his friend Kennedy, who advised against it. 'I fell back', he wrote later, 'upon a style half plausible, half bantering.' The story as finally published in the *Southern Literary Messenger* (June 1835) consisted of the realistic narrative of the journey from the earth to the moon and the fantastic enveloping plot.

More than anyone before, Poe lavished attention on the preparations for the trip and the actual journey to the moon, and details follow details in rapid sequence. To explain the use of the balloon for the journey through space, Poe carefully marshals evidence to prove that a very thin atmosphere may exist in space, and to complete the process of winning credibility, he attempts to picture a balloon of amazing buoyancy. No effort is spared to furnish a plausible-sounding description of this, the last as well as the only important lighter-than-air spaceship. It is made of cambric muslim, treated with three coats of varnish caoutchouc and filled with 40,000 cubic feet of a remarkable new gas '37.4 times lighter than hydrogen'. Suspended beneath is a wicker passenger car covered by 'a very strong, perfectly air-tight, but flexible gum-elastic bag'. To maintain a breathable atmosphere inside the sealed car, Hans Pfaall has 'one of M. Grimm's improvements upon the apparatus for the condensation of atmospheric air' and a 'small valve at the bottom of the car' to eject foul air. A supply of water and 'compact provisions like pemmican' complete the arrangements, while Hans also collects animal passengers, in this case a cat and two pigeons. Because he plans to make scientific observations during the

trip, he assembles various instruments: 'a telescope, a barometer, a thermometer, an electrometer, a magnetic needle, and a seconds watch'.

The journey itself is characterized by a similar effort to achieve technical verisimilitude. As Hans Pfaall rises in the air, he observes the earth and sky, and watches his instruments more attentively than had any previous space traveller. The barometer indicates the altitude, and the rate of fall of feathers thrown from the car the density of the air. At seventeen miles elevation the atmosphere becomes so thin that Hans, gasping for breath and bleeding at the nose, ears, and eyes, adjusts the air-tight bag around his car, and during the rest of the trip he wakes himself periodically with an ingenious water clock in order to operate his air-replenishing machine. Throughout the whole experience he carefully records observations in his notebook.

In the narrative of the voyage to the moon, all the stereotyped conventions are employed, and certain incidents seem to have been copied from previous stories. The earth is a great globe hanging in space; the reversal of the ship at the point of equal attraction between the earth and the moon and then the growing bulk of the moon, are all included. But Poe does make one original contribution to the journey to another world. Far out in the depths of space a flaming meteor comes booming past the balloon, a convention which becomes standard in nineteenth-century stories of interplanetary travel.

Poe omitted the description of the moon when he gave up the idea of writing an entirely realistic story and decided instead to add the facetious enveloping plot. However, internal evidence seems to indicate that his original intention was to portray the moon of contemporary astronomy. Far out in space, Hans notes the 'entire absence of ocean or sea, and indeed of any lake or river, or body of water whatever' on our satellite, and he sees 'vast level regions of a character decidedly alluvial' and also 'innumerable volcanic mountains conical in shape'. Later Hans mentions the moon's 'wonderful alterations of heat and cold; of unmitigated and burning sunshine for one fortnight, and more than polar frigidity for the next'. It might seem that Poe was following Kepler's conception of the moon. Poe, however, explained in a later article that inspiration for 'Hans Pfaall' had come from the description of the moon in Sir John Herschel's *Treatise on Astronomy*, the American edition of which had been published a few months before 'Hans Pfaall'. Poe read Herschel's book with great care as soon as it appeared and found himself 'very much interested in what is there said respecting the possibility of future lunar investigations', but Kennedy's unfortunate advice put an end to his plan of embodying in a story the description of the moon contained in the *Treatise on Astronomy*.

In order to write the enveloping plot, which tells how the manuscript account of Hans's trip is delivered by a ridiculous Selenite who arrives in a balloon made of dirty newspapers, Poe was forced to alter his

conception of the moon-world from which the Selenite had come. Though not described at any length, this moon-world is fantastic in the tradition of those discovered by voyagers like Domingo Gonsales and Cyrano de Bergerac. After nineteen days in transit, Hans, clutching the framework of his balloon, crashes into the 'very heart of a fantastical-looking city, and into the very heart of a vast crowd of ugly little people'. The Selenites, about 2 feet 2 inches tall, are absurdly rotund, have enormous red noses, and are without ears. Their description, while obviously related to the seventeenth-century tradition of the cosmic voyage, also seems to echo the ideas of the nineteenth-century selenographer Schröter about the little people who inhabit the moon.

It is interesting to note that, in *From the Earth to the Moon* (1865), Verne, in concluding a survey of previous journeys to the moon in literature, ends with mention of 'Hans Pfaall': 'But, to bring this rapid skecth to a close, I will only add that a certain Hans Pfaall, of Rotterdam, launching himself in a balloon filled with a gas thirty-seven times lighter than hydrogen, reached the moon after a passage of nineteen hours.'

Finally a postscript. Voyages to the planets became more common in the period after Verne's trip to the moon (which will be discussed later in this volume). One kind, though very minor, was to a world less advanced in evolution, usually either Jupiter or Mars. The other kind, the journey to an advanced Mars, was inspired by Schiaparelli's detection of the so-called canals in 1877. The public responded enthusiastically to the implication that intelligent life had produced artificial waterways on Mars, and writers began to capitalize on this enthusiasm at least as early as Percy Greg's *Across the Zodiac* (1880). But it is not until Wells's *The War of the Worlds* (1898) that the story of the advanced Martians achieves substantial development.

Notes

1. See Raymond Williams's essay in this volume (p. 52–66).
2. See my survey of the many minor nineteenth-century journeys to other worlds in 'Victorian "Extraterrestrials" ', *The Worlds of Victorian Fiction*, ed. Jerome H. Buckley (Harvard U.P., 1975). Another minor form of science fiction in the period is the future war story, which is discussed in I. F. Clarke, *Voices Prophesying War* (Oxford U.P., 1966).

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Jules Verne: the last happy utopianist

Marc Angenot

Life and work

Jules Verne was born in Nantes in 1828. His father, a well-to-do provincial bourgeois, wanted his son to follow the respectable career of a lawyer or financier. Jules was sent to Paris to study law. Endowed with an independent and adventurous character, he did not show much enthusiasm for his first profession, that of a stockbroker. He wanted to write and actually tried without great success to become a playwright. It was rather late in his life and, apparently, by pure chance that Verne discovered the literary formula that was to bring him success, wealth, and some sort of international fame.

In 1862, encouraged by his friend and publisher Hetzel (who some years later would launch the *Magasin d'Education et de Récréation*, the most successful magazine for young people at the time), Jules Verne wrote his first scientific adventure novel, *Five Weeks in a Balloon* (1863), to be followed shortly by *Journey to the Centre of the Earth* (1864), *From the Earth to the Moon* (1865), and many others. Their success was immediate, as evidenced by an ever-increasing demand from a public never entirely limited to teenagers. A host of imitators soon followed, among them André Laurie, le Faure and Graffigny, Nagrien, Calvet, Berthet, and Danrit.

Without trying to disparage his genius, it should be noted that, although he has so often been called the 'Father of Science Fiction', Verne was not among the first to write 'scientific romances'. From the French Revolution to 1862 in France, there had been dozens of narratives which, in retrospect, have to be called science fiction. C. Defontenay's *Star* (*Psi Cassiopoea*) (1854), recently published in English, gives evidence of the hitherto unrecognized value and audacity of these works. Nevertheless, before Verne, SF never established a tradition. It was a production without cultural continuity, deprived of any institutional legitimacy.

In sociological terms, the contrast between Verne's commercial success and the failure of his predecessors may be explained by supposing that SF had for years sought in vain for an institutional 'landing point' and an ideological model. It is as if powerful resistances had impeded the success of genres with an intense speculative boldness or with strong elements of social satire, so that the fiction of scientific

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conjecture was finally forced into a more timid framework, namely the promotion of a literature for teenagers, progressivist and 'virile'.

And in fact – though a few early enthusiasts recognized him immediately as an important author – Verne was generally considered nothing more than a respectable writer for young people. It is only in the last twenty years that such critics as Michel Butor, Marcel Moré, Roland Barthes, Michel Serres, Michel Foucault, Pierre Macherey, Jean Chesneaux, and Simone Vierne have discovered in Verne a writer whose coherence, subtlety, and complexity of vision place him among the greatest. These recent works in French (see Bibliography) place Jules Verne at the centre of the methodological debates on literary criticism, since each is representative of a particular approach; thus, Verne has been brought within the horizons of psychoanalysis, archetypal criticism, formalism, Marxism, structuralism, and other types of sociocritical analysis.

Verne wrote eighty novels or so and, although he reached the peak of his career in the 1870s, there are only a few of his later works that are decidedly uninteresting. In this essay, I shall attempt to circumscribe a specific world-view that in my opinion underlies all his books: not only the actual 'scientific romances' – which would leave us with a balance of travelogues, fantasy tales, and adventure stories that are usually labelled as 'less interesting' by critics of SF – but his opus as a whole.

Circulation as theme

Let us begin with something obvious on the surface of the text: all the narratives of Jules Verne, or almost all, are narratives of circulation and even – as Michel Serres has pointed out – of circular circulation. All his practically minded characters are bodies in motion; but one can also see that this mobility does not apply to the actors alone. Other things circulate also: desires, information, money, machines, celestial bodies. Everything circulates – *mobilis in mobili*: what can be more suitable than to use Captain Nemo's own motto as the *leitmotif* of the entire opus?

It has often been noted that Verne's most significant characters are people with fixations: Lidenbrock in *Journey to the Centre of the Earth*, Hatteras in *English at the North Pole* (1866), Phileas Fogg in *Around the World in Eighty Days* (1873) and, to the point of being ridiculous, Jos Merritt in *Mistress Branican* (1891) who goes all the way to Australia in search of a hat won by Queen Victoria. Yet, paradoxically, all these fixations are ambulatory fixations.

What of the 'supreme point' towards which the characters tend, as Michel Butor has noted? No doubt it exists, but it is always a question, not of remaining there, but of *attaining* it. In fact, by virtue of its being a fixed point, it cannot be occupied: the geographic pole is an erupting volcano, while the centre of the earth is never reached by Professor

Lidenbrock and his nephew. The 'American' qualities of the characters – energy, tenacity, steadiness, insensitivity – are qualities of an object bound to a periplus or circumnavigatory voyage, the trajectory of which ought to be accelerated, but cannot be bent inwards. 'This gentleman asked for nothing. He did not travel, he described a circumference', says Verne very accurately of Phileas Fogg.

In *Captain Antifer* (1894), the hunt for treasure, determined by geographic coordinates, results in the tracing of a 'circle of circles', but the treasure (the fixed point, meaning or value) has been swallowed up by the sea. Equally, Verne's frequent cryptogram is a machine which causes meaning to circulate: it has a key but no referent; circulation comes to a halt with the last message. The entire *œuvre* is a 'cycle of cyclical voyages', says Michel Serres, who returns to Hegel, but could just as easily refer to Marx's concept of the commodity circuit (commodity → money → commodity). To add a Freudian element, the theme of 'triangulation' can be interpreted as analogous to the Oedipus triangle, in a work where the Oedipus myth is present through a number of avatars.

Before attempting an interpretation, it is important to take into account the polysemy, the circulation of meaning throughout the intertextual system.

At a cosmological level, for example, Verne's celestial mechanics correspond to his circular voyages. The celestial bodies also turn in relation to a fixed point: thus the aphelion of Gallia in *Off on a Comet!* (1877) does not pass beyond the solar system, and the comet returns to skim the earth's atmosphere after its revolution. And since mythological interpretations have a good time with Jules Verne, it remains to be noted that Verne uses only the *ambulatory* myths which are, in effect, transposed, and very systematically, in his work: Ulysses being the model for *Mathias Sandorf* (1885); Orpheus, the ancestor of Franz de Telek in *Castle of the Carpathians* (1892); Icarus, the ancestor of Robur in *Clipper of the Clouds* (1886); Oedipus being reversed in *Michael Strogoff* (1876); ARiadNE being the archetype of ARNE Saknussemm, the thread in the labyrinth where Lidenbrock and Axel make their way. . . . These myths, of which Verne retains the general configuration, are superficial features; to look here for the essence of the work, as the archetypal critics do, would be a mistake. It is the 'theme' of circulation (for lack of a more appropriate expression) which gives unity to the work, and which permits the bringing together of the scientific romances and the 'simple' travel narratives such as *Michael Strogoff*, *Eight Hundred Leagues on the Amazon* (1881), and *Cesar Cascabel* (1890).

Verne reactivates in his work *all* the fictional models of the voyage. *Around the World in Eighty Days* revives the picaresque model of flight and pursuit stories: Figgs behind Fogg, policeman and thief. Fogg is accused of having invented his extravagant bet to cover a bank robbery. Fogg is the movable body and Figgs's is fixed, an obstacle to

circulation, attempting to head back the circulating gold to the 'fixed capital' of the Bank of England, the victim of the theft. This confusion of Phileas Fogg with a *gold thief* is worth emphasizing. In the economic image that I shall describe, gold is an imaginary equivalent for capitalization, i.e. sedentariness, as opposed to the circulation of commodities in the axiomatic paradox of the capitalist system.

Keraban the Inflexible (1883), a narrative of simple circulation, gives us a clue. Keraban wants to go from Constantinople to Scutari, but the protectionist government of the Young Turks has just imposed a toll on the Bosporus. The reactionary Keraban becomes, in spite of himself, a hero of economic liberalism: he cannot put up with this blocking element, a tax imposed on commodities and people. Since he is prevented from circulating as he pleases, he decides to circulate in an accelerated fashion: he will travel around the Black Sea to avoid submitting to this protectionist nuisance! The novel comes down to this and nothing else, but it reads in expressly economic terms. Let us keep in mind the equation: 'blockage implies acceleration'.

There are other epics of *release* and *circulation*. *L'Invasion de la Mer* (1905) predicts that the Sahara Desert, travelled by wretched and culturally stagnant people, will become an ocean, open to commercial ventures, if a canal can be dug between the Gulf of Gabes and the Tunisian Schotts. *The Underground City* (1877) is likewise the story of a struggle between the engineer, Starr, who wants to reopen the Aberfoyle coal mine, and Silfax, the Hermit of the mine and the superstitious guardian of stagnation and autistic obscurity. In *Off on a Comet!* Gibraltar, symbol of imperialist protectionism and blockading, is sucked away by the comet Gallia, so that its obtuse garrison begins to circulate within the solar system. The same goes for the 'polar' novels, narratives of the struggle against entropy and 'zero degree': 'I do not believe in uninhabitable areas', Captain Hatteras had said. . . .

It has often been noted that all Verne's imaginary machines are machines meant to circulate more rapidly: the Steam House, the Albatross, the *Nautilus*, the Épouvante, the Columbiad rocket, Propellor Island; and even (minus the machinery) the giant raft of la Jangada, and the gypsy wagon of Cesar Cascabel. One is reminded of the love for railways shared by Verne and his juvenile readers. Verne even invented lines which did not exist (and still do not), such as the Transcaspian, and the Transasiatic. *Claudius Bombarnac* (1892) is a railroad romance from the first page to the last.

At the end of the nineteenth century, electricity was no longer a dream; the dynamo dates from 1861, the electric railway from 1879, the elevator from 1880. But electricity is, in itself, natural energy, and, in its effects, a source *par excellence* of mobility, the negation of space by speed: the telegraph, acclaimed by Verne, presages a McLuhanesque shrinking of the world to the dimensions of an 'electronic village'. It should be noted that electricity is an accelerating agent, not a transforming one in Verne: there are *accelerated circularities*, not

qualitatively irreversible mutations: the acceleration does not reach attrition speed, the circle never becomes asymptote.

These circulating machines finally permit a dialectical transcendence of values attached to sedentariness: the vehicles are homely and comfortable, deterritorialized territories. Hence, the paradoxes of the Steam House, the Floating City, and the Propellor Island. What is meant by this means of travelling which carries its shelter along with it? By the hero who is both a sedentary bourgeois and a stateless person, like Captain Nemo in the rococo stateroom of the *Nautilus*, with its opulent pictures and tapestries, its marble statues and its magnificent organ?

Circulation for circulation's sake

Let us ask ourselves the most obvious question: why does one circulate? And what can be gained at the end of the periplus which very often is the point of departure? Among Verne's recent critics, Simone Vierne replies that the Voyage is always an 'initiation', in the quasi-religious sense of the world. But the idea of initiation is, to a large extent, an artificial critical device which has been superimposed on Verne's texts. M.-H. Huet declares: 'the exploration, the voyage would be incomplete if the hero did not return to communicate his discovery'. This is the official ideology which rationally justifies the voyage. But Nemo and Robur never return. Hatteras and Telek do return, to the 'civilized' world, but go mad. . . .

Let us go back to our question, 'why circulate?' in the light of the 'cryptogram voyages', such as *Journey to the Centre of the Earth*, *Captain Grant's Children* (1867), *Captain Antifer* and *Eight Hundred Leagues on the Amazon*. The cryptogram is a text without a signified: it is a mutable signifier, the mobility of which involves that of the decipherers. With the exception of *Captain Grant's Children*, the referent of the cryptogram is never really found at the end of the voyage (the centre of the earth is not reached, the islet Julia is engulfed). Captain Grant – the father – is found on his island, but the voyage around the world was an investment without return, and Paganel's 'treasures' of ingenuity were in vain. All the cryptograms, then, give rise to circulation (of meaning and characters).

The 'Icarian' novels, such as those featuring Nemo and Robur, are flights forward: Icarus is a Prometheus without a beneficiary for his gift. In *The Will of an Eccentric* (1889), J. W. Hipperbone leaves his fortune to the winner of a strange contest: the United States becomes a chart for the game of snakes-and-ladders, each State representing a square of the game. But to have travelled across the USA is the only thing the competitors will have to show for their efforts; J. W. Hipperbone not being dead, the inheritance escapes them. The paradigm for all this is to be found in the pre-capitalist fable of Jean de la Fontaine, 'The Ploughman and the Children'. A ploughman, 'sensing his

approaching death', summons his children and directs them to plough the fields he leaves them, since 'a treasure is hidden within'. The children plough, the plough digs its furrows, and they find nothing (no value, no capital, no fetish), but they know henceforth, seeing the earth improved and productive, that 'work is treasure'. In Verne also, circulation is the true wealth and capitalization is accursed.

Phieeas Fogg makes his trip around the world; the expenses and benefits of the bet cancel each other out; his voyage was a case of circulation (monetary) without the surplus-value of *investment.* But Fogg obtains something which could be called a 'surplus-value of circulation', one day gained in travelling eastward. He also obtains another unsought-after value – fortune, gift, not investment – 'What was the yield of this voyage? Nothing, we would say.' . . . 'Nothing were it not for a wife.' And Verne, tongue in cheek, concludes: 'Would one not make a trip around the world for less than this?' In addition, the bet, a frequent motif in Verne, is the Romantic image of a time transaction, a 'future'; Fogg is a 'speculator' in both the intellectual's and the stockbroker's sense of the word.

Why does one circulate? One circulates in order to circulate, and one gains no profit from it, except a 'capital' of knowledge (but science is an immanent accelerator). Circulation is an end in itself; the only thing to do is to speed it up, and the highest moral quality is haste, which is always valued.

All the narratives are bound to this principle of acceleration: Lidenbrock and his companions are thrown forth by the Stromboli, while Phileas Fogg moves more and more rapidly in spite of the obstacles. A ludicrous variant of this is to be found in *Dr Ox's Experiment* (1874). The experiment consists of exposing a placid Flemish village to the effects of pure oxygen. Over a period of several hours, the normally phlegmatic behaviour of these people becomes more and more frantic, but finally everything goes back to normal. That's all: the narrative has no other interest than to stage this incongruous acceleration.

The paradox is that this accelerated circulation takes place in a closed circuit, in a limited universe, a world without transcendence, where science is identified with an integrated and accrued acceleration. I will try to interpret this essential feature in economic and political terms (but on other levels also), by opposing two isotopias, the terms of which are correlated:

Sedentariness	*vs*	Circulation
stagnation, entropy		acceleration
centripetal absorption		centrifugal expansion
territory		deterritorialization
blockages, territorial obstacles		fluidification
feudalism, closed societies		imperialism, deculturation
permanent or fixed capital		circulation of commodities

Sedentariness	*vs*	Circulation
monosemy		circulation of meaning, cryptogram
Jehovah figure		positivism and immanence
father figure		orphan figure
protectionism, State apparatus		liberalism, anarchism
superstition		free examination and science
marriage		celibacy
etc		

I shall attempt to demonstrate the immanent intelligibility of these contrasts, certain of which seem incongruous. Let me add a possible interpretative paradigm:

Robinsonade, as the paradigm of primitive capitalism, the physiocratic epic of landed property.	*vs*	Vernian narrative, as the paradigm of 'Keynesian' consumption society, acceleration without exterior limit (or crisis).

(Hence the need for examining Verne's *robinsonades* or desert-island narratives, such as *The Mysterious Island* (1874).)[1]

From the eighteenth century to the end of the nineteenth, we progress from the ideological figure of the Island to that of the accelerated Voyage, from the appropriation of nature to the economy of consumption. Movement is measured in time and energy; progress is a drive having neither limit nor backlash. As Lewis Mumford writes in *Technics and Civilization*, 'Progress was motion toward infinity, motion without completion or end, motion for motion's sake. One could not have too much progress, it could not come too rapidly, it could not spread too widely and it could not destroy the "unprogressive" elements in society too swiftly and ruthlessly.'

In this hypothesis, capitalism, as an ideological form, is perceived as the paradoxical coexistence of sedentary capital and circulating abundance (technical progress, consumption). The necessity for increased circulation leads to the valorization of science as a solvent of social contradictions, an immanent anticipative apparatus, a Utopia without rupture or setback, constantly producing divergences and integration. In a society which is torn apart by its transformation, Vernian fiction produces an imaginative synthesis of the contradictions of sedentariness and circulation.

Circulation in economic terms

Let us begin with the most commonplace quotations of Marx, not to

look here for the 'source' of Vernian ideological phantasms, but rather for an intertextual vector which passes through Verne's text:

All capital values are engaged in the continuous circulation. . . . The movement of the commodity is therefore a circuit.

Money is a perpetuum mobile.

The circulation of money as capital possesses its end in itself, because it is only by this continuously renewed motion that value continues to make itself valuable.

(Karl Marx, Capital, *I, i, Ch. 3, sect. 1, a, b)*

Circulation is a 'process without end', M—→C—→M, a circle; after undergoing changes of form, the same value returns to that of the universal equivalent. Circulation seems to *create* value in the shortened circuit M → M' (as exemplified by the bet in *Around the World in Eighty Days*). Verne privileges circulation as a social axiom; it is here that one is tempted to compare his idea of circulation with Keynes's antistagnationism: 'lack of consumption as the chief cause of depression'.

This circulation is tied to a generalized accountability – energy is measurable. Phileas Fogg is a neurotic of accountable time. Verne disregards the fact that circulation is tied to a sedentary pole, *Capital.* Everything is seen as accelerated fluidity; all unproductive accumulation (of meaning, knowledge, riches) is condemned in the story itself. For instance, his condemnation of permanent capital is illustrated in the character of Isaac Hakkabut, a merchant and usurer, in *Off on a Comet!* Carried away through the solar system, Hakkabut thinks only of centralizing the economic exchanges on Gallia in order to increase his small hoard of money. What the parable shows is that capital, once made 'unsedentary', no longer has any value. First because the comet itself is made of gold – which never more merited the name of a 'dirt cheap metal'! Second, because in orbit around Saturn, gold no longer weighs what it weighed on earth. The novel is a metaphorical critique of capitalist 'fetishism'.

There is no encoding which resists mobility, which is to say that capitalism destroys itself, not through crises, but in the very process of its reproduction. Private property is not a major element in modern society, it is an archaism, a contradiction. All of Verne's imaginative art puts this mobility and its liberating effects on stage. Science opposes fixed Capital: they are the positive and negative aspects of modernity. On this level, we already see Verne's ideological paradox: a utopia without rupture for a capitalism without capital. Verne portrays expense, not accumulation; circulation, not surplus value.

If capitalism tends to become, in economic terms, undifferentiated circulation, it is also undifferentiated circulation in its *lateral* effects. Here Verne sometimes expresses most directly the presuppositions

which we ascribe to his world-view. The political effect of industrial capitalism is an effect of deterritorializing and anonymizing. In suppressing by force the archaic axioms dependent on territorial investments, it creates a universe of stateless persons and orphans, in which everybody can be called a *Nemo*.

The capitalist market, and the apparatus of political expansion that it relies on, pitilessly eliminates particularisms, local traditions, old cultures which interfere with its expansion, and subverts the closed social nuclei – families, tribes – to mix up everything in the insignificance of exchange. Imperialist mobilization involves alienation, but equally the liberation from traditional bonds: the peasant uprooted from the soil becomes a proletarian, and the Hindu prince brutally expelled from his feudal world becomes Captain Nemo (Latin: nobody), the anonymous avenger, builder of a submarine, the *Nautilus*, which circulates more rapidly than the fleets of the imperialist powers pursuing him. Nemo does not try to reconstitute what 'inevitable progress' has crushed. He haunts a non-territory which no one will appropriate, the Ocean, with its inexhaustible abundance. He is the figure of the Wandering Jew, the Romantic image of the man without a territory.

Let us consider the ideological elements which Nemo's case transposes:

1. His motto *mobilis in mobili* is at once ambiguously Romantic theme ('Homme libre, toujours, tu chériras la mer!') and the epitome of circulation and technological modernity.
2. The *Nautilus*, a machine which produces no surplus value, makes for the coexistence of deterritorialization and territorial nostalgia; it is a closed whole, a museum and an encyclopaedia.
3. For Nemo to become an anarchist rebel who seeks to avenge himself on the imperialist powers, imperialism had to tear him from his static and condemned feudal world and to strip him of his identity as the former Prince Dakkan, a leader of the Sepoys in the Indian Mutiny of 1857. (Nemo's past is not revealed in *Twenty Thousand Leagues under the Sea*, but is established retrospectively in *The Mysterious Island*.) Nemo is both a new Prometheus and a Frankenstein's monster; he is at once the Creature dehumanized by progress, and the Creator who makes use of progress in accelerating it. His mobility is a fate which he transforms into a Romantic choice, and this is why the Saint-Simonian hero Cyrus Smith (Cyrus Harding in the English translation) must both admire and condemn him: 'Your error lay in supposing that the past could be resuscitated and in contending against inevitable progress' (*The Mysterious Island*, III, Ch. 16). It should be noted that 'inevitable progress' includes the genocide of the Sepoys and that Verne is perfectly conscious of this.
4. Nemo intervenes politically by financing the Cretans' liberation

movement against the English imperialists, but he draws the money from the unproductive treasure of the Spanish galleons sunk in the Bay of Vigo. In other words, here again he places in circulation 'sedentary' capital.

5. His voyage, zigzagging without a goal, a case of conspicuous consumption in undersea lands, is deterritorialized circulation, thus reproducing the capitalist axiom.
6. Imperialism, by stripping Nemo of his name, his property, and his flag made of him a 'free' man, a negative liberty that he changes into a positive one. Is Nemo a father figure, as Marcel Moré would have it? An odd father whose name is no-one! He is an orphan rather, like many Vernian heroes, born of a 'family without a name', in the violent midwifery of Capital made History. This outcast is not in reaction against, but rather ahead of history – he struggles against 'inevitable progress', but it must be said that in doing so, he passes beyond it. In the last chapters of *Twenty Thousand Leagues under the Sea*, when a British frigate blocks him up in an estuary, he can avenge himself, because he has, in the circumstances, the ultimate value of circulation against blockage.
7. This is also clearly stated in *The Mysterious Island*. Verne is forced to admire the power of imperialism to place things in circulation, at the very time when he tries to vindicate the right. Of the crushing of the Sepoys he says: 'Right, once again, had succumbed in the face of might. But civilization never recedes and it seems that it borrows all its rights from necessity.'[2] This is an ambiguous and frightening phrase to which no one has paid sufficient attention.

Blocking figures

In this epic of acceleration, what are the elements which represent the blockage of flow, the obstruction of energy, the stasis? First of all, there is frequently a critique of the State (the State, not the nation: nationalism is a liberating stage, but its clotting in a repressive apparatus inhibits it; the 'libertarian' Verne condemns the police forces while the free-trader Verne condemns the customs duties). From a Saint-Simonian point of view, the withering away of the State is tied to the free development of the industrial system.

We have seen the example of Keraban the Inflexible who cannot accept the toll on the Bosporus. If Verne is anglophobic, it is when he speaks of Gibraltar, Malacca, Aden, and all the hegemonic protectionism for which he nourishes a stubborn hatred. Verne even wrote a short story which is apparently supportive of the South in the American Civil War, but its title explains this paradox: 'The Blockade Runners' (1865). In *North Against South* (1887) and other novels, he is, on the contrary, for the Northerners, because philanthropic anti-slavery is consonant with the theme of deterritorialization.

Is he a racist, hostile to archaic or primitive peoples? That depends. No, if they free themselves from feudal stagnation. Yes, if, like the Tunisian nomads, they want to preserve for themselves a desert where nothing circulates: Verne invents a tidal wave which sweeps them away, but this natural catastrophe assists the cause of Progress and Exchange by creating the 'Saharan Sea' (*L'Invasion de la Mer*)!

Verne has a high regard for profit, trade and riches, but gold is doomed: a Romantic theme, if one wishes, but also an echo of a Saint-Simonian loathing, since what is spurned is unproductive accumulation. The ideological ethic which valorizes accelerated circulation, condemns the reduction of economic flow to an immobile centre. Marx in *Capital* saw that the two phenomena are correlated:

As soon as the circulation of commodities develops, the necessity and the desire to conserve the product of the first metamorphosis also develops.

But it is the 'fetishists of metal money', fascinated by the 'material glow of precious metals', who are condemned by Verne.

In other words, gold is valorized if it is put into circulation. Thus the Spanish treasures recovered by Nemo supply the revolt of the Cretans. In *Off on a Comet!*, in which Isaac Hakkabut is, as has been seen, the figure of unproductive capital, it is ironic that Verne thought it fit that the comet be made of gold telluride: 'It was indeed the mineral reign in its horrible aridity. . . .'

In *The Golden Volcano* (1906) and *The Survivors of the 'Jonathan'* (1909), Verne remembers the Australian and Californian gold rushes of the 1850s. Kaw Djer, the libertarian leader, throws back into the sea the first gold nugget that he finds. But he cannot prevent this discovery from bringing the disintegration of the colony. The colonists of Hoste Island become gold-washers, and the abandonment of productive labour ruins the economy of the island. 'The eternal desire to possess' is equally at the heart of *The Vanished Diamond* (1884), in which alchemical delusion is transposed into the theme of the chemical manufacture of diamonds.

If it is absurd to ask whether Verne was a closet anarchist, one may venture to see what in libertarian thought could be inscribed in his fictional system: and that is the absurdity of private property:

Everyone would say, as though it were the most natural thing in the world: this is mine! And no one was aware of this intense comedy, this pretention of a being so fragile to monopolize for himself and for himself alone some fraction of the universe. (The Survivors of the 'Jonathan')

Here again it is unproductive property which is condemned, such as that of Silfax in *The Underground City*, guardian of an unknown gold vein in an abandoned mine. As soon as Starr starts working the mine again, the tone changes and the praise of industrial capital modestly conceals the exploitation of the workers.

Science as accelerator

Science, for Verne, is at the same time exterior to social vicissitudes, innocent of society's contradictions and completely understood in its effects. In the place of need and labour it is the transcendental subject of history, whose inscription in the social body is called *progress*. Exterior to social relations but the agent of their transformations, it is the *alibi*, in the etymological sense, of the dominant class. It cannot be enslaved. It does not, then, have an institutional dimension: there are isolated scientists, but there is no technostructure; the rocket to the moon is launched by a private society supported by gifts. With isolated scientists as heroes, the passage from knowledge to praxis is made in the same person.

But science is not described for its own sake, and never does the narrative focus on isolated gadgets. The referent of Vernian discourse is the *effect* of science, as the successive projection of discrete inventions on the social body. This effect is essentially a quantifiable acceleration. Science is thus at once the guardian of the social *status quo*, and the means of its immanent transcendence.

Verne is far from manifesting the futurological fantasy of Rosny the Elder or Albert Robida, as his ideological project lies elsewhere: to show the social and historical effect of the introduction of new techniques into a state of society – his own. (Although Verne has for a long time been seen as the 'prophet of the twentieth century', it has been discovered that there is scarcely an 'invention' in his work which did not already exist in blueprint form.) His works are a portrayal of the influence of science in history. It is a one-way effect: science accelerates general circulation, but it is not influenced by the conflicts or the interests which were pre-existent. This lack of realism is proportional to Verne's optimism. Science cannot progress, however, without freedom (free criticism, free diffusion): it demands an unbounded and fluid society which it, in turn, contributes to produce; a dialectical harmony to which Verne holds.

Identifying Progress and Growth – an idea which our century has learned to distrust – Verne sees science taking the place of the immediate means of manual industry. 'They *knew*', he says of the colonists of Lincoln Island, comparing their progress to the failure of other, more primitive colonists. Progress is a continual process, unequivocal; its contradictions are only archaic resistances, reminders of a former order which will erode. It is fully positive. Does Verne write *science fiction*? Yes, as fiction about science in its global, historical effect, not in its scattering in specific discoveries.

In *The Golden Meteor* (1908), Verne confronts science and capitalism. An eccentric scientist, by means of a small apparatus manufactured in two or three days, brings the fall of a golden meteor; the result is diplomatic panic, universal bankruptcy, and military crisis. Science can wipe out the capitalist system which cannot do it any harm

in return. Verne, however, hesitated in seeing it through, and at the end of the novel nothing has happened. There are some transfers of fortune and the Republic of Greenland where the meteor had fallen (only to be engulfed by the sea) remains as poor as it was before. Something can be retained nonetheless: the impotence of the capitalist system when a simple scientific initiative strikes at its heart.

Verne's ideological image of unlimited acceleration unfolds in a closed universe. There is no externality: in terms of fiction, no mutant, no alien, no humanoids, no social catastrophe, no epistemological break, no interplanetary expansion. It is a world without externality, a geocentric circulation which remains totalizable: the cartographic dream fills up a limited space: 'The earth is the primitive and savage unity of desire and production.' All Vernian islands are the synecdoche of this primitive unity which echoes that of the first capitalist fiction, *Robinson Crusoe* (1719) by Daniel Defoe.

There is no anticipation in Verne, because the future is *in* the present. As Michel Serres writes, 'We are of a world where everything happens: one has almost the right to say: where everything has happened.' In this closed universe, Verne postulates the unlimited development, absolute growth without crises that will go on until the natural resources become exhausted. Some have wanted to see in his idea of the end of the world by 'natural exhaustion' a sign of pessimism, but, to me, it indicates an extreme optimism!

Narrative presuppositions and ideology

I have presented the theme of 'accelerated circulation' – a theme which postulates a *generalized economy* (circulation of commodities, people, ideas, desires) – as the invariable feature that confers a dynamic unity on Verne's work.

After having traditionally treated Verne as an inspired entertainer, literary critics have sought recently to throw light on his political ideology. Was he a good watch-dog of the bourgeois order, or rather a closet socialist, a libertarian, or a nationalist in the 1848 tradition? Perhaps it is useful to outline some significant vectors.

1. Saint-Simonianism

The social doctrine of Saint-Simon is often considered quite improperly as being socialist (i.e. as a class ideology of the proletariat). Saint-Simon expressed the social aspirations of the petty-bourgeois industrial vanguard, yearning for a 'government of the producers' when 'engineers would be kings'. The division of labour is seen as functional: a common and effective exploitation of Nature will eradicate exploitation of man by man.

2. '1848' nationalism

Verne praises the struggle of oppressed ethnic groups and nations, but

he also tends to justify a 'civilizing' imperialism. Here there are potential contradictions in his work. Class struggle is not ignored but is usually associated with ethnic struggles: Quebecers, Irishmen, Greeks, Balts, Slavs, etc.

3. Libertarian socialism

Jules Verne, a well-to-do provincial bourgeois, but also a friend and admirer of the anarchist doctrinaire Elisée Reclus, had in principle a certain reticent admiration for anarchism. At least in theory, anarchy stands for individual freedom as science stands for the freedom of mankind. Anarchy was probably in his opinion a 'noble chimera'. Bourgeois liberalism and anarchism are not totally incompatible in the spirit of 'accelerated circulation'. Free trade is a factor in the decay of the absolutist state.

4. 'Authoritarian' socialism

Here, Verne's reticence is more profound. The bourgeois parliamentary system is satirized in *Propellor Island* (1895); imperialist chauvinism is denounced in *The Golden Meteor. The Survivors of the 'Jonathan'* conceals a deeper critique of socialist theories. If Verne talks about 'les Lassalle, les Karl Marx, Les Guesde', it is to say that 'none of them take into account contingencies of life'. The 'dictatorship essential for the working of a collectivist society' is what his hero rejects. Verne sees in socialism only the blocking of circulation, economic exploitation being shifted to political hyper-repression. The parable is very clear: immigrants, displaced persons, are shipwrecked on the coast of southern Magellania, the last part of the world that in 1900 was not claimed by any political power. Yet, as soon as they are settling in this inhospitable area, they re-create powers, policies, prisons, and some sort of collective property that does not eliminate hatred and competition. The ideological conclusions are obvious. Collectivism cannot exist in scarcity: it cannot but entail tyranny. Science remains, for Verne, the only factor of social liberation.

Conclusions

Verne is not a doctrinaire but rather a man of fiction and fantasy. His tales display a certain ideological fuzziness along a major vector: that is, the circulation and acceleration of flux in a closed universe.

Verne is paradoxically a utopianist without an alternative society; he is the last SF writer who believes in industrialist euphoria, even if some pessimism overshadows his last books. H. G. Wells or Rosny the Elder are of another generation, prey to a cataclysmic world-view counterbalanced by a quest for mutations and radical changes. At the cost of some oversimplifications, Verne is able to harmonize most of the social ideas of his time.

Rather than a precursor of the twentieth century, he is the last

'happy' SF writer. Hence his everlasting seduction. Nostalgically, the reader sees this world-view which is neither critical, nor tragic, nor clouded with resentment, and is free from the paranoia that invades conjectural fiction after him. Verne is a great writer, whose profundity and aesthetic richness were discovered only recently. Far from anticipating the twentieth century, he only marks the end of certain illusions.

Notes

1. Pierre Macherey tries to see in *The Mysterious Island* a regression to early capitalist ideology. One should rather talk of a critical transcendence of this ideology. Marx himself clearly delineated such a project. Verne, had he read *Das Kapital*, would only have had to follow this scheme (I, i, sect. 3): 'Let us now picture to ourselves a Community of free individuals, carrying on their work with the means of production in common, in which the labour power of all the different individuals is consciously applied as the combined labour-power of the community. All the characteristics of Robinson's labour are here repeated, but with this difference, that they are social, instead of individual. . . . The total product of our community is a social product. . . . The social relations of the individual producers, with regard both to their labour and to its products, are in this case perfectly simple and intelligible, and that with regard not only to production but also to distribution.'
   Here is the ideological 'source' of *The Mysterious Island*, substituting for individual property the overall product of united workers. This 'Robinsonade' is anti-Robinson; the reign of scarcity is supplemented by technical knowledge. The 'colonists' begin at a prehistorical stage (one match, one watch-glass) and, in four years, recapture the technical development of the 1870s. The novel is a reflection on scientific 'surplus value' replacing landed surplus value.
2. My translation. In the (abridged) British version one only reads: 'Civilization never recedes. The law of necessity ever forces it onwards.' This is typical of the state of Vernian translations.

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Les Voyages extraordinaires

The dates given in the text of this essay refer to the first publication of the French original in book form. The titles, however, are those of the English translations, where translations exist. In the following cases, the English title differs noticeably from that of the French original: *English at the North Pole* (*Voyages et aventures du Capitaine Hatteras*), *Off on a Comet!* (*Hector Servadac*), *Clipper of the Clouds* (*Robur le Conquérant*), *Eight Hundred Leagues on the Amazon* (*La Jangada*), *The Underground City* (*Les Indes noires*), *The Golden Meteor* (*La Chasse au météore*).
The only reliable reprints of Verne in any language today are the *Œuvres de Jules Verne*, Lausanne (Rencontre) 1966-71, and the twenty titles or so published by Hachette in their 'Livre de Poche' series. The latter reproduce the original texts and illustrations. All other texts on the market are bowdlerized.

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The science fiction of H. G. Wells

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I

Wells's early works are remarkable for the way they do justice to conflict. In these stories and novels Wells does not set out to defend a specific point of view or assume a position of advocacy; instead, he constructs contradictions and then explores their structures and possibilities. His imaginative strategy is to establish acute conflict, the sharper and the more irresolvable the better, and then to find ways of overcoming the opposition without denying the validity of either side. The process involves either finding areas of identity that transcend the antithesis (*The War of the Worlds*), or, more usually, inventing symbols, images, and characters that bridge the gap between opposites. These early works thereby develop, not answers, but intricately balanced patterns which, by helping us focus clearly on the contradictions within civilization, force us to ponder, though hardly resolve, central moral issues of our world. Science fiction, or Scientific Romance as Wells himself termed it, is useful for such imaginative play because it offers a wider range of situations and images than does conventional realistic literature, and it permits new and eccentric orderings of old images.

The core of work that most interests us today was all published before 1900. It consists of four novels (*The Time Machine*, 1895; *The Island of Doctor Moreau*, 1896; *The Invisible Man*, 1897; and *The War of the Worlds*, 1898) and three collections of stories (*The Stolen Bacillus and Other Incidents*, 1895; *The Plattner Story and Others*, 1897; and *Tales of Space and Time*, 1899). This body of work forms a coherent unit which, despite the variety of ingenious plots and situations, is the product of a consistent imaginative method. There are, to be sure, important and influential pieces of science fiction that lie outside this central core (such as the great allegory of the limitations of human imagination, 'The Country of the Blind,' 1904), but they are for the most part works of a more didactic purpose and products of a new and different mode of imagination which, as has been frequently observed, enters Wells's fiction around 1900. After that date Wells frequently attempts to resolve the kind of conflict which he sustains in his early work, and often such resolutions take place at the expense of the truth one of the two sides expresses. Increasingly, he sees his art as

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committed to depicting a single truth, and the crises he invents are warnings of the consequences of not seeing or not acting according to his vision of sanity. Such works have their own excitement and generate their own kind of enlightenment; they are the works that Zamyatin focused on when he praised Wells as a genuine heretic; but in their concern for solutions, for being 'useful', they differ significantly from the stories and novels of the early years which offer no solutions, but delight in questions and paradoxes.

II

The key to Wells's early work is his use of irony, not to mock, nor to express moral outrage, but to explore civilization's form and potential. At its purest this irony is not even a linguistic device; it is situational and consists of simple, radical physical juxtaposition and contradiction. A number of the early tales have extraordinarily simple plots and no explicit moral ideas, but focus entirely on the strange conflict of two incongruous worlds. 'The Remarkable Case of Davidson's Eyes', for example, seems to have no other aim than to work out the ways two discrepant worlds fit and do not fit. Davidson, an acquaintance of the narrator, is working with electromagnets when lightning strikes particularly close by and suddenly he sees, instead of a laboratory in London late on a stormy afternoon, a semi-arid South Sea island early in the morning. But his body still resides in London, and for a while he has a difficult time getting around since he sees a world quite unlike the physical world he actually inhabits. The story spends some time working out oppositions – it is day there when it is night here; when he goes downstairs Davidson thinks he is going underground and gets claustrophobia; likewise, when he goes upstairs he thinks he is suspended in mid-air and gets vertigo. Nothing of narrative interest is happening in London, yet it is certainly no hell of boredom; and the island with its flock of filthy penguins is terribly drab, hardly a paradise. The story ends with evidence to suggest that Davidson was actually seeing a real island; there is neither a thematic nor a psychological explanation for the strange event. It is enough to sketch the exotic aspect of one world and the quotidian aspect of the other to set up a powerful and disturbing opposition, and it is simply that opposition, that superimposition of one world on another, that interests the author and his reader. Such radical juxtaposition of two incongruous opposites, what I shall call a 'two-world system', represents Wells's most basic imaginative structure.

Throughout the early tales we find instances of the two-world system enjoyed for itself. 'The Crystal Egg', though it hints at plots tangential to the central structure of physical contrast (Mr Cave's unhappy home life and the mysterious customers who want to buy the crystal egg lead one to seek some value in the Martian world viewed in the egg) is at its core exactly like 'Davidson's Eyes'. The crystal egg is the device, like

the mysterious twist to Davidson's sight, that links London and a strange landscape. 'The Plattner Story', in which Gottfried Plattner disappears into a parallel world and then later reappears, ornaments the two world structure by raising the issue of fraud (is Plattner perpetrating a hoax?), by making the other world that of the dead rather than just some other 'space', and by hinting at a complicated plot at the end (we watch a dying husband being tended by his greedy wife). But as in the other tales of this type, nothing develops from these suggestions, and ultimately they are secondary to the dichotomy between the two worlds and the odd intimacy between them. In 'Under the Knife' the narrator, after worrying through the last days before an operation, escapes from his body under the influence of the anaesthetic and thinks he sees himself die. Wells's main imaginative effort goes towards describing the approach to immortality: the narrator finds himself free from matter and therefore not subject to the motion of the Earth or even of the Universe, and the time between impressions becomes increasingly vast for him. At the end Wells forces us to see the exercise in contrast itself as the story's point by having the narrator regain consciousness, thereby leaving the experience of immortality unexplained. The possibilities of complicated plot develop into nothing; imagining the opposition is itself pleasurable and sufficient.

At the edge of the two-world system, as an almost inevitable consequence, is the balanced opposition between the true and the false. Just as stories using the two-world system establish a situation encapsuling a contradiction, the stories of fraud develop a double perspective by which we see that the same event can be read two different ways. One of Wells's shortest and most elegant stories, 'The Triumphs of a Taxidermist', renders the whole form and its pleasurable irony perfectly. An old, drunken taxidermist tells a reporter, Bellows (the name hides that of the author), about the 'secrets' of his profession. The greatest triumph of taxidermy has been, not merely to stuff well a damaged pelt, not merely to make a whole specimen out of a few shreds of the original, but to create species:

'I have created *birds', he said in a low voice.* 'New *birds. Improvements. Like no birds that was ever seen before'.*

He resumed his attitude during an impressive silence.

'Enrich the universe; rath-*er. Some of the birds I made were new kinds of humming birds, and very beautiful little things, but some of them were simply rum. The rummest, I think, was the* Anomalopteryx Jejuna. Jejunus-a-um *– empty — so called because there was really nothing in it; a thoroughly empty bird — except for stuffing. Old Javvers has the thing now, and I suppose he is almost as proud of it as I am. It is a masterpiece, Bellows. It has all the silly clumsiness of your pelican, all the solemn want of dignity of your parrot, all the gaunt ungainliness of a flamingo, with all the extravagant chromatic conflict of a mandarin duck.* Such *a bird. I made it out of the skeletons of a stork and a toucan*

and a job lot of feathers. Taxidermy of that kind is just pure joy, Bellows, to a real artist in the art.'

The Taxidermist, like the writer of scientific romances, generates an alternative fictional world which infiltrates the real one and which thereby generates the 'pure joy' of the friction of ironic juxtaposition.

The essentially abstract structure of the two-world system allows Wells to treat such concrete historical issues as imperialism and racism, but the structure enforces balance rather than judgement, though judgement is not necessarily excluded. Frequently, secondary oppositions follow from the imperialist one: the British–alien opposition becomes an opposition between technology and primitive craft, or between science and superstition. The ultimate division, which subsumes the imperialist situation itself, is that between Civilization (usually explicitly British) and Nature. We can see the potential for such a division in the pure two-world structure of 'Davidson's Eyes' where the author could have begun to explore the implications of the South Sea island's pastoral and its relation to urban civilization. And though Wells often ornaments his tales with verbal ironies that contain some harsh judgements of the imperialist enterprise, in their largest and deepest structures such tales support neither side but stabilize and balance the opposition.

Such symmetry can be quite elaborate, as in the story of 'The Flying Man'. The central opposition here is that between the British Army and the savage Chin. Initially, this cultural opposition is given simple geographic expression: the English camp is downstream; the Chin village is upstream in a wilderness without roads. As the English approach the Chin they lose any superiority that might have unbalanced the opposition: the Lieutenant hero loses his rifle; the troop loses its mule; and as they approach the interior they find the going 'as slippery as ice'. By the middle of the story the inequality of British power and native vulnerability has been rectified, and the opposition has become a stand-off: the English, trying to retreat, are trapped on a high ledge which is completely safe but lacks water and offers no way out. Beneath the ledge runs the river, escape and life, but it is patrolled by the Chin. Thus, what at first looked to be a somewhat unbalanced opposition between technological civilization and primitive savagery gradually balances and becomes a graphic opposition between a high, dry, safe trap and a low, moist, dangerous escape.

At this point Wells goes beyond the oppositions that we have been looking at; the story turns into science fiction: by inventing a new mode of travel, an unheard-of kind of movement, the Lieutenant bridges the static opposition. He improvises a parachute and leaps out of the English world into that of the Chin. As he descends he sees that the Chin have decapitated a Sepoy who earlier had leapt off the cliff in despair, and the Lieutenant in landing replays the savage gesture: 'Then my boot was in the mouth of one [of the Chin], and in a moment

he and I were in a heap with the canvas fluttering down on the top of us. I fancy I dashed out his brains with my foot.' Under the fluttering canvas the union of Englishman and native is complete, so complete that when he arrives at the English camp the Lieutenant's comrades, mistaking him for a native, fire on hom. The Lieutenant's daring and ingenious act, while it leaves intact the central opposition, allows traffic between the two sides. And it also transcends both sides. The Lieutenant relinquishes civilization (the act of leaping is strongly associated with suicide in the story) and enters nature: he becomes a bird (he is called later the 'gay Lieutenant bird') and also commits an act of savage violence. He finally becomes a myth. But Wells tucks the end of the story back into the original opposition by having the Lieutenant refuse to accompany the rescue squad, choosing to sit safely at the English camp drinking whisky and soda. The story sides with neither the English nor the Chin; it creates a physical opposition, a visual irony, and then discovers a mode a bridging the abyss, not to unify, but to open the possibilities of thought.

III

The machine which travels in time instead of space sets up a pure two-world system. In *The Time Machine*, however, Wells goes beyond 'The Flying Man' in the number and complexity of the antitheses and in the ingenuity of the links. The novella confronts the great, consoling myths of progress and of social harmony of the late Victorian period (and of our own) with myths of degeneration, entropic decline, and of absolute class division. But the conflict, while it entails a severe rebuke to the complacency and injustice of the present, remains balanced, and the possibilities of both optimism and pessimism remain open. After the Time Traveller has disappeared into time at the end of the novella, the narrator remarks that the Time Traveller 'thought but cheerlessly of the Advancement of Mankind, and saw in the growing pile of civilization only a foolish heaping that must inevitably fall back upon and destroy its makers in the end'. But that pessimism is balanced by the narrator himself, who is more sanguine about the future: 'I, for my own part', he has said a moment earlier, 'cannot think that these latter days of weak experiment, fragmentary theory, and mutual discord are indeed man's culminating time.' This juxtaposition of opposite attitudes is but the last of a sequence of open antitheses that define the tale. *The Time Machine* is not simply a prognosis of what will occur in the distant future, nor simply a judgement of the present, but a series of balances and of symbolic bridges between opposites which lead us to meditate on the nature of humanity and on the virtues and drawbacks of technological civilization itself.

The Time Traveller finds that in the future the human race has split into opposed species: the Eloi, who have descended from the owning classes, and the Morlocks, who have descended from the working

classes. Quite apart from the issue of who controls whom and the problems of general decline the two species represent, this division gives expression to a deep confusion in what we admire in human civilization. The Morlocks – who, though certainly frightening, have been severely misrepresented in the movie of *The Time Machine* and can be seen as considerably less monstrous than is usually assumed – are masters of machinery. Their world is terribly diminished, and their understanding, what little we know about it, feeble, but nevertheless they do control their world, and they are capable of such basic social techniques as working in a group, and of such basic survival mechanisms as laying a trap for the Time Traveller. Though caricatures, they operate a civilization based on an overwhelming technology. On the other hand, the Eloi express the leisure and aesthetic pleasure that are supposed to be the benefits of technological civilization: they are beautiful; they enjoy flowers; they dance and sing. Thus, in spite of the transformation into diminished versions of present humanity, the opposition of the two renders a basic puzzle about what we value in modern civilization itself. The opposition is rendered painful and ironic but is not resolved when the Time Traveller realizes that the laborious Morlocks are the predators and that the seemingly aristocratic but mindless and feeble Eloi are their prey.

Upon his return to the present the Time Traveller explicitly associates himself with both aspects of civilization: he shows the strange flower that Weena, the Eloi woman who accompanied him, gave him, a badge of his link with the Eloi and their gentle, affectionate, and trivial aestheticism, and he aggressively demands some meat and complains about his eight days as a vegetarian, thereby associating himself with the carnivorous and dominating Morlocks. Like the flying Lieutenant, he can acknowledge the opposition and bridge it.

As in 'The Flying Man' the division of civilization finds vivid spatial expression. The Eloi belong above the surface in the light; the Morlocks belong below in darkness. Yet this Manichean war of opposites is not absolute and is mediated at a number of levels. The Time Traveller himself bridges this predatory antithesis by the technology of matches which allow him to bring light to the lower darkness. The match serves both as a source of aesthetic pleasure, thereby linking the Time Traveller with the Eloi, and as a tool and weapon of a sort more fittingly associated with the Morlock aspect of civilization. He wastes matches entertaining the childish Eloi, but he also frightens off Morlocks with them. The division between up and down, light and dark, is further bridged by the Palace of Green Porcelain, an aesthetic construction that houses a museum of technology and whose most curious feature is its ability to translate the Time Traveller underground without his being aware of any descent. A mysterious editor enters at this point to underline this special quality by observing in a footnote that the museum may have been built into a hill (Ch. XI). Thus, though lateral, it manages to participate in both the upper and the lower worlds.

But architecture and technology, though they may bridge the opposites, are valueless without the ingenuity of human intellect. While in the Palace of Green Porcelain the Time Traveller recovers fire, but also, importantly, he improvises a club from the lever of a machine. This act of creating a tool by misusing one is a favourite of Wells and appears frequently in the early work. One remembers that the Lieutenant in 'The Flying Man' makes a parachute from a tent; the young man in 'In the Avu Observatory' smashes a bottle to make a weapon against the monstrous bat: Prendick in *The Island of Doctor Moreau* makes a lethal club from the arm of a chair; the narrator in *The War of the Worlds* turns a meat cleaver into a blunt club; Denton in 'A Story of the Days to Come' uses a lamp as a bludgeon. Such improvization usually involves a healthy regression from an incapacitating sophistication back to a more primitive ingenuity. It is the ability to make a tool, however simple, that is the sign of the human mind at its highest, not the mere ability to use tools already made. Thus the act of making a club, more than the knowledge of matches, sets the Time Traveller above the inhabitants of the future, for it reveals his ability to do more than serve machines the way the Morlocks do, but to improvise and invent.

However, tools are not seen simply as unqualified benefits. Fire, the instrument on one level of mediation between the Eloi and the Morlocks, has its severe limitations, even dangers. After the Time Traveller leaves the Palace of Green Porcelain, he sets a fire to ward off Morlocks as he moves through the forest at night. Later he has to set a second fire, by which he and Weena go to sleep. The second fire goes out, and the Morlocks almost overcome the Time Traveller, but the first fire has turned into a forest fire which threatens both the Morlocks, as intended, and the Time Traveller himself. On one hand the fire fails to perform; on the other it overperforms. This undependability of tools is most graphically expressed by matches. As the major symbol of technological merit, matches represent a hope of unlocking the unhappy opposition of Eloi and Morlock, as we have seen, and yet matches are also undependable toys that lead us to misplaced self-confidence: elementary as they seem, they nevertheless represent a stage of technological sophistication a fraction too intricate to be entirely trustworthy. As he leaves the year 802701, the Time Traveller, confidently mounted on his time machine, tries to strike a match to drive off the Morlocks and discovers that he has conserved safety matches that will strike only on the box, which he has lost. Again, however, he proves his mastery by improvising an elementary weapon, a club from a lever of the time machine itself. The 'message' of all this, it should be observed, is neither for nor against technology as such. The novella is more interested in setting up ironic balances and oppositions, and the author's primary imaginative energy is directed towards creating a pattern that is symmetrical and linked.

The Time Machine is neither strictly prophetic nor is it merely a

revealing nightmare of the author; it is a very special narrative configuration that contains within its structure the dynamic awareness of the promising and disastrous potentialities of the present. Wells here engages central contradictions of his civilization, not to propagandize for one side or the other, but to permit them to conflict. Such an ironic pattern sets the novella apart from the gothic aspects of some and the utopian aspects of others of Wells's models. One has only to read the fantasies of writers whom Wells admired, Grant Allen or William Morris, for example, to see how elegantly organized and open, in the sense of tolerating contradiction, *The Time Machine* is. To allow us to think clearly, Wells here gives us a pattern that in its symmetries both emphasizes contradiction and values connections.

IV

A recurrent opposition in Wells's work is that between the human and the alien. At one pole one finds the complete failure to communicate between humans and such creatures as regimented and armed ants in 'The Empire of the Ants'. The comic Captain Gerilleau can only shrug his shoulders and exclaim, 'What can a man do against ants? Dey come, dey go.' His one military act is to fire off the Big Gun, a pompous, empty gesture he later regrets when he contemplates having to explain the waste of ammunition. Similarly, in 'The Sea Raiders', organized, intelligent, flesh-eating octopi visit the English coast briefly, wreak some few atrocities, and retire with the narrator's vague intimations of future hostilities. Like the simplest two-world systems, these stories enjoy incongruous juxtaposition, and frequently they balance in the sense that Wells's sympathy seems suspended between the incompetent humans and the efficient aliens who have the sanction of being underdogs. However, in Wells's longer works the opposition between human and alien becomes more complicated and the possible bonds and links between the two sides become a source of extensive investigation.

The human–alien opposition is central to *The Time Machine*. The Time Traveller finds the humanity of 802701 remote, and while the humanoid appearance of the Eloi leads him to treat them as human, even though he is aware how inhuman they are, the sloth-like appearance of the Morlocks leads him to make what may be a no less artificial disjunction and treat them as separate and alien, even after he suspects the truth of their descent. The Time Traveller's relation with Weena catches the first of these problematic identity-separations: the more intimate the bond is between the Time Traveller and Weena, the more disturbing it is. While he instinctively treats her as a human child, he repeatedly forces himself to acknowledge how remote her behaviour is from that of a human. In the last lines of the tale the narrator piously observes that 'even when mind and strength had gone, gratitude and mutual tenderness still lived in the heart of man'. We may take this as

true, but given the real facts of Eloi mindlessness, this may be a sentimental illusion. The novella leaves it entirely ambiguous what bond of affection is possible across the species difference. The uneasiness critics have expressed about the depiction of the relationship with Weena is, therefore, exactly right. On the other hand, the Morlocks, who are equally close to (and distant from) today's humanity, do not appear human at all. Like Gulliver who at first can see no human aspect in the Yahoos, the Time Traveller dismisses the Morlocks as ape-like ghosts for half the tale. If Weena represents a false identity that the Time Traveller has to keep reminding himself of, the Morlocks establish a false division that the progress of the tale makes the Time Traveller begin to overcome. When the forest fire reaches him the Time Traveller experiences a moment of symbolic fellowship with the Morlocks: he ceases to batter them and shares with them a common refuge from the fire. But, if Weena's alienness is muted by her human appearance, the Morlock identity never gets much beyond horror.

In all of Wells's early novels the human–alien opposition generates a process of constant reinterpretation and re-examination of the bases of similarity and of difference. *The War of the Worlds* is a clear case of such restructuring of the initial opposition. While the cruelty and the repulsive appearance of the Martians are sources of antipathy and terror early in the novel, their very amorality becomes a source of identity with humanity when it is pointed out by the narrator that the Martians are merely doing to humans what humans have done to other species and races. Perhaps the Martians are not aliens at all but simply super-humans, a possibility that Wells underlines by playfully reminding us how close they come to his own vision of future humanity in his early essay, 'The Man of the Year Million'.

The irony of this connection is exquisitely rendered by the Artilleryman who accepts the evolutionary implications of the Martian invasion and who plans for a long-term combat culminating in a melodramatic reversal:

Just imagine this: Four or five of their Fighting Machines suddenly starting off— Heat-Rays right and left, and not a Martian in 'em. Not a Martian in 'em, but men — men who have learned the way how. It may be in my time, even — those men. Fancy having one of them lovely things, with its Heat-Ray wide and free! Fancy having it in control! What would it matter if you smashed to smithereens at the end of the run, after a bust like that? I reckon the Martians'll open their beautiful eyes! Can't you see them, man? Can't you see them hurrying, hurrying — puffing and blowing and hooting to their other mechanical affairs? Something out of gear in every case. And swish, bang, rattle, swish! Just as they are fumbling over it, swish *comes the Heat-Ray, and, behold! man has come back to his own.* (Book II, Ch. 7)

The triumph of 'man' in the Artilleryman's vision is not for humanity to enforce civilizing activity in place of Martian ruthlessness, but

simply for humanity to become Martian. The irony is made all the more powerful by the naive exhilaration of the passage.

Towards the end of *The War of the Worlds* a more humane link between the Martians and us is proposed by the narrator who, disillusioned by the models for human behaviour set forth in the pathetic Curate, who treats God as his 'insurance agent', and the ruthless and ineffective Artilleryman, finds a powerful consolation in the Martian hootings:

Abruptly, as I crossed the bridge, the sound of 'Ulla, ulla, ulla', ceased. It was, as it were, cut off. The silence came like a thunder-clap.

The dusky houses about me stood faint, and tall and dim; the trees towards the park were growing black. All about me the Red Weed clambered among the ruins, writhing to get above me in the dim. Night, the Mother of Fear and Mystery, was coming upon me. But while that voice sounded, the solitude, the desolation, had been endurable; by virtue of it London had still seemed alive, and the sense of life about me had upheld me. Then suddenly a change, the passing of something — I knew not what — and then a stillness that could be felt. Nothing but this gaunt quiet. (Book II, Ch. 8)

'The passing of something': what we had expected to be the end of humankind has turned out to be the end of the Martians. Wells's consummate stroke in the novel is not simply to have truly evolutionary forces defeat the Martians, but to transpose the tragedy of the human race that the whole novel has been working towards to a tragedy of the Martians. Such a transformation is possible only if we acknowledge, as the narrator does, the bond of intelligence in the midst of evolutionary chaos. The enemy at the end of the novel is not the Martians, but the wild dogs and the black birds, symbols of nature's vast machinery of death against which all intelligent life, human and Martian, organizes itself.

Though the bond of intellect is recognized powerfully at the end of *The War of the Worlds*, the novel also acknowledges the problem of domination inherent in the split between higher and lower stages of evolution. *The Island of Doctor Moreau*, though earlier than *The War of the Worlds*, examines this dilemma more subtly and with a finer eye to the obligations that may extend across species difference. The novel develops a symmetrical system in which the principle of opposition works at almost all levels. On the one hand the line between human and non-human is defined with acute precision by both humans and beast-men in the terms of the 'law' that Moreau's creations chant:

'Not to go on all-Fours; *that* is the Law. Are we not Men?
Not to suck up Drink; *that* is the Law. Are we not Men?
Not to eat Flesh nor Fish; *that* is the Law. Are we not Men?
Not to claw Bark of Trees; *that* is the Law. Are we not Men?
Not to chase other Men; *that* is the Law. Are we not Men?' (Ch. 12)

The tension here arises from our strong sense that only a non-human would need such a law to be human. And yet many of the very characteristics that here define man – posture, food, language, treatment of other men, etc. – are violated by real men at some time in the novel. We see Prendick himself on all fours. We see Montgomery drinking brandy the way beasts drink blood; Montgomery himself teaches the beast-man, M'ling, how to cook a rabbit. At the beginning of the novel we see men in a life-boat planning on cannibalism, and it is only because they are clumsy that cannibalism does not occur. The Captain of the *Ipecacuanha*, the ship that rescues Prendick at the beginning of the novel and which has destroyed itself by the end, is clearly bestial: he drinks heavily and reduces language to the simple term of command, 'Shut up'. Just as the beast-men once they taste blood revert, the Captain and Montgomery both become drunks. Prendick even drinks something that 'tasted like blood' (Ch. 2) early in the novel, and near the end Montgomery gives brandy to M'ling with the injunction, 'drink and be men' (Ch. 19), the obvious implication being that what defines man is the ability to degenerate. Thus, throughout the novel the activity of distinguishing between man and beast is mirrored by the activity of bridging that carefully established boundary.

Besotted Montgomery, who as he becomes more degenerate as a human exhibits greater humanity towards the beast-men, points to the strong bond that extends between men and beasts. When they are stranded with the beast-men attacking them, he bitterly remarks to Prendick, 'We can't massacre the lot, – can we? I suppose that's what *your* humanity would suggest?' (Ch. 19). This sarcastic remark draws our attention to Prendick's tendency to use the difference between human and beast to justify acts less than humane: he refrains from murder, but later when Montgomery is dead and he is alone and threatened, Prendick 'had half a mind to make a massacre of them' (Ch. 21). We recall the Time Traveller smashing Morlock skulls with joy, and again we sense how it is the act of restraint more than anything else that defines the human act as against the bestial for Wells. A similar moment occurs in *The War of the Worlds* when the narrator in order to prevent the Curate from revealing their hiding place to the Martians hits him with a meat cleaver, but at the very last moment, in what he calls a 'last touch of humanity' (Book II, Ch. 4), turns the instrument and uses the butt rather than the cutting edge.

The Invisible Man, which since its characters are all Englishmen and women might seem to lie outside this general concern with the human and the non-human and the paths between them, actually fits exactly. As an albino, Griffin has always been slightly alien, but his obsessive genius and his brutal carelessness about other humans set him increasingly apart until, as the invisible man, he becomes an alien in the sense we are used to in the other novels. The war between species that is the issue of *The Time Machine* and *The War of the Worlds* occurs in *The*

Invisible Man only at the end when Griffin begins his reign of terror and Kemp suddenly realizes that it is 'Griffin *contra mundum*' (Ch. 27).

Griffin's role of scientist places him in the company of the Time Traveller and Dr Moreau. Wells works through a chain of transformations by which the scientist, who originally offered the hope of bridging a future conflict by means of present-day technology in the service of conventional humane moral concerns, becomes in Moreau a figure of terribly ambiguous power who in the act of bridging generates monstrosities that threaten both sides of the opposition, and then in Griffin becomes himself the alien, the opposite. The benign relation of the Time Traveller to the Eloi, the adult among children, becomes sinister in the later works. Moreau is a cruel and demanding patriarch; Griffin becomes a tyrannical maniac. The chain describes a natural set of permutations of power. One should note, however, that if Griffin offers the darkest picture of the scientist, Wells's quest for balance does not allow him simply to render Griffin horrible. Griffin generates a special version of the questions of mastery and cooperation that civilization raises, for to enjoy the power of invisibility he must go naked and thus expose himself to weather, cold, and such common hazards of civilization as broken glass. On the other hand, dressed in his disguise, his range of expression and interaction is so limited that he becomes powerless. Like the Time Traveller's match, Griffin's invisibility is a terribly ambiguous tool.

V

The nature and problems of such power as Griffin's never ceased to fascinate Wells, but as time goes on the complexity of his vision of them diminishes. In *The First Men in the Moon* (1901) he divides the power between Cavor, the absent-minded and therefore at times quite dangerous scientific genius, and Bedford, the quick-witted and unscrupulous con-man. One reason the Selenites silence Cavor at the end of the novel is to prevent him from sending to earth the secret that would allow the Bedfords on earth to invade and exploit the moon. But if separating Cavor from Bedford seems to simplify thought about the problem, the civilization on the moon, which deforms individuals to adapt them for specific jobs, offers a strangely ambiguous critique of such separation. The Selenite 'hive' is in part a satiric horror, but one senses that its efficiency has a fascination for Wells that weakens the sense of abomination, and a part of him responds by seeing an inefficient individualism as the ultimate horror. Cavor reports:

Recently I came upon a number of young Selenites, confined in jars from which only the fore-limbs protruded, who were being compressed to become machine-minders of a special sort. The extended 'hand' in this highly developed system of technical education is stimulated by irritants and nourished by injection, while the rest of the body is starved. Phi-oo,

unless I misunderstood him, explained that in the earlier stages these queer little creatures are apt to display signs of suffering in their various cramped situations, but they easily become indurated to their lot; and he took me on to where a number of flexible-limbed messengers were being drawn out and broken in. It is quite unreasonable, I know, but these glimpses of the educational methods of these beings have affected me disagreeably. I hope, however, that may pass off, and I may be able to see more of this aspect of their wonderful social order. That wretched-looking hand sticking out of its jar seemed to appeal for lost possibilities; it haunts me still, although, of course, it is really in the end a far more humane proceeding than our earthly method of leaving children to grow into human beings, and then making machines of them. (Ch. 23)

This justly celebrated passage with its dialectical ironies fits into the main tradition of Swiftian satire, but like Pierre Menard's *Quixote*, it must be read in a twentieth-century way. Though Wells never went so far as to argue for education on the Selenite model, the ideal of a 'wonderful social order' in which all men grew to their places and took pleasure in doing their bit to make the social machine work smoothly and efficiently appealed to him, and more and more he concentrated on envisioning such an order.

The First Men in the Moon retains some of the complexity of vision that has characterized the early work, but in an important story, 'The Land Ironclads', published in 1903, we see a distinct simplification of the issues of mastery and order. This Vernian tale of technological competence begins in military stalemate and then describes how one side achieves stunning victory by introducing the military tank. The story is impatient with balance. The oppositions – country–town, man–machine, heroic athlete–engineer – do not express serious puzzles. Wells sees one side as simply stupidly traditional while the other is intelligent and imaginative. Technological efficiency becomes self-justifying and blinds him to moral complexity. The hypocrisy of the engineers' position, which seems to be Wells's own, is, I hope, self-evident:

For the enemy these young engineers were defeating they felt a certain qualified pity and a quite unqualified contempt. . . . 'If they must *make war', these young men thought, 'why in thunder don't they do it like sensible men?' They resented the assumption that their own side was too stupid to do anything more than play their enemy's game, that they were going to play this costly folly according to the rules of unimaginative men. They resented being forced to the trouble of making man-killing machinery; resented the alternative of having to massacre these people or endure their truculent yappings; resented the whole unfathomable imbecility of war.*

Meanwhile, with something of the mechanical precision of a good clerk posting a ledger, the riflemen moved their knobs and pressed their buttons. . . .

This is, if you will, Martian reasoning: the invaders blame the defenders for making war and consider that technological superiority equals moral superiority. But whereas in *The War of the Worlds* Wells explored the complexities of the moral problem by conscious irony, here the irony is unconscious and as far as one can tell unintended. We see here the style of the new Wells, the prophet of the efficient future state.

Years later, in 1940, Wells would bear testimony to the centrality of 'The Land Ironclads' in his vision of himself by objecting at length to Major-General Swinton's claiming credit for inventing the military tank when, so Wells insisted, he himself was responsible for it. The point is that by 1903 Wells has come to see himself, not as the artist creating complex structures by which to explore human possibilities, but as the prophet of an efficient future that has little tolerance for the subtleties and discriminations so carefully developed in the earlier work. Around the turn of the century Wells decided that it was not enough to build balanced imaginative forms, no matter how educational such exercises might be, but that he must put his energies into changing the world. In part this new view of the writer's function comes from a need to get beyond a system of thought which, however elegant, is clear and complete in its basic structure and which tends to repeat itself even as the details of the surface change. In part it comes from an imperative intrinsic in the need for balance itself: artistic equilibrium is itself one-sided and requires its opposite, the disequilibrium of committed advocacy that leads to action and change. Wells wants to get beyond an art that, while doing justice to complexity, leaves the world in the same sorry state it found it.

The problem Wells is feeling is clear in 'A Story of the Days to Come' (1899). The story is paired with 'A Story of the Stone Age'; they are adventures which take place at the same place at different times, so together they constitute a two-world system much like *The Time Machine*. But 'A Story of the Days to Come' is surprisingly clumsy, given the skill we have seen. Like *The Time Machine*, the story builds a tension between an intense anticipation of a better future and an angry pessimism about the dragging sameness of human behaviour and of civilization's constraints. But in 'A Story of the Days to Come' the contradictory attitudes are unintegrated; while balance is maintained, the reader nevertheless senses Wells's impatience with the complexities it entails. At the middle of the long story occurs a passage that captures well the new tone. The passage starts off enthusiastic about the promise of change, but then, almost without being aware of the shift, it complains about the lack of change:

Prominent if not paramount among world-changing inventions in the history of man is that series of contrivances in locomotion that began with the railway and ended for a century or more with the motor and the patent road. That these contrivances, together with the device of limited liability joint stock companies and the supersession of agricultural

labourers by skilled men with ingenious machinery, would necessarily concentrate mankind in cities of unparalleled magnitude and work an entire revolution in human life, became, after the event, a thing so obvious that it is a matter of astonishment it was not more clearly anticipated. Yet that any steps should be taken to anticipate the miseries such a revolution might entail does not appear even to have been suggested; and the idea that the moral prohibitions and sanctions, the privileges and concessions, the conception of property and responsibility, of comfort and beauty, that had rendered the mainly agricultural states of the past prosperous and happy, would fail in the rising torrent of novel opportunities and novel stimulations, never seems to have entered the nineteenth-century mind. That a citizen, kindly and fair in his ordinary life, could as a shareholder become almost murderously greedy; that commercial methods that were reasonable and honourable on the old-fashioned countryside, should on an enlarged scale be deadly and overwhelming; that ancient charity was modern pauperisation, and ancient employment modern sweating; that, in fact, a revision and enlargement of the duties and rights of man had become urgently necessary, were things it could not entertain, nourished as it was on an archaic system of education and profoundly retrospective and legal in all its habits of thought. (Ch. III)

This is a wonderful indictment, but of the present, not of the future, and there lies the problem. The tone at the end here is outrage at human stupidity. The sense of the deep contradictions in human desires for civilization is gone; instead Wells seems to say that the way to a true civilization is open and only a fool will refuse or botch it.

The same dilemma can be felt in *When the Sleeper Wakes* (1899); in place of the ingenious analysis we see in the early works, Wells here relies on melodramatic clichés about love and revolution in order to escape the closed system his logic generates. Later novels, such as *In the Days of the Comet* (1906) and *The World Set Free* (1914), resolve the problems of alienation and oppression by changing humanity. These novels may be said to participate in a remote way in the two-world system, but the balance is gone; the old world is simply dismissed as primitive and insane, and the new world, created by miracle, is celebrated as emancipated and sane. The promise is exhilarating but unconvincing

However, Wells is never incapable of irony. Though the engineer who invents and runs the new machine or society becomes an ideal for him, he is able to use irony to give contour and shading to the projector's stark enthusiasms. For instance, *A Modern Utopia* (1905), one of Wells's most concrete projections, does not lose sight of the difficulties of human interaction. The narrator never is able to give up the habits of mind which give him pleasure in the present world, and he and his friend find that, once the present does not exist, they do not enjoy each other's company. Not everything is predictable, and Wells, even when he is most proud of his ability to predict, does not quite forget that. But

in general the later work is arrogantly complacent when compared to the works we have been looking at. Wells's early work is profoundly disturbing, not because it is pessimistic, nor because it is optimistic, but because it abjures the solace of simple solutions and attains balance, not by sacrificing detail and honesty, but by probing situations deeply, by maintaining sceptical openness, and by developing symmetrical structures that by mirroring illuminate. To render such complexity so simply is the gift of genius.

Bibliography

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The major biography of Wells is Norman and Jeanne Mackenzie's *The Time Traveller* (London: Weidenfeld & Nicolson, 1973).

Criticism of Wells by his contemporaries has been usefully collected in *H. G. Wells: The Critical Heritage*, ed. Patrick Parrinder (London: Routledge and Kegan Paul, 1972). During Wells's lifetime most of his critics focused on his sociological and technological ideas and tended to dismiss the early core of science fiction as entertaining but not serious. As late as 1960 Kingsley Amis would continue this tradition in his *New Maps of Hell* (London: Gollancz, 1961). Nevertheless, the following works published during Wells's lifetime are important for our understanding of the man's total accomplishment; Van Wyck Brooks, *The World of H. G. Wells* (New York: 1915, repr. New York: Scholarly Reprints, 1970); J. D. Beresford, *H. G. Wells* (New York: 1915, repr. New York: Haskell House, 1973); Yevgeny Zamyatin, 'H. G. Wells', in *A Soviet Heretic: Essays by Yevgeny Zamyatin*, ed. and trans. Mirra Ginsburg (Chicago and London: University of Chicago Press, 1970) (a different translation of this essay appears in the Parrinder collection); Christopher Caudwell, 'H. G. Wells: A Study in Utopianism', in his *Studies in a Dying Culture* (New York: Dodd, Mead and Co., 1938); and George Orwell, 'Wells, Hitler, and the World State', in *Collected Essays, Journalism and Letters of George Orwell*, vol. 2 (London: Secker & Warburg, 1968).

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Part II

Two formative traditions

Utopia and science fiction

Raymond Williams

I

There are many close and evident connections between science fiction and utopian fiction, yet neither, in deeper examination, is a simple mode, and the relations between them are exceptionally complex. Thus, if we analyse the fictions that have been grouped as utopian we can quickly distinguish four types:

1. *the paradise*, in which a happier kind of life is described as simply existing elsewhere;
2. *the externally altered world*, in which a new kind of life has been made possible by an unlooked-for natural event;
3. *the willed transformation*, in which a new kind of life has been achieved by human effort;
4. *the technological transformation*, in which a new kind of life has been made possible by a technical discovery.

It will of course be clear that these types often overlap. Indeed the overlap and often the confusion between (3) and (4) are exceptionally significant. One kind of clarification is possible by considering the negative of each type: that negative which is now commonly expressed as 'dystopia'. We then get:

1. *the hell*, in which a more wretched kind of life is described as existing elsewhere;
2. *the externally altered world*, in which a new but less happy kind of life has been brought about by an unlooked-for uncontrollable natural event;
3. *the willed transformation*, in which a new but less happy kind of life has been brought about by social degeneration, by the emergence or re-emergence of harmful kinds of social order, or by the unforeseen yet disastrous consequences of an effort at social improvement;
4. *the technological transformation*, in which the conditions of life have been worsened by technical development.

Since there can be no *a priori* definition of the utopian mode, we cannot at first exclude any of these dystopian functions, though it is clear that they are strongest in (3) and (4), perceptible in (2) and barely

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evident in (1), where the negative response to Utopia would normally have given way to a relatively autonomous fatalism or pessimism. These indications bear with some accuracy on the positive definitions, suggesting that the element of transformation, rather than the more general element of otherness, may be crucial.

We can then consider these types in relation to science fiction, an even more difficult general category. What we are looking for are the differential ways in which 'science', in its variable definitions, can be an element in each of the types. We find:

1. *The paradise and the hell* can be discovered, reached, by new forms of travel dependent on scientific and technological (space-travel) or quasi-scientific (time-travel) development. But this is an instrumental function; the mode of travel does not commonly affect the place discovered. The type of fiction is little affected, whether the discovery is made by a space voyage or a sea voyage. The place, rather than the journey, is dominant.
2. *The externally altered world* can be related, construed, foretold in a context of increased scientific understanding of natural events. This also may be an instrumental function only; a new name for an old deluge. But the element of increased scientific understanding may become significant or even dominant in the fiction, for example in the emphasis of natural laws in human history, which can decisively (often catastrophically) alter normal human perspectives.
3. *The willed transformation* can be conceived as inspired by the scientific spirit, either in its most general terms as secularity and rationality, or in a combination of these with applied science which makes possible and sustains the transformation. Alternatively, the same impulses can be negatively valued: the 'modern scientific' ant-heap or tyranny. Either mode leaves open the question of the social agency of the scientific spirit and the applied science, though it is the inclusion of some social agency, explicit or implicit (such as the overthrow of one class by another), that distinguishes this type from type (4). We must note also that there are important examples of type (3) in which the scientific spirit and applied science are subordinate to or simply associated with a dominant emphasis on social and political (including revolutionary) transformation; or in which they are neutral with respect to the social and political transformation, which proceeds in its own terms; or, which is of crucial diagnostic significance, where the applied science, though less often the scientific spirit, is positively controlled, modified or in effect suppressed, in a willed return to a 'simpler', 'more natural' way of life. In this last mode there are some pretty combinations of very advanced 'non-material' science and a 'primitive' economy.
4. *The technological transformation* has a direct relation to applied

science. It is the new technology which, for good or ill, has made the new life. As more generally in technological determinism, this has little or no social agency, though it is commonly described as having certain 'inevitable' social consequences.

We can now more clearly describe some significant relations between utopian fiction and science fiction, as a preliminary to a discussion of some modern utopian and dystopian writing. It is tempting to extend both categories until they are loosely identical, and it is true that the presentation of *otherness* appears to link them, as modes of desire or of warning in which a crucial emphasis is attained by the element of discontinuity from ordinary 'realism'. But this element of discontinuity is itself fundamentally variable. Indeed what has most to be looked at, in properly utopian or dystopian fiction, is that form of continuity, of implied connection, which the form is intended to embody. Thus, looking again at the four types, we can make some crucial distinctions which appear to define utopian and dystopian writing (some of these bear also on the separate question of the distinction of science fiction from older and now residual modes which are simply organizationally grouped with it):

1. *The paradise and the hell* are only rarely utopian or dystopian. They are ordinarily the projections of a magical or a religious consciousness, inherently universal and timeless, thus commonly beyond the conditions of any imaginable ordinary human and worldly life. Thus the Earthly Paradise and the Blessed Islands are neither utopian nor science-fictional. The pre-lapsarian Garden of Eden is latently utopian, in some Christian tendencies; it can be attained by redemption. The medieval *Land of Cokaygne* is latently utopian; it can be, and was, imagined as a possible human and worldly condition. The paradisal and hellish planets and cultures of science fiction are at times simple magic and fantasy: deliberate, often sensational presentations of *alien* forms. In other cases they are latently utopian or dystopian, in the measure of degrees of connection with, extrapolation from, known or imaginable human and social elements.
2. *The externally altered world* is typically a form which either falls short of or goes beyond the utopian or dystopian mode. Whether the event is magically or scientifically interpreted does not normally affect this. The common emphasis is on human limitation or indeed human powerlessness: the event saves or destroys us, and we are its objects. In Wells's *In the Days of the Comet* (1906) the result *resembles* a utopian transformation, but the displacement of agency is significant. Most other examples, of a science-fiction kind, are implicitly or latently dystopian: the natural world deploys forces beyond human control, thus setting limits to or annulling all human achievement.
3. *The willed transformation* is the characteristic utopian or dystopian mode, in the strict sense.

4. *The technological transformation* is the utopian or dystopian mode narrowed from agency to instrumentality; indeed it only becomes utopian or dystopian, in strict senses, when it is used as an image of *consequence* to function, socially, as conscious desire or conscious warning.

II

No contrast has been more influential, in modern political thought, than Engels's distinction between 'utopian' and 'scientific' socialism. If it is now more critically regarded, this is not only because the scientific character of the 'laws of historical development' is cautiously questioned or sceptically rejected; to the point, indeed, where the notion of such a science can be described as utopian. It is also because the importance of utopian thought is itself being revalued, so that some now see it as the crucial vector of desire, without which, in one version, even the laws are imperfect; in another version are mechanical, needing desire to give them direction and substance. This reaction is understandable, but it makes the utopian impulse more simple, more singular, than, in the history of utopias, it is. Indeed the variability of the utopian situation, the utopian impulse and the utopian result is crucial to the understanding of utopian fiction.

This can be seen from one of the classical contrasts, between More's *Utopia* (1516) and Bacon's *New Atlantis* (1627). It is usual to say that these show, respectively, a humanist and a scientific Utopia:

that excellent perfection in all good fashions, humanitye and civile gentilness (More);

the end of our foundation is the knowledge of causes and secret motions of things and the enlarging of the bounds of human empire, to the effecting of all things possible (Bacon).

It can be agreed that the two fictions exemplify the difference between a willed general transformation and a technological transformation; that More projects a commonwealth, in which men live and feel differently, while Bacon projects a highly specialized, unequal but affluent and efficient social order. But a full contrast has other levels. Thus, they stand near the opposite poles of the Utopia of free consumption and the Utopia of free production. More's island is a cooperative subsistence economy; Bacon's a specialized industrial economy. These can be seen as permanent alternative images, and the swing towards one or another, in socialist ideology as in progressive utopianism, is historically very significant. (One might indeed write a history of modern socialist thought in terms of the swing between a Morean cooperative simplicity and a Baconian mastery of nature, except that the most revealing trend has been their unconscious fusion.) Yet what we can now perceive as permanent alternative images was rooted, in each case, in a precise social and class situation.

More's humanism is deeply qualified: his indignation is directed as much against importunate and prodigal craftsmen and labourers as against the exploiting and engrossing landlords – his social identification is with the small owners, his laws regulate and protect but also compel labour. It is qualified also because it is static: a wise and entrenched regulation by the elders. It is then socially the projection of a declining class, generalized to a relatively humane but permanent *balance*. Bacon's scientism is similarly qualified: the scientific revolution of experiment and discovery becomes research and development in an instrumental social perspective. Enlarging the bounds of human empire is not only the mastery of nature; it is also, as a social projection, an aggressive, autocratic, imperialist enterprise; the projection of a rising class.

We cannot abstract desire. It is always desire for something specific, in specifically impelling circumstances. Consider three utopian fictions of the late nineteenth century: Bulwer-Lytton's *The Coming Race* (1871); Edward Bellamy's *Looking Backward* (1888); William Morris's *News from Nowhere* (1890).

The Coming Race is at one level an obvious example of the mode of technological transformation. What makes the Vril-ya, who live under our earth, civilized is their possession of Vril, that all-purpose energy source which lies beyond electricity and magnetism. Outlying underground peoples who do not possess Vril are barbarians; indeed the technology *is* the civilization, and the improvement of manners and of social relations is firmly based on it alone. The changes thus brought about are the transformation of work into play, the dissolution of the State and in effect the outlawing of competitive and aggressive social relations. Yet it is not, for all the obvious traces of influence, either a socialist or an anarchist Utopia. It is a projection of the idealized social attitudes of an aristocracy, now generalized and distanced from the realities of rent and production by the technological determinism of Vril. In its complementary liberation of sexual and family relations (in fact qualified, though apparently emphasized, by the simple reversal of the relative size and roles of women and men) it can be sharply contrasted with the rigidities of these relations within More's humanism. But this is of a piece with the aristocratic projection. It is (as in some later fantasies, with similarly privileged assumptions) a separation of personal and sexual relations from those problems of care, protection, maintenance and security which Vril has superseded. Affluence delivers liberation. By contrast the greed, the aggression, the dominativeness, the coarseness, the vulgarity of the surface world – the world, significantly, both of capitalism and of democracy – are easily placed. They are what are to be expected in a world without Vril and therefore Vril-ya. Indeed there are moments when Vril can almost be compared with Culture, in Matthew Arnold's virtually contemporary *Culture and Anarchy* (1869). Arnold's spiritual aristocracy, his spiritual force beyond all actual classes, has, though, been magically

achieved, without the prolonged effort that Arnold described, by the properties of Vril. It is in each case desire, but desire for what? A civilizing transformation, beyond the terms of a restless, struggling society of classes.

What has also to be said, though, about *The Coming Race* is that the desire is tinged with awe and indeed with fear. The title introduces that evolutionary dimension which from this period on is newly available in utopian fiction. When the Vril-ya come to the surface they will simply replace men, as in effect a higher and more powerful species. And it is not only in his unVril humanity that the hero fears this. Towards the end he sounds the note that we shall hear so clearly later in Huxley's *Brave New World*: that something valuable and even decisive – initiative and creativity are the hovering words – has been lost in the displacement of human industry to Vril. This was a question that was to haunt the technological Utopia. Meanwhile, back in nineteenth-century society, an entrepreneur took his own short-cut. Inspired by Lytton he made a fortune from a beef extract called Bovril.

Bellamy's *Looking Backward* is unquestionably a Utopia, in the central sense of a transformed social life of the future, but it is in a significant way a work without desire; its impulse is different, an overriding rationalism, a determining total organization, which finds its proper institutional counterpart in the State-monopoly capitalism which is seen as the inevitable 'next stage in the industrial and social development of humanity' (the order of adjectives there is decisive). That this forecast, rather than vision, was widely taken as socialism is indicative of a major tendency in Bellamy's period, which can be related to Fabianism, but has also now to be related to a major current in orthodox Marxism: socialism as the next higher stage of economic organization, a proposition which is taken as overriding, except in the most general terms, questions of substantially different social relations and human motives. Morris's critique of Bellamy repeated almost exactly what is called the Romantic but is more properly the radical critique of utilitarian social models: that 'the underlying vice . . . is that the author cannot conceive . . . anything else than the *machinery* of society': the central point made, in this tradition, from Carlyle's *Signs of the Times* onward. Morris's fuller response was his *News from Nowhere*, but before we look at this we should include a crucial point about the history of utopian writing, recently put forward by M.-H. Abensour.

Abensour establishes a crucial periodization in the utopian mode, according to which there is, after 1850, a change from the *systematic* building of alternative organizational models to a more open and *heuristic* discourse of alternative values. E. P. Thompson has interpreted this latter mode as the 'education of desire'. It is an important emphasis, since it allows us to see more clearly, by contrast, how examples of the mode of 'willed social transformation' can be shifted, in their essence, to the mode of 'technological transformation', where

the technology need not be only a marvellous new energy source, or some industrial resource of that kind, but can be also a new set of laws, new abstract property relations, indeed precisely new *social machinery*. But then, when we have said this, and recognized the contrasting value of the more heuristic mode, in which the substance of new values and relations is projected, with comparatively little attention to institutions, we have to relate the change to the historical situation within which it occurred. For the shift from one mode to another can be negative as well as positive. To imagine a whole alternative society is not mere model-building, any more than the projection of new feelings and relationships is necessarily a transforming response. The whole alternative society rests, paradoxically, on two quite different social situations: either that of social confidence, the mood of a rising class, which knows, down to detail, that it can replace the existing order; or that of social despair, the mood of a declining class, or fraction of a class, which has to create a new heaven because its earth is a hell. The basis of the more open but also the vaguer mode is different from either. It is a society in which change is happening, but primarily under the direction and in the terms of the dominant social order itself. This is always a fertile moment for what is, in effect, an anarchism: positive in its fierce rejection of domination, repression and manipulation; negative in its willed neglect of structures, of continuity and of material constraints. The systematic mode is a response to tyranny or disintegration; the heuristic mode, by contrast, seems to be primarily a response to a constrained reformism.

It is then not a question of asking which is better or stronger. The heuristic Utopia offers a strength of vision against the grain; the systematic Utopia a strength of conviction that the world really can be different. The heuristic Utopia, at the same time, has the weakness that it can settle into isolated and in the end sentimental 'desire', a mode of living with alienation, while the systematic Utopia has the weakness that, in its insistent organization, it seems to offer little room for any recognizable life. These strengths and weaknesses vary, of course, in individual examples of each mode, but they vary most decisively, not only in the periods in which they are written but in the periods in which they are read. The mixed character of each mode then has much to do with the character of the twentieth-century dystopias which have succeeded them. For the central contemporary question about the utopian modes is why there is a progression, within their structures, to the specific reversals of a Zamyatin, a Huxley, an Orwell; of a generation of writers of science fiction.

It is in this perspective that we have now to read *News from Nowhere*. It is commonly diagnosed and criticized as a generous but sentimental heuristic transformation. And this is substantially right, of the parts that are made ordinarily to stick in the mind: the medievalism of visual detail, and the beautiful people in the summer along the river, are inextricable from the convincing openness and friendliness and

relaxed cooperation. But these are residual elements in the form: the Utopians, the Houyhnhnms, the Vril-ya would have found Morris's people cousins at least, though the dimensions of universal mutuality have made an identifying difference. But what is emergent in Morris's work, and what seems to me increasingly the strongest part of *News from Nowhere*, is the crucial insertion of the *transition* to Utopia, which is not discovered, come across or projected – not even, except at the simplest conventional level, dreamed – but fought for. Between writer or reader and this new condition is chaos, civil war, painful and slow reconstruction. The sweet little world at the end of all this is at once a result and a promise; an offered assurance of 'days of peace and rest', after the battle has been won.

Morris was strong enough, even his world is at times strong enough, to face this process, this necessary order of events. But when Utopia is not merely the alternative world, throwing its light on the darkness of the intolerable present, but lies at the far end of generations of struggle and of fierce and destructive conflict, its perspective, necessarily, is altered. The post-religious imagining of a harmonious community, the enlightened rational projection of an order of peace and plenty, have been replaced, or at least qualified, by the light at the end of the tunnel, the sweet promise which sustains effort and principle and hope through the long years of revolutionary preparation and organization. This is a genuine turning-point. Where the path to Utopia was moral redemption or rational declaration – that light on a higher order which illuminates an always present possibility – the mode itself was radically different from the modern mode of conflict and resolution.

Morris's chapters 'How the Change Came' and 'The Beginning of the New Life' are strong and convincing. 'Thus at last and by slow degrees we got pleasure into our work': this is not the perspective of reformism, which in spirit, in its evasion of fundamental conflicts and sticking points, is much nearer to the older utopian mode; it is the perspective of revolution – not only the armed struggle but the long and uneven development of new social relations and human feelings. That they have been developed, that the long and difficult enterprise has succeeded, is crucial; it is the transition from dream to vision. But it is then reasonable to ask whether the achieved new condition is not at least as much rest after struggle – the relaxed and quiet evening after a long, hard day – as any kind of released new energy and life. The air of late Victorian holiday is made to override the complexities, the divergences, the everyday materialities of any working society. When the time-dreamer finds himself fading, as he looks in on the feast at the old church, the emotions are very complex: the comforting recall of a medieval precedent – 'the church-ales of the Middle Ages'; the wrench of regret that he cannot belong to this new life; and then also, perhaps, for all the convinced assent to the sight of the burdens having been lifted, the impulse – and is it only unregenerate? – of an active, engaged, deeply vigorous mind to register the impression, though it is

put into a voice from the future, 'that our happiness even would weary you'. It is the fused and confused moment of the longing for communism, the longing for rest and the commitment to urgent, complex, vigorous activity.

III

When Utopia is no longer an island or a newly discovered place, but our familiar country transformed by specific historical change, the mode of imagined transformation has fundamentally changed. But the historical agency was not only, as in Morris, revolution. It was also, as in Wells, some kind of modernizing, rationalizing force: the vanguard of Samurai, of scientists, of engineers, of technical innovators. Early rationalist Utopias had only, in the manner of Owen, to be declared to be adopted; reason had that inevitability. Wells, refusing popular revolution, belonged to his time in seeing agency as necessary, and there is a convincing match between the kind of agency he selected – a type of social engineering plus a rapidly developing technology – and the point of arrival: a clean, orderly, efficient and planned (controlled) society. It is easy to see this now as an affluent state capitalism or monopoly socialism; indeed many of the images have been literally built. But we can also, holding Morris and Wells together in our minds, see a fundamental tension within the socialist movement itself; indeed in practice within revolutionary socialism. For there are other vanguards than those of Wells, and the Stalinist version of the bureaucratic Party, engineering a future which is primarily defined as technology and production, not only has its connections to Wells but has to be radically distinguished from the revolutionary socialism of Morris and of Marx, in which new social and human relations, transcending the deep divisions of industrial capitalist specialization, of town and country, of rulers and ruled, administrators and administered, are from the beginning the central and primary objective. It is within this complex of tendencies – of efficient and affluent capitalism set against an earlier capitalist poverty and disorder; of socialism against capitalism in either phase; and of the deep divisions, within socialism itself, between the reformist free-riders with capitalism, the centralizing social engineers, and the revolutionary democrats – that we have to consider the mode of dystopia, which is both written and read within this extreme theoretical and practical complexity.

Thus Aldous Huxley's *Brave New World* (1932) projects a black amalgam of Wellsian rationality and the names and phrases of revolutionary socialism, in a specific context of mobile and affluent corporate capitalism. This sounds and is confused, but the confusion is significant; it is the authentic confusion of two generations of science fiction itself, in its powerful dystopian mode. 'Community, Identity, Stability': this is the motto of the Brave New World State. It is interesting to track these ideals back into the utopian mode. Stability, undoub-

tedly, has a strong bearing; most of the types of Utopia have strongly emphasized it as an achieved perfection or a self-adjusting harmony. Huxley adds the specific agencies of repression, manipulation, prenatal conditioning and drugged distraction. Western science fiction has been prolific in its elaboration of all these agencies: the models, after all, have been close to hand. Stability blurs to Identity: the manufacture of human types to fit the stabilized model; but this, crucially, was never an explicit utopian mode, though in some examples it is assumed or implied. Variability and autonomy, within the generally harmonious condition, are indeed among its primary features. But now, under the pressures of consumer capitalism and of monopoly socialism, the mode has broken. As in the later stages of realist fiction, self-realization and self-fulfilment are not to be found in relationship or in society, but in breakaway, in escape; the path the Savage takes, like a thousand heroes of late-realist fiction, getting out from under the old place, the old people, the old family, or like a thousand science-fiction heroes, running to the wastes to escape the machine, the city, the system. But then the last and most questionable irony: the first word of the motto of this repressive, dominating, controlling system is Community: the keyword, centrally, of the entire utopian mode. It is at this point that the damage is done or, to put it another way, is admitted. It is in the name of Community, the utopian impulse, and in the names of communism (Bernard Marx and Lenina) that the system is seen as realized, though the actual tendencies – from the degradation of labour through an ultimate division and specialization to the organized mobility and muzak of planned consumption – rely for their recognition on a contemporary capitalist world. In his 1946 foreword Huxley continued his running together of historically contrary impulses but then, interestingly, returned to Utopia, offering a third way beyond the incubator society and the primitive reservation: a self-governing and balanced community, little different in spirit from Morris's future society except that it is limited to 'exiles and refugees', people escaping from a dominant system which they have no chance or hope of changing collectively. Utopia then lies at the far end of Dystopia, but only a few will enter it; the few who get out from under. It is the path travelled, in the same period, by bourgeois cultural theory: from the universal liberation, in bourgeois terms, through the phase in which the minority first educates and then regenerates the majority, to the last sour period in which what is now called 'minority culture' has to find its reservation, its hiding-place, beyond both the system and the fight against the system. But then what is so strange is that this last phase, in some writing, returns to the utopian mode, throwing strange questions back to the whole prior tradition: questions which disturb the apparently simple grammar of desire – that desire for another place and another time which, instead of being idealized, can be seen as always and everywhere a displacement, but which can itself be transformed when a history is moving:

Not in Utopia – subterranean fields –
Or in some secret island, Heaven knows where!
But in the very world, which is the world
Of all of us – the place where in the end
We find our happiness, or not at all!

Wordsworth's emphasis, it is true, can go either way: into revolutionary effort, when the history is moving; into a resigned settlement when it goes wrong or gets stuck. The utopian mode has to be read, always, within that changing context, which itself determines whether its defining subjunctive tense is part of a grammar which includes a true indicative and a true future, or whether it has seized every paradigm and become exclusive, in assent and dissent alike.

For the same consideration puts hard questions to the now dominant mode of dystopia. George Orwell's 1984 is no more plausible than Morris's 2003, but its naturalized subjunctive is more profoundly exclusive, more dogmatically repressive of struggle and possibility, than anything within the utopian tradition. It is also, more sourly and more fiercely than in Huxley, a collusion, in that the State warned against, satirized – the repression of autonomy, the cancellation of variations and alternatives – is built into the fictional form which is nominally its opponent, converting all opposition into agencies of the repression, imposing, within its excluding totality, the inevitability and the hopelessness which it assumes as a result. No more but perhaps no less plausible than Morris's 2003, but then, in the more open form, there is also Morris's 1952, and the years following it: years in which the subjunctive is a true subjunctive, other than a displaced indicative, because its energy flows both ways, forward and back, and because in its issue, in the struggle, it can go either way.

IV

The projection of new heavens and new hells has been a commonplace of science fiction. Yet perhaps a majority of them, just because they are so often literally out of this world, are functions of fundamental alteration: not merely the intervention of altered circumstance, which in the type of the externally altered world is a minor mode of the utopian, but a basic recasting of the physical conditions of life and thence of its life-forms. And then in most stories this is a simple exoticism, generically tied to the supranatural or magical romance. There is a range from casual to calculated fantasy, which is at the opposite pole from the hypothesized 'science' of science fiction. Yet, perhaps inextricable from this genre, yet bearing different emphases, there is a mode which is truly the result of a dimension of modern science: in natural history, with its radical linkages between life-forms and life-space; in scientific anthropology, with its methodological assumption of distinct and alternative cultures. The interrelation between these is often significant. The materialist tendency of the former

is often annulled by an idealist projection at the last, mental phase of the speculation; the beast or the vegetable, at the top of its mind, is a human variation. The differential tendency of the latter, by contrast, is often an overriding of material form and condition: an overriding related to idealist anthropology, in which alternatives are in effect wholly voluntary. Yet it is part of the power of science fiction that it is always potentially a mode of authentic shift: a crisis of exposure which produces a crisis of possibility; a reworking, in imagination, of *all* forms and conditions.

In this at once liberating and promiscuous mode, science fiction, as a whole, has moved beyond the utopian; in a majority of cases, it is true, because it has also fallen short of it. Most direct extrapolation of our own conditions and forms – social and political but also imminently material – has been in effect or in intention dystopian: atomic war, famine, overpopulation, electronic surveillance have written 1984 into millennia of possible dates. To live otherwise, commonly, is to be other and elsewhere; a desire displaced by alienation and in this sense cousin to phases of the utopian, but without the specific of a connected or potentially connecting transformation and then again without the ties of a known condition and form. So that while the utopian transformation is social and moral, the science-fiction transformation, in its dominant Western modes, is at once beyond and beneath: not social and moral but natural; in effect, as so widely in Western thought since the late nineteenth century, a mutation at the point of otherwise intolerable exposure and crisis; not so much, in the old sense, a new life as a new species, a new nature.

It is then interesting within this largely alternative mode to find a clear example of an evidently deliberate return to the utopian tradition, in Ursula K. Le Guin's *The Dispossessed* (1974). It is a return within some of the specific conditions of science fiction. The alternative society is on the moon of a far planet, and space-travel and electronic communication – to say nothing of the possibilities of the 'ansible', that device for instantaneous space-wide communication developed from the theory of simultaneity – permit interaction between the alternative and the original society, within a wider interaction of other galactic civilizations. At one level the space-ship and the ansible can do no more, technically, than the sea voyage, the cleft in the underground cavern and, crucially, the dream. But they permit, instrumentally, what is also necessary for another and more serious reason: the sustained comparison of the utopian and the non-utopian options. The form of the novel, with its alternating chapters on Anarres and Urras, is designed for this exploratory comparison. And the reason is the historical moment of this looking again at Utopia: the moment of renewed direct social and political hope, a renewed alternative social and political morality, in a context with one variable from the ordinary origins of the utopian mode, that within the world in which the hope is being interestedly if warily examined, there is not, or

apparently not, the overwhelming incentive of war, poverty and disease. When Morris's dreamer goes back from twenty-first- to nineteenth-century London the questions are not only moral; they are directly physical, in the evidently avoidable burdens of poverty and squalor. But when Le Guin's Shevek goes from Anarres to Urras he finds, within the place provided for him, an abundance, an affluence, a vitality, which are sensually overwhelming in comparison with his own moral but arid world. It is true that when he steps out of his place and discovers the class underside of this dominant prosperity the comparison is qualified, but that need only mean that the exuberant affluence depends on that class relationship and that the alternative is still a shared and equal relative poverty. It is true also that the comparison is qualified, in the text as a whole, by what is in effect a note that our own civilization – that of Earth, which in its North-American sector Urras so closely and deliberately resembles – has been long destroyed: 'appetite' and 'violence' destroyed it; we did not 'adapt' in time; some survivors live under the ultimate controls of 'life in the ruins'. But this, strictly, is by the way. Urras, it appears, is not in such danger; Anarres remains the social and moral option, the human alternative to a society that is, in its extended dominant forms, successful. It is among its repressed and rejected that the impulse stirs, renewing itself, after a long interval, to follow the breakaway revolution, anarchist and socialist, which took the Odonians from Urras to a new life on Anarres. Shevek's journey is the way back and the way forward: a dissatisfaction with what has happened in the alternative society but then a strengthened renewal of the original impulse to build it. In two evident ways, then, *The Dispossessed* has the marks of its period: the wary questioning of the utopian impulse itself, even within its basic acceptance; the uneasy consciousness that the superficies of Utopia, affluence and abundance, can be achieved, at least for many, by Non-utopian and even anti-utopian means.

The shift is significant, after so long a dystopian interval. It belongs to a general renewal of a form of utopian thinking – not the education but the learning of desire – which has been significant among Western radicals since the crises and also since the defeats of the 1960s. Its structures are highly specific. It is a mode within which a privileged affluence is at once assumed and rejected: assumed and in its own ways enjoyed, yet known, from inside, as lying and corrupt; rejected, from in close, because of its successful corruption; rejected, further out, by learning and imagining the condition of the excluded *others*. There is then the move to drop out and join the excluded; the move to get away, to get out from under, to take the poorer material option for a clear moral advantage. For nothing is more significant, in Le Guin's contrasted worlds, than that Anarres, the Utopia, is bleak and arid; the prosperous vitality of the classical Utopia is in the existing society that is being rejected. This is a split of a major kind. It is not that Anarres is primitivist: 'they knew that their anarchism was the product of a very

high civilization, of a complex diversified culture, of a stable economy and a highly industrialized technology'. In this sense, the modification of Morris is important; it is clearly a future and not a past, a socially higher rather than a socially simplified form. But it is significantly only available in what is in effect a waste land; the good land is in the grip of the Urran dominance. It is then the movement that Huxley imagined, in his 1946 foreword. It is not the transformation, it is the getaway.

It is a generous and open getaway, within the limited conditions of its waste-land destination. The people of Anarres live as well, in all human terms, as Morris's cooperators; mutuality is shown to be viable, in a way all the more so because there is no abundance to make it easy. The social and ethical norms are at the highest point of the utopian imagination. But then there is a wary questioning beyond them: not the corrosive cynicism of the dystopian mode, but a reaching beyond basic mutuality to new kinds of individual responsibility and, with them, choice, dissent and conflict. For this, again of its period, is an open Utopia: forced open, after the congealing of ideals, the degeneration of mutuality into conservatism; shifted, deliberately, from its achieved harmonious condition, the stasis in which the classical utopian mode culminates, to restless, open, risk-taking experiment. It is a significant and welcome adaptation, depriving Utopia of its classical end of struggle, its age of perpetual harmony and rest. This deprivation, like the waste land, may be seen as daunting; the cutting-in of elements of a dominant Dystopia. But whereas the waste land is voluntary deprivation, by the author – product of a defeatist assessment of the possibilities of transformation in good and fertile country – the openness is in fact a strengthening; indeed it is probably only to such a Utopia that those who have known affluence and known with it social injustice and moral corruption can be summoned. It is not the last journey. In particular it is not the journey which all those still subject to direct exploitation, to avoidable poverty and disease, will imagine themselves making: a transformed this-world, of course with all the imagined and undertaken and fought-for modes of transformation. But it is where, within a capitalist dominance, and within the crisis of power and affluence which is also the crisis of war and waste, the utopian impulse now warily, self-questioningly, and setting its own limits, renews itself.

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Science fiction and the scientific world-view

Patrick Parrinder

I

The problems of writing about the relationship between science and science fiction are manifold. It is necessary not only to define one's terms but to dispel a widespread suspicion that the relationship is accidental rather than essential. Do the initials 'SF' have to stand for '*science* fiction'? Many have wished that they didn't. One could compile an anthology of dismissive or patronizing references to SF by practising scientists (though Arthur C. Clarke has suggested that they might mostly be second-rate scientists). A much livelier anthology would display SF writers, particularly recent ones, pouring scorn on the idea that their work has anything to do with institutionalized knowledge. 'Like most science-fiction writers', Kurt Vonnegut assures us (referring to his fictional hero, Kilgore Trout), 'Trout knew almost nothing about science, was bored stiff by technical details.' And Brian Aldiss once asserted that 'Most of science fiction is about as firmly based in science as eggs are filled with bacon.'

One could answer these statements by saying that they are demonstrably untrue; there are probably very few significant developments in modern physics, astronomy, cybernetics, biology and genetics – to go no further – which have not been reflected in science-fiction stories. One could also note that the denial of any connection between SF and science is a species of deliberate heresy. For many years SF writers in England and America formed a largely ingrown community, cut off from the mainstream of literary culture by their outspoken support for the values of scientists and technologists. By the 1960s there was an understandable desire to break out of the ghetto and to assert the continuity between SF and other forms of contemporary fiction. At the same time, there was a loss of confidence in the scientific world-view which had inspired so many writers of earlier decades. The period of ascendancy of the scientific outlook – an ideology justifying scientific research as intrinsic to the nature and purpose of human existence – began with the technological triumphs and the erosion of traditional religious beliefs caused by the Industrial Revolution. The growth of science fiction as a separate genre would be unthinkable without this ascendancy. Up to the present, SF has continued to be moulded and shaped by scientific thought, even in its moments of rebellion against it.

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Hugo Gernsback introduced the first number of his magazine *Science Wonder Stories* (June 1929) with the declaration that 'it is the policy of *Science Wonder Stories* to publish only such stories that have their basis in scientific laws as we know them, or in the logical deduction of new laws from what we know'. At the same time, he announced that he was enlisting a panel of experts to pronounce on the scientific correctness of stories submitted to the magazine.[1] The necessity of getting the technical details right has always been a precept with some SF writers, as Jules Verne's famous put-down of Wells's *The First Men in the Moon* ('I make use of physics. He invents') illustrates. More important than detailed correctness, however, is the general imaginative debt which SF writers owe to scientific ideology. This ideology has often received its fullest expression in stories – such as those concerning time travel – which at some point flagrantly violate 'scientific fact'.

Mary Shelley's *Frankenstein* (1818) would undoubtedly have been thrown out by the *Science Wonder Stories* panel of scientific experts. Yet, as Mark R. Hillegas has already argued, this is one of the earliest SF novels because it takes us into the laboratory and shows the horrifying results of a scientist's researches into the principle of life. Victor Frankenstein creates life by collecting the materials of a human body from dissecting-rooms and slaughterhouses, and then galvanizing the creature with the 'vital spark' of electricity. The power of electricity is suggested by the thunderstorms which crackle through the novel, as well as by the blackened lips and shrivelled skin of the hideous creature itself. Science, in this Gothic melodrama, stands accused of perverting the awesome power of natural forces to ungodly ends. Frankenstein's researches do irreparable damage to himself and his family, and his last words are a warning against the ambition of distinguishing oneself in science and discoveries.

The isolated, demonic inventor remains a classic SF figure, but the development of the genre throughout the nineteenth century reflects the steady institutionalization of science, as uncoordinated 'discoveries' and 'inventions' gave way to the organized connection of education and research. Jules Verne's romances have a strong element of scientific education without tears. H. G. Wells was an ex-science student, his first book was *A Text-Book of Biology* (1893) and several of his early novels were reviewed in the scientific periodical *Nature* as well as in more conventional journals. Though he has a residual fondness for the Frankenstein figure, most of his heroes have had a scientific training and some, like Dr Moreau, are outlaws from the community of professional scientists. The widespread foundation of learned societies, professional journals, laboratories and degree courses during the Victorian period conferred on the 'scientist' (the word was coined by William Whewell in 1840) a growing degree of public esteem. What T. H. Huxley called the 'ethical spirit' of science, sceptical, experimental and rigorously impersonal, had a wide impact on social thought, literature and the arts. Science and technology held

the key to 'progress' and thus represented bourgeois society's investment in its own future. One expression of this climate is the technological utopianism of Bellamy and Bulwer-Lytton, as analysed in Raymond Williams's essay in this volume.

Two strands of late nineteenth-century science appeared to challenge this prospect of the social perfectibility of man. These were the Darwinian theory of evolution, with its implication that the biological constitution of man was open to perpetual change and instability, and the Second Law of Thermodynamics which posited an irreversible process of entropy, or what became known as the 'running-down universe'. In the conclusion to *The Origin of Species* (1859), Darwin contrasted the fixed nature of planetary movements with the dynamism of biological evolution, which throws up 'endless forms most beautiful and most wonderful'. Natural selection, he writes, 'works solely by and for the good of each being', so that in man 'all corporeal and mental endowments will tend to progress towards perfection'. The noble optimism of these words conceals the fact that natural selection is based on competitive struggle and the 'elimination of the unfit' – in this case, of present-day man. Moreover, the perfection of the human race is being pursued on a planet that, in the long run, must inevitably cool to the point where it becomes uninhabitable. (The belief that the earth must eventually be abandoned is one of the imperatives underlying science fiction's characteristic vision of space travel.) These paradoxes at the heart of the scientific outlook are the province of the early fiction of H. G. Wells, beginning with *The Time Machine* (1895).

Scientific thought has most decisively influenced science fiction where it has itself contained a strong vein of futurological fantasy. The prospects of space travel and of evolution beyond man have played an important part in this. Space travel is an age-old dream of mankind, which appealed to the Victorian rationalist as representing the final goal of human progress. Thus Winwood Reade's *The Martyrdom of Man* (1872), a Positivist account of human history which remained in print for fifty years and was still selling in its tens of thousands in the 1920s, looks forward to a time when disease has been extirpated, immortality has been 'invented' and man has migrated into space. 'The earth will become a Holy Land', Reade predicts, 'which will be visited by pilgrims from all quarters of the universe.' Finally, men will master the forces of nature and will set out to build their own universes. What Reade is putting forward here is a 'religion of humanity' very obviously modelled on the Christian religion, with scientists eventually usurping the function of God. It is not surprising that a sober-minded observer such as Huxley, in his lecture 'On the Advisableness of Improving Natural Knowledge' (1860), should pooh-pooh the idea of science as a fairy godmother bringing 'omnipotent Aladdin's lamps' and 'telegraphs to Saturn'. In the early twentieth century, however, the invention of powered flight made space travel no longer seem an absurdity. Meanwhile, developments in biology led not only to the control of

ageing and disease but to the prospect of a planned 'improvement' of the human race by means of genetic engineering. Yet it was not until the 1920s that there emerged a coherent body of thought bringing together all the elements of the future vision that we have come to call 'science-fictional'. It is in this body of popular scientific thought, and most notably in works by H. G. Wells, J. B. S. Haldane and J. D. Bernal, that we may find a significant link between the scientific outlook and modern SF.

The reasons why this futurological perspective or 'scientific world-view' took coherent shape when and where it did are highly complex, and only a few suggestions can be made here. Modern scientific optimism reached its peak in the 1920s as a reaction against the traditionalist thinking which was thought to have caused the First World War. Although an international movement, it received its most authoritative intellectual statement in Europe, and especially Britain, while in the United States it was most fully represented by Gernsback and his successors in the SF pulps. It has often been suggested that the scientific world-view was the ideology of a new social class of engineers and technicians, a sector of the petty-bourgeoisie who hoped to gain enormously in power and influence as the planned society that they foresaw came about. H. G. Wells saw himself as the prophet of an 'Open Conspiracy' of scientists, technicians and industrialists who would take over world government, while both Haldane and Bernal were advocates of the combination of collectivism and the high status of the specialist that they found in the Soviet Union. Nevertheless, the specifically British origins of these three thinkers might be detected in their tendency to envisage a future of cosmic expansion; at the height of the Empire, the conquest of space would seem to have had a special appeal even for the most anti-imperialistic of Englishmen.

In Britain and Europe the vision of a scientific, collectivist future was in sharp contrast to the established or (in the Soviet Union) the recently destroyed social structure. The United States, however, was thought of as an inherently dynamic society which already represented 'the future' (see, for instance, Wells's book *The Future in America*, which finds – in 1906 – that the major flaw of American society is its lack of any collectivist ideology). In America technological developments were more immediately put in the service of consumer-oriented capitalism than in Europe, where the first priority was often national defence. It may have been for these reasons that the most influential American proponents of the scientific outlook expressed a much narrower and more manipulative attitude than their European counterparts. Pragmatism, the philosophy of 'if it works, it's right' originating in the works of C. S. Peirce and William James, prepared the ground for the techniques of 'social engineering' advocated by F. W. Taylor in *The Principles of Scientific Management* (1911), and later by the behaviourist school of psychologists. The aim of social engineering is to increase efficiency by 'modernizing' all aspects of industrial produc-

tion; its range thus extends from the time-and-motion study advocated by Taylor (and satirized in Zamyatin's *We*, 1921) to the social welfare programmes of the New Deal in the 1930s. The extension of 'scientific management' into the control of all human behaviour is envisaged in B. F. Skinner's utopian novel *Walden Two* (1948), which portrays a perfect community set up within the existing capitalist system. Skinner's behaviourism, which holds that human fulfilment can be attained as a result of psychological techniques to be applied, without any structural or political change, in the here and now, seems a typical – though extreme – product of the pragmatic American outlook.

More recently, a similarly hard-headed, materialistic attitude has been reflected in the establishment of 'futurology' as a so-called science in which likely technological developments are scrutinized in isolation from any wider social and political changes which might influence them. The tendency to universalize the acquisitiveness and individualism of the capitalist epoch is also widespread in American SF. At the same time, SF writers interested in the longer perspectives of science, such as space travel or biological and cultural evolution, had to turn to European thinkers; either to the proponents of the scientific world-view, or to the apologists of a modern, post-scientific irrationalism such as Oswald Spengler, whose Darwinian sense of the rise and fall of civilizations made *The Decline of the West* (1922) one of the main source-books for SF's future histories.

II

The first element in the scientific world-view of Wells, Haldane, Bernal and their successors is the entity 'man'; man considered not as a divinely created being or a paragon of reason, but as a competing biological species. Wells (unlike many other late-Victorian 'social Darwinists') was concerned with the fortunes of mankind as a whole, not with particular class or racial groups. Nevertheless, a degree of conceptual slippage is very widespread in scientific materialism; 'man' comes to stand for 'civilized man' and, in effect, for 'modern Western man', with modernity being equated with the capacity to pursue scientific research. Scientific pronouncements about 'man's survival' pretend to a universalism which is often false, since they tend to represent the interests of the social groups to which scientists belong. Typically, they look to action by world bodies such as the United Nations (or its predecessor the League of Nations) to bring about the changes which are desired. The 'League of Nations' idea of joint action by governments to ensure peace and prosperity reflects an idealism that arose naturally out of the carnage of the First World War, but it also suggests a desire to stave off the 'anarchy' of proletarian revolutions like that which had taken place in Russia. The common interest of 'mankind' is taken for granted by some (if not all) of the scientific thinkers of the 1920s and 1930s. Their articulation of the problems and prospects of

'man' – an articulation largely present in Wells, and yet considerably extended by his scientific followers, including some SF writers – may be loosely summarized as follows.

1. The immediate challenge to mankind is the self-destructiveness inherent in the present phase of social and technological evolution. The nightmare of technological warfare, as foreseen by Wells and other SF novelists, was unleashed in the First World War of 1914-18. Future wars, it is anticipated, will be world wars, destructive of civilization as a whole. War has become irrational because no one side stands any longer to gain by it. (Thus, scientists often incline towards a pacifist position on purely rational grounds, but such pacifism has little to say about localized wars, strike-breaking, colonial 'police actions' and other forms of violence which are not self-evidently irrational.) If major wars are to be avoided, the advanced societies must learn to control their own 'inner demons' and those of others. Such control is to be achieved by a framework of international legal and political coordination, by the use of social engineering (i.e. social reform directed from above) to remove the frustrations and inequalities which lead to demagogy and mass hysteria, and by the transfer of power to a scientific élite.

2. It is when it looks beyond the horizons of the immediate twentieth-century crisis that scientific thinking enters the 'eschatological' dimension which is the territory of much SF. Once the problems of war, poverty, frustration and ignorance have been overcome, what is to come next? From an evolutionary point of view, man is now free to apply the principles of social engineering at will to his own further development. Since there is no finality in the evolutionary process – except that of extinction – he cannot look to the stabilization or conservation of any features of his present civilization as a long-term goal. Man's aim, accordingly, must be to transcend his own present cultural, and eventually biological, identity. The vision of 'evolution beyond man' is usually presented by some grotesque marriage of biology and cybernetics; the inheritors of human civilization will be either organisms with vastly distended brains (as in Wells and Stapledon) or machines which have liberated themselves from their human constructors. The first steps toward further development will be taken as human beings learn to inhabit wholly artificial environments, to consume artificial foods and adopt artificial means of reproduction and the prolongation of life.

3. As consolation for this loss of natural life there is the last and greatest of the physical challenges that man faces: the conquest of space. Today, with the US and USSR space programmes well into their third decade, space exploration and research are usually

justified on pragmatic grounds, either as a satisfaction of basic impulses ('Because it's there') or as an exercise in *Realpolitik* ('Because the Russians might get there first'). Once the gospel of a small number of writers and thinkers mocked by the public at large, space research is now both an economic and military reality and one of the staple components of mass-entertainment fantasy.

While the practicability of star travel awaits the discovery of some mode of faster-than-light propulsion, travel within the solar system depends upon simple extensions of the transport technology which has produced the motor-car and the jet aeroplane. The mid-twentieth-century revolution in attitudes to space is vividly recorded in the files of periodicals like the *Journal of the British Interplanetary Society*, founded in 1934 by a small group of visionaries, which by the late 1940s had become a professional journal for rocket engineers, most of whom were employed on government-assisted research projects. Writing in the *Journal* for December 1946, Arthur C. Clarke (already a veteran contributor) recalled that in *Possible Worlds* (1927) J. B. S. Haldane had predicted space travel around the year 8 000 000. Now, Clarke suggested a little too optimistically, there was a possibility of a guided missile crashing onto the moon by 1950! For decades before this, however, scientific thinkers and SF writers had discussed the possibilities of colonizing neighbouring planets, the exploitation of mineral resources and the sale of real estate on them, and the likelihood of discovering alien life-forms. 'Space' had become a new frontier of the imagination, at once the last repository of the colonist's dream of a clean break and a new start, and the ultimate target of capitalism's drive towards perpetual expansion.

Beyond the practical advantages of opening up the solar system, space travel has always had a powerful quasi-religious attraction for certain minds. Winwood Reade's *The Martyrdom of Man* has already been cited as an example of this, and perhaps the most important writer to echo the strain of religious exaltation in which Reade writes of space is H. G. Wells. In his lecture 'The Discovery of the Future' (delivered at the Royal Institution and subsequently published in *Nature* for 6 February 1902) Wells looks forward to a time when 'beings who are now latent in our thoughts and hidden in our loins, shall stand upon this earth as one stands upon a footstool, and shall laugh and reach out their hands amidst the stars'. Like the universe-makers prophesied by Reade, these human children who take the heavens for their playground are substitutes for the traditional gods. But, since Wells wrote, they have also become the brain-children of an ever-increasing social group – the readers of science fiction.

In the long term there is a more sombre reason for embarking on space travel, which scientific thinkers have seldom failed to point out. The time will come (though maybe not for millions of years)

when the earth will no longer be able to support human life. Whether as a result of the planet's natural cooling or of some purely man-made disaster, enforced migration will become the key to human survival. The certainty that man, having survived the most immediate dangers, must one day face the choice of leaving the earth or becoming extinct makes space travel appear as a form of positive evolutionary adaptation. Space, in effect, is of the essence of the scientific world-view, for it represents not only man's future playground but his destiny.

4. It is not likely that man is alone in the universe. If he were, he might soon be able to master it – thus finally proving the Darwinian reduction of *Homo sapiens* to a biological entity to be an irrelevance – but, in the long run, what could be more boring than to be a lone ranger on a frontier without Red Indians? While statistical probability seems to support the inference that there is or has been intelligent life elsewhere in the universe, there is no doubt that scientific thinkers have by and large *wanted* to believe this. In the 1890s popular astronomy championed the idea that intelligent beings must have constructed the newly discovered 'canals' on Mars. Now that we no longer expect to encounter a rival civilization anywhere in the solar system, speculation centres on the possibility of establishing a communications network across interstellar space. The astronomer Fred Hoyle has written that, while travel outside the solar system may be 'not merely difficult but impossible', the rate of information-exchange may be such that we could stumble across a 'galactic library' and a 'galactic telephone directory'. In this way we might even profit from the experience of other civilizations which have learned to avoid nuclear war! These speculations from Hoyle's *Of Men and Galaxies* (1965) do not differ in essence from those of SF writers who imagine extra-terrestrials arriving out of the blue and establishing a benevolent despotism to save mankind from its follies. Against this, Arthur C. Clarke suggested in *The Exploration of Space* (1951) that although the chances of intelligence existing elsewhere in the universe are very high, the probability of our encountering a civilization at a stage of development recognizably close to our own is infinitesimal. But even if contact with other civilizations turns out to be a purely fictional prospect, the doubt whether numan intelligence is alone in the universe does much to mitigate the bleakness of scientific cosmology.

5. Modern scientific thought places man in a time and space so large as to annihilate the individual with a normal human life-span. This perspective has no obvious relevance to the problems of individual behaviour or of social justice and liberty, so that it would be quite rational to refuse to base one's ethical or political views on it. Nevertheless, the inherently anti-individualistic quality of the