

## Science fiction before the genre

### The origins of science fiction

The word 'science' acquired its modern meaning when it took aboard the realization that reliable knowledge is rooted in the evidence of the senses, carefully sifted by deductive reasoning and the experimental testing of generalizations. In the seventeenth century writers began producing speculative fictions about new discoveries and technologies that the application of scientific method might bring about, the earliest examples being accommodated – rather uncomfortably – within existing genres and narrative frameworks.

One genre hospitable to sf speculation was that of utopian fantasy, whose usual narrative form was the imaginary voyage. The rich tradition of sf travellers' tales was launched by one of the first and foremost champions of the scientific method, Francis Bacon, in *New Atlantis* (written c.1617; published 1627), although the importance of technological progress to social reform had earlier been recognised by Johann Valentin Andreae's account of *Christianopolis* (1619) and Tommaso Campanella's description of *La Città del Sole* (*The City of the Sun*, written 1602; published 1623). Most subsequent utopian fantasies took scientific and technological advancement into account, but relegated it to a minor role while matters of social, religious and political reform remained centre stage. Nor were those writers who took account of scientific progress always enthusiastic about it; Baconian optimism prompted a backlash of hostility from those who perceived a threat to religious values in the secularizing tendencies of religion and the materialistic encouragements of technology.

The imaginary voyage was also the usual narrative form of scathing satirical fantasies, and scientists became satirical targets in Margaret Cavendish's *The Blazing World* (1666) and the third book of Jonathan Swift's *Gulliver's Travels* (1726). Such works founded a tradition of 'anti-science fiction', whose reliance on similar motifs and narrative strategies has always resulted in its subsumption within the genre whose ambitions it opposes. Given the

importance of scepticism and theoretical dissent to the advancement of science and the near-oxymoronic quality of the 'science fiction' label, this confusion is not entirely inappropriate.

The more extreme versions of the fantastic voyage overlapped with the standard format of religious fantasy, the dream story. Whenever seventeenth- and eighteenth-century imaginary voyages found it convenient to cross interplanetary space their devices became phantasmagorical, and dreaming remained the only plausible means of gaining access to the future until the late nineteenth century. Another pioneer of the scientific revolution, Johannes Kepler, was the first to couch an earnest scientific argument – a representation of the Copernican theory of the solar system – as a visionary fantasy. His *Somnium* (*A Dream*, 1634) also includes an ingenious attempt to imagine how life on the moon might have adapted to the long cycle of day and night.

Although most early accounts of lunar voyages are calculatedly ludicrous, the proposition that the moon and the planets were other worlds was a central contention of the heliocentric theory of the solar system. That theory became an important champion of the cause of science in its contest against religious faith because the Christian Church had adopted the geocentric cosmology favoured by Aristotle into its faith-supported world-view. Francis Godwin's farcical account of *The Man in the Moone* (1638) may, therefore, be placed among the ancestors of sf as confidently as John Wilkins's earnest essay celebrating the *Discovery of a World in the Moon* (1638) – to which a supplement was added in 1640, proposing that men would one day journey to the moon.

Such discussions were less risky in Protestant England than in Catholic France, but Pierre Borel's *Discours nouveau prouvant le pluralité des mondes* (*A New Discourse Proving the Plurality of Worlds*, 1657) and Cyrano de Bergerac's flamboyant *L'Autre Monde – The Other World*, two fragments of which were published in 1657 and 1662 – prepared the way for Bernard de Fontenelle's enormously popular *Entretiens sur la pluralité des mondes* (*Discussion of the Plurality of Worlds*, 1686). Fontenelle's adaptation of the classical dialogue into a casual and flippant 'conversation' was calculated to defuse criticism, but it helped pave the way for the development of more naturalistic speculative fictions. Throughout the eighteenth century, however, such fictions were handicapped by the lack of any plausible narrative devices capable of opening up the imaginative frontiers of space and time.

Although most satirists were satisfied with the moon as an extraterrestrial venue, a tradition of more wide-ranging cosmic voyages was founded by Athanasius Kircher's *Itinerarium Exstaticum* (*Ecstatic Journey*, 1656). Cosmic tours taking in all the known worlds of the solar system became a hybrid sub-genre, fusing religious and scientific fantasies, usually incorporating

utopian and eschatological imagery within the same framework. Attempts to describe a universe in which the sun was merely one star had little alternative but to adopt the form of visionary fantasy, however, even when the vision took the form of a voyage through space. Such works as Gabriel Daniel's *Voyage au monde de Descartes* (*Voyage to the World of Descartes*, 1692) and Christian Huygens's *Cosmotheoros* (1698) struggled to find an appropriate narrative form.

The most ambitious cosmic visions of the eighteenth century were those allegedly experienced in 1743–5 and reported in *Arcana Coelestia* (1749–56) by the Swedish mystical theologian Emmanuel Swedenborg, strongly influenced by Swedenborg's early work in physics, geology and mathematics. In France, the tradition of cosmic voyages was encouraged by a new imaginative licence – often involving the casual deployment of magical devices borrowed from Antoine Galland's translation of the *Arabian Nights* – associated with the fashionability of fantastic fiction. *Voyages de Mylord Céton dans les sept planètes* (*Journeys of Lord Seton in the Seven Planets*, 1765) by Marie-Anne de Roumier-Robert was the most extravagant, employing a narrative template established by the Chevalier de Béthune's *Relation du monde de Mercure* (*The World of Mercury*, 1750).

The gradual removal of terra incognita from maps of the Earth's surface helped to force utopian and satirical images out into space, although the remoter regions of the southern hemisphere remained useful to such writers as Gabriel de Foigny in *La Terre australe connue* (1676) and Restif de la Bretonne in *La Découverte australe par un homme volant* (*The Discovery of the South by a Flying Man*, 1781). Ludvig Holberg's *Nils Klim* (1741) pointed out another way to go, but the interior of the Earth was always a minority choice, although the adventurous *Le Passage de pôle arctique au pôle antarctique* (*The Passage from the North to the South Poles*, 1780) might have attracted more attention had it not remained unattributable. A more significant variation on the cosmic voyage theme was, however, employed in the *conte philosophique* by Voltaire, *Micromégas* (1752), which brought visitors to Earth from Sirius and Saturn.

Many French works, along with several translations from English, were reprinted in a thirty-six-volume series of *Voyages imaginaires* produced by Charles Garnier in 1787–9. This attempt to define and exemplify a genre might have been even more influential had it not been interrupted by the Revolution; even so, it provided a vital landmark for Camille Flammarion – who included many of its constituent works in his pioneering history of cosmological speculative fiction constructed in *Les Mondes imaginaires et les mondes réels* (*Imaginary Worlds and Real Worlds*, 1864) – and Jules Verne, who described his own works, collectively, as *Voyages extraordinaires*.

The adaptation of traditional narrative frameworks to the work of serious speculation laboured under several handicaps. Travellers' tales, even in their most earnest utopian mode, were infected by a chronic frivolity that increased as the travels extended into regions inaccessible to ships and pedestrians. Literary dreams, even at their most gravely allegorical, were by definition mere phantoms of the imagination, demolished by reawakening. The transformation of moral fables into Voltairean *contes philosophiques* was hampered by the calculated artificiality of their traditional milieux and exemplary characters. These problems became more acute as the philosophy of progress made the future an imaginative realm ripe for exploration. Utopian speculation entered a 'euchronian' mode once Louis-Sebastien Mercier had led the way in *L'An deux mille quatre cent quarante* (*The Year 2440*, 1771) – which soon prompted the production of more cynical accounts of futurity, such as Cousin de Grainville's *Le Dernier Homme* (*The Last Man*, 1805) – but the only obvious alternative to dreaming as a means of gaining access to the future was sleeping for a long time. This was no help to a contemporary narrator if the intelligence gained could not be returned to the present. The problem of designing and developing appropriate narrative frames for scientific *contes philosophiques* inevitably became acute during the nineteenth century, and was not easily solved.

#### Experiments in science-fictional method

The first writer to grapple with this problem in a wide-ranging experimental fashion was Edgar Allan Poe. The earliest poem by Poe to see eventual publication was 'Sonnet – to Science', written in the early 1820s, and his career culminated in *Eureka* (1848), an extraordinary poetic essay on the nature of the universe newly revealed by astronomical telescopes. The imaginative thread connecting these two works ran through Poe's entire career. As his appreciation of the aesthetics of scientific discovery grew, his attempts to find literary means of communicating and celebrating the wonders of science became more varied and more inventive.

Although the prefatory essay on the necessity of verisimilitude attached to reprints of Poe's lunar voyage story 'Hans Phaál' (1835; revised 1840 as 'The Unparalleled Adventure of One Hans Pfaall') was not intended to be taken seriously, it highlighted the problem implicit in extending travellers' tales beyond the Earth's surface. Although balloons had enabled a few intrepid aeronauts to get off the ground, they were not a convincing means of extraterrestrial exploration, and Hans Pfaall's attempt to outdo the hero of Willem Bilderdijk's pioneering *Kort verhaal van eene aanmerkelijke luc-treis en nieuwe planeetokdekking* (1813) never seemed convincing even to

its author. Despite its self-taunting sarcasm, however, Poe's preface became the first tentative manifesto for modern sf.

Poe experimented with new frameworks for futuristic speculation in 'The Conversation of Eiros and Charmion' (1839), a dialogue of the dead whose protagonists recall the near-future destruction of Earth by a comet, and 'The Colloquy of Monos and Una' (1841) before producing 'Mesmeric Revelation' (1844), which recognizes and emphasizes the necessity of establishing a more authoritative species of visionary fantasy for science-fictional use. He also used mesmerism as a device in 'A Tale of the Ragged Mountains' (1844) and 'The Facts in the Case of M. Valdemar' (1845); the latter added the further device of mimicking a 'scientific paper' – a prose form then in its infancy – thus paving the way for *Eureka*.

A few British writers contemporary with Poe grappled with the problem of finding appropriate narrative frameworks for bold scientific speculation, without any conspicuous success. Sir Humphry Davy's posthumously published *Consolations in Travel* (1830) was formulated as a series of dialogues extrapolating responses to a cosmological vision. In the same year that Poe published *Eureka*, Robert Hunt – a significant pioneer of the popularization of science – published *The Poetry of Science*, but the metaphysical visions in Hunt's novel *Panthea* (1849) owe more to the 'Rosicrucian romances' popularized by Edward Bulwer-Lytton (building on foundation-stones provided by J. V. Andreae) than to the scientific method for which Hunt gave up his own Romantic aspirations. Hunt's *Poetry of Science* inspired William Wilson to coin the term 'science-fiction' in *A Little Earnest Book Upon a Great Old Subject* (1851), but the only instance of the new genre Wilson could find was R. H. Horne's *The Poor Artist* (1850), a fable in which an artist discovers the wonders of the world as beheld by the eyesights of different creatures.

Modern historians of sf often locate the origins of British scientific romance in the works of Mary Shelley, although the Gothic trappings of *Frankenstein* (1818) place it firmly within the tradition of anti-science fiction, and *The Last Man* (1826), a fatalistic disaster story, is equally antithetical to the philosophy of progress. Neither work made its influence felt immediately, but both became formative templates heading powerful traditions of imaginative fiction. The *Frankenstein* formula of an unruly and unfortunate artefact bringing about the downfall of its creator became established in the last decade of the nineteenth century as the principal narrative form of anti-science fiction, and still retains that status, while *The Last Man* became grandparent to an entire genre of elegiac British disaster stories, more directly fathered by Richard Jefferies's *After London* (1885). One early work derivative of *Frankenstein* that did offer some tentative championship of progress was *The Mummy! A Tale of the Twenty-Second Century* (1827) by Jane Webb



Loudon, but explorations of the future remained few and tentative for many years. Notable exceptions include *The Air Battle* (1859) by 'Herrmann Lang', which anticipates what was soon to become an important British genre of future war fiction, and *The History of a Voyage to the Moon* (1864), where Poe's demand for more 'verisimilitude' in interplanetary fiction was taken up by the pseudonymous 'Chrysostom Trueman', who employed an early 'antigravity' technology to transport his protagonists to a lunar utopia.

Poe's American contemporary Nathaniel Hawthorne described imaginary scientific experiments in several of his moral tales, but his deep suspicion of the scientific world-view placed him in the antagonistic tradition; 'The Birthmark' (1843) and 'Rappaccini's Daughter' (1844) are early exemplars of a sceptical attitude deploring the excesses and perversions of what would nowadays be called 'scientism'. Other nineteenth-century American writers following in Poe's footsteps were mostly inclined to a similar caution. Fitz-James O'Brien's 'The Diamond Lens' (1858) and Ambrose Bierce's 'Moxon's Master' (collected 1909) are usually read as conservative moral tales, although the latter item is flirtatiously ambiguous. Edward Everett Hale's space flight satire 'The Brick Moon' (1869) is unconvincing, but he set an important precedent by producing the first significant fictionalization of an essay in alternative history, 'Hands Off!' (1881). Frank R. Stockton took advantage of the increasing familiarity of science-fictional devices by employing them as launch-pads for playful flights of fancy in such tales as 'The Water-Devil' (1874) and 'A Tale of Negative Gravity' (1884).

Thanks to Charles Baudelaire, their French translator, Poe's works became far more influential in France than in his native land, and it was there that the cause of finding more appropriate narrative frameworks for sf was taken up most urgently and most adventurously. Jules Verne toyed briefly with Poesque short forms before deciding that the imaginary voyage offered far more scope for interstitial scientific discourse. The essence of Verne's method was the carefully constrained extrapolation of contemporary technology, and he became famous for the application of hypothetical locomotive technologies to laborious exploration and leisurely tourism. Verne made the most convincing nineteenth-century attempt to import a measure of verisimilitude into an extraterrestrial voyage in *De la terre à la lune* (*From the Earth to the Moon*, 1865), but his conscience forbade him to land his moonshot – because he had no plausible way to return it to Earth – and his quarrelsome travellers ended up merely making a trip *Autour de la lune* (*Round the Moon*, 1870).

Verne's earliest *voyages extraordinaires* included several boldly imaginative works, the most extravagant of all being *Voyage au centre de la terre* (*Journey to the Centre of the Earth*, 1863) and *Vingt mille lieues sous les*

*mers* (*Twenty Thousand Leagues under the Seas*, 1870), but he became convinced that the key to success was the moderation of his imagination. His publisher Hetzel apparently refused to publish an adventurous vision of twentieth-century Paris in the future which Verne penned in the early 1860s (it was not published until 1994). Verne's imaginative discipline became so stern that several of the more adventurous works credited to him in his later years required imaginative injections from his enthusiastic disciple Paschal Grousset – who signed himself André Laurie – or his son Michel Verne. Jules Verne was, however, solely responsible for the extraterrestrial fantasy *Hector Servadac* (1877) and the flying machine story *Robur le conquérant* (*Robur the Conqueror*, also translated as *The Clipper of the Clouds*, 1886). The most important of the works in which Grousset had a hand was *Les Cinq cents millions de la bégum* (*The 500 Millions of the Begum*, also translated as *The Begum's Fortune*, 1879), which contrasts utopian and dystopian images of technological development, while Michel's most impressive 'posthumous collaboration' with his father was the fantasy of historical recurrence 'L'Eternel Adam' (1910). Unfortunately, Verne's belated sequel to Poe's *The Narrative of A. Gordon Pym* (1837), *Le Sphinx des glaces* (*The Sphinx of the Ices*, translated as *An Antarctic Mystery*, 1897), meticulously squeezed all the imaginative virility out of its predecessor, contriving a bathetic quasi-naturalistic reduction of all its ominous wonders.

Poe's influence is also manifest in the works of Camille Flammarion, another pioneer of the popularization of science. Flammarion, who also took considerable inspiration from Humphry Davy, was more imaginatively ambitious than Verne, although he struggled in vain to find narrative frameworks appropriate to his ambition. The most daring item in *Récits de l'infini* (*Stories of Infinity*, 1872), expanded for separate publication as *Lumen* (1887), is a dialogue between a human questioner and a disembodied soul whose ability to travel faster than light has allowed him to view and remember former incarnations on a large number of alien worlds, each of which has life-forms adapted to its particular physical circumstances. No other nineteenth-century work is so thoroughly imbued with a sense of wonder at the universe revealed by astronomy and the Earth sciences. Flammarion incorporated a synoptic account of *Lumen's* schema into a painstakingly didactic account of a reincarnation on Mars in the patchwork *Uranie* (1889), and his account of *La Fin du monde* (translated as *Omega. The Last Days of the World*, 1893) is also a patchwork, concluding with a rhapsodic prose poem.

Hetzel's restraint of Jules Verne's imagination was encouraged by his desire to serialize Verne's novels in an educational magazine for young readers, and this tactic inhibited Verne's influence both at home and abroad. Although

Verne's works were read by adults as well as children, the works of other 'Vernian' writers – who sprang up in some profusion in France, Britain and Germany – were usually marketed as juveniles. The most prolific of Verne's French disciples were Pierre d'Ivoi and Gustave le Rouge; the most inventive writers featured in British boys' papers were Francis Henry Atkins – who wrote as 'Frank Aubrey' and 'Fenton Ash' – and George C. Wallis; the leading German Vernians were Robert Kraft and F. W. Mader.

The introduction of Vernian fiction into America initially followed the same path, but was always distinctive by virtue of its cultural context. Stories about young inventors comprised one of a number of marketing categories formulated by the publishers of 'dime novels', alongside westerns and detective stories. Edward S. Ellis's pioneering account of *The Steam Man of the Prairies* (1868) was, in fact, a western, as were many of the items in story series featuring inventors such as Frank Reade and Tom Edison Jr. The hybridization of inventor fiction and westerns emphasized the importance of the myth of the frontier to American attitudes to technological development. The two genres retained a crucial spiritual affinity which persisted for a hundred years.

So powerful was the myth of the West as a place where the future was to be found and made, however, that American Vernian fiction soon began to outstrip the ambitions of European Vernians. Writers like Frank R. Stockton, in *The Great War Syndicate* (1889) and *The Great Stone of Sardis* (1898), and Garrett P. Serviss, in *The Moon Metal* (1900) and *A Columbus of Space* (1909), helped pave the way for the development of popular sf of a distinctively American kind.

### The evolution of scientific romance

British speculative fiction received a vital boost in 1871 when *Blackwood's Magazine* published George T. Chesney's account of 'The Battle of Dorking'. This account of British defeat following a German invasion provoked numerous replies in kind, founding a genre of future war stories that remained prolific until the outbreak of the actual Great War in 1914. Its early practitioners favoured mock-nonfictional formats, often following Chesney's example – which was subtitled 'Reminiscences of a Volunteer' – in presenting their accounts as 'memoirs', but as time went by the accounts of future conflict became increasingly novelistic. Another important precedent set in 1871 was the initially anonymous publication of the most science-fictional of Bulwer-Lytton's occult romances, *The Coming Race*, featuring a technologically advanced subterranean utopia. Samuel Butler's flamboyant utopian satire *Erewhon* (1872), including a parody of Darwinistic evolution applied

to machinery, provided a further stimulus, as did the first translation of Verne's *Journey to the Centre of the Earth*.

Britain might have been more hospitable to scientific speculation had it not been for the fact that the standard format of Victorian fiction was the three-volume novel beloved of the circulating libraries. Building descriptions of significantly different other worlds, whether futuristic or alien, requires a great deal of narrative labour, but the task is better suited to sketchy outlining than to detailed elaboration. Such three-decker futuristic fantasies as Edward Maitland's *By and By* (1873) and Andrew Blair's *Annals of the Twenty-Ninth Century* (1874) founder under their own ponderous weight, in stark contrast to the deftest of the Poesque tales produced in America, which occupied the opposite limit of the broadening spectrum of speculative fiction.

The future war story popularized by Chesney offered a solution to the awkward problem of how to make technological advancement dramatic. From the point of view of progressively minded writers the device involved the unfortunate cost of concentrating heavily on military technology, but that was not initially a deterrent. The crucial point in the evolution of future war stories arrived when they made the leap from propagandistic pamphlets to serialization in a host of new popular periodicals, which entered into a fierce circulation war in the 1890s. A relatively pedestrian account of 'The Great War of 1892' compiled by military experts, including Rear-Admiral Colomb, which was serialized in 1891–2, was immediately upstaged by George Griffith's lurid account of the exploits of heroic 'Terrorists' armed with airships, submarines and high explosives in *The Angel of the Revolution*, whose anti-imperialistic sentiments immediately called forth a right-wing backlash in E. Douglas Fawcett's account of the exploits of *Hartmann the Anarchist*. All three of these works were reprinted in book form in 1893, after which the steady trickle of future war stories became a flood.

Griffith's casual deployment of as-yet-non-existent arms and armour was rapidly standardized, and the escalation was such that when Griffith began his last future war story in 1906, *The Lord of Labour* (published posthumously in 1911), his weapons of choice were nuclear missiles and disintegrator rays. Other journalists persuaded by their editors to write future war serials included Louis Tracy, author of *The Final War* (1896), and William Le Queux, author of *The Invasion of 1910* (1906), both of whom went on to write scientific romances of other kinds. One of the most adventurous early contributors to the new genre, M. P. Shiel, also made his entry by this route with 'The Empress of the Earth' – reprinted as *The Yellow Danger* (1898) – although he was the chief British disciple of Edgar Allan Poe.

Although the expansion of the future war genre into a much broader speculative genre of 'scientific romance' was tentatively begun by others it was

not until H. G. Wells got involved that anyone replicated Poe's determination to explore the utility of a whole range of narrative frameworks. The sudden surge of new periodicals provided the perfect arena for Wells to conduct his experiments in speculation. The earliest were cast as brief journalistic essays, of which the most adventurous was 'The Man of the Year Million' (1893), but as soon as he began to adapt the ideas in these essays into fictional form he discovered the limitations of such travellers' tales as 'Aepyornis Island' (1894) and such visionary fantasies as 'The Remarkable Case of Davidson's Eyes' (1894).

By the time Wells made his third attempt to fit an appropriate fictional frame around a speculative account of the future evolution of life on Earth – initially published as 'The Chronic Argonauts' (1888) – he was very conscious indeed of the necessity of replacing dreams as a means of exploring possible futures. The idea of mesmerically induced 'true visions' no longer commanded the least shred of plausibility, so he took advantage of articles by C. H. Hinton collected in *Scientific Romances* (1886), which had popularized the idea of time as a 'fourth dimension', to provide an apologetic jargon for a new facilitating device: *The Time Machine* (1895). This imaginative exercise had little in common with Jules Verne's modest extrapolations of locomotive technology, as Verne was quick to recognize and complain, but Wells had not taken the trouble to make his time machine seem plausible to sympathetic readers because he expected them to take the notion seriously as an actual possibility; he knew how necessary some such device had become as a means of opening the future to serious speculative scrutiny.

Wells's time machine became the first of a series of facilitating devices that opened up the farther reaches of time and space to a kind of rational enquiry that had previously been severely handicapped by its reliance on obsolete narrative frameworks. The crucial invention of *The Time Machine* was the establishment of a paradigm example of a whole new class of narrative devices. The antigravity technology of Cavorite, employed by Wells in *The First Men in the Moon* (1901), was the most obvious equivalent of the time machine and its most necessary supplement. The publication dates of these two works defined the brief interval in which Wells produced all his important scientific romances; not only did he never use the time machine or Cavorite again but he never invented or used any significant facilitating device after 1901.

As soon as the twentieth century had begun, moved by the earnest passion of his strong socialist convictions, Wells gave up wide-ranging exploration of the infinite range of future possibility in favour of a much less interesting quest to discover and comment upon the particular form that the future

actually would take. The first philosophical novel subjecting the possibilities of futuristic fiction to scrupulous analysis, Anatole France's *Sur la pierre blanche* (*The White Stone*, 1903), hailed Wells as the only writer prepared to venture into the future as an open-minded explorer rather than a vulgar prophet intent on painting his own hopes or anxieties on its blank canvas, but by the time that judgement appeared in print it was no longer true. Even so, Wells single-handedly laid the groundwork for the distinctive methods of modern sf, employing the narrative technique he had developed in *The Time Machine*, gaudily seasoned with melodrama, to reinvigorate the narrative framework of the moral *conte philosophique* far more effectively than anyone had previously contrived.

*The Island of Dr Moreau* (1896), *The Invisible Man* (1897) and *The War of the Worlds* (1898) are all painstaking moral fables, albeit of an unprecedentedly zestful and unusually realistic kind, cleverly assisted by the narrative labour that made their central devices plausible. Wells's other moral fables in melodramatic guise include 'The Star' (1897) and 'The Empire of the Ants' (1904), but he always remained willing to develop such fables in more traditional forms, as he did in *The Wonderful Visit* (1895), 'The Man Who Could Work Miracles' (1898) and 'The Country of the Blind' (1904). He also remained content, as and when the mood moved him, to employ perfectly straightforward visionary fantasies, as in 'Under the Knife' (1896) – although 'The Crystal Egg' (1897) does make use of a facilitating device of sorts.

Precedents had been set for Wellsian speculative fiction by such cautionary tales as Grant Allen's 'Pausodyne' (1881) and 'A Child of the Phalanstery' (1884), and by such extended *contes philosophiques* as W. H. Hudson's *A Crystal Age* (1887) and Walter Besant's *The Inner House* (1888), but Wells imported such powerful narrative energy and sturdy conviction into his works that he transformed the methodology of speculative fiction, with almost instantaneous effect. Indeed, he revealed far more potential than he sought to exploit even in his brief fervent phase. Although his demonstration that moral fables could be couched as gripping and violent thrillers was welcome news to at least a few would-be moralists, *The Island of Dr Moreau*, *The Invisible Man* and *The War of the Worlds* spawned far more imitations whose writers were only interested in the melodramatic potential of monster-makers, alien incursions and scientifically assisted criminals.

Wells's work was, therefore, an invitation to writers of action-adventure fiction enthusiastic to work on wider stages in a more spectacular manner than naturalistic fiction would ever permit, as well as to speculative fabulists. There was, inevitably, a certain parting of the ways between writers whose primary interest was in futuristic and other-worldly costume drama

and writers who were seriously concerned to explore future possibilities associated with the advancement of science and technology, but the overlap between the two remained considerable, and the artful combination of the two kinds of ambition has always been able to exploit a powerful synergy.

It is perhaps regrettable that Wells never followed up his most useful discoveries. With one exception – the awkward but enterprising mock-naturalistic novella 'A Story of the Days to Come' (1897) – his post-*Time Machine* ventures into the future all fell back on more traditional modes of presentation, including suspended animation in *When the Sleeper Wakes* (1899) and visionary fantasy in *The Dream* (1924). Nor did he make any further use of his new means of space travel, tending to fall back on Vernian space-guns in other interplanetary tales (he could never bring himself to accept the potential of rockets). When Wells did use pseudoscientific facilitating devices after 1901, he did so in a tokenistic fashion whose casualness was almost insulting, as in *In the Days of the Comet* (1906).

Although his work grew out of the same milieu as the future war sub-genre, Wells was a latecomer to that branch of speculative fiction, and he was virtually alone among its writers in deploring the destruction that such a war might bring. His anticipation of tank warfare in 'The Land Ironclads' (1903) was followed up by an account of *The War in the Air* (1908) as witnessed by its potential victims. These two stories now seem far more prophetic than the jingoistic flood of novels which took it for granted that 'the war to end war' would be won by the British – and thus provided the slogan under which the actual Great War could recruit its cannon fodder – but in this respect too, Wells relented; his atomic war story *The World Set Free* (1914) was the first of several works in which he welcomed the prospect of a destruction of civilization, on the grounds that nothing less would clear the way for socialist reconstruction. There was, however, no shortage of twentieth-century writers ambitious to write the 'Wellsian' works that Wells himself would not.

### Proliferation and diversification

Wells's influence at home and abroad was mediated by local circumstance. In Britain the extension of scientific romance beyond the margins of future war fiction was exploited by future war chroniclers such as Fred T. Jane and M. P. Shiel, in the apocalyptic fantasies *The Violet Flame* (1899) and *The Purple Cloud* (1901). George Griffith, a relentless borrower of other writers' ideas, soon progressed to interplanetary romance in *A Honeymoon in Space* (1901), although he also became a prolific writer of 'karmic romances' in a vein popularized by Edwin Lester Arnold and Henry Rider Haggard.

The broader horizons of scientific romance attracted a host of assiduous new recruits. Robert Cromie – who felt that Wells had stolen the thunder of his interplanetary romance *A Plunge into Space* (1890), which had employed an antigravity device similar to Chrysostom Trueman's – offered his own take on the implications of Darwin's theory of evolution in *The Crack of Doom* (1895). William Hope Hodgson embedded a cosmic vision in *The House on the Borderland* (1908) before publishing the far-futuristic phantasmagoria *The Night Land* (1912), which outdid *The Time Machine* in supplying an account of the death of the Earth as anticipated by the theory of Lord Kelvin (which held that the sun's heat was generated by gravitational collapse, and could not last more than a few million years). J. D. Beresford followed the fine evolutionary fantasy *The Hampdenshire Wonder* (1912), tracing the career of a superhuman born out of his time, with the elegiac disaster story *Goslings* (1913) and a series of visionary *contes philosophiques* collected in *Signs and Wonders* (1921).

Many members of the new generation of professional writers created by the new periodicals dabbled in scientific romance as they dabbled in detective fiction and adventure stories. The most notable were Arthur Conan Doyle, whose tentative pre-Wellsian *The Doings of Raffles Haw* (1891) was far surpassed by his series chronicling the adventures of Professor Challenger begun with *The Lost World* (1912) and *The Poison Belt* (1913), and Rudyard Kipling, whose 'With the Night Mail' (1905) and 'As Easy as A.B.C.' (1912) imagine the dramatic transformation of future society by air transport and air power. Minor writers who helped formularize genre templates included C. J. Cutcliffe Hyne, who employed the Frankenstein formula in numerous stories published under the pseudonym Weatherby Chesney, and the disaster-story writer Fred M. White.

This activity was curbed as the popular periodicals moved beyond their experimental phase, having discovered that other genres were more popular with larger audiences; the long-anticipated Great War delivered an abrupt *coup de grâce*. The bitter legacy of disenchantment left by the war lasted far longer than the fighting, very obviously reflected in such dire anticipations of the destruction of civilization by war as *The People of the Ruins* (1920) by Edward Shanks and *Theodore Savage* (1922) by Cicely Hamilton. Although those writers of imaginatively ambitious scientific romance who survived the war tried to continue their work in that vein they found it very difficult to do so, and the most adventurous scientific romances of the early postwar years – E. V. Odle's *The Clockwork Man* (1923), Edward Heron-Allen's *The Cheetah Girl* (1923) and S. Fowler Wright's *The Amphibians* (1925) – were released into a hostile environment whose inhospitability was not to relent until the 1930s.



In France the continuing influence of Poe, Verne and Flammarion was quickly combined with Wellsian elements by such writers as J.-H. Rosny aîné, the pioneer of the novel of prehistory. Rosny had already adapted that sub-genre to more adventurous speculation in the alien visitation story 'Les Xipéhus' ('The Xipehus', 1887), as well as dabbling in Flammarionesque visionary fantasy in 'La Légende sceptique' (1889), but the influences of Flammarion and Wells are fruitfully combined in 'La Mort de la terre' ('The Death of the Earth', 1910) and *Les Navigateurs de l'infini* (*Navigators of Infinity*, 1925). Albert Robida, who had built a career as a writer and illustrator by cleverly satirizing Jules Verne and future war fiction, also became more adventurous towards the end of his career, in such novels as the time-reversal fantasy *L'Horloge des siècles* (*The Clock of the Ages*, 1902). Flammarionesque notions of serial extraterrestrial reincarnation remained important in French speculative fiction, providing a logic for the striking visionary fantasy *Force ennemie* (*Enemy Force*, 1903) by John-Antoine Nau – which won the first Prix Goncourt – but they were melodramatically combined with Wellsian influences in such novels as Octave Joncquel and Théo Varlet's 'Martian epic', *Les Titans du ciel* (*The Titans of Heaven*, 1921) and *L'Agonie de la terre* (*Agony of the Earth*, 1922). In France as in England, however, the Great War was a drastic interruption inhibiting the genre's development and lending encouragement to its sceptical and pessimistic elements.

Elsewhere in Europe, where no traditions of scientific romance had taken root before the importation of Verne and Wells, the Great War had even more dramatic effects. Although the German Wellsian, Kurd Lasswitz, produced three speculative novels, including the monumental *Auf Zwei Planeten* (*On Two Planets*, 1897), his influence – and that of the highly imaginative Paul Scheerbarth, whose *Astrale Noveletten* were collected in 1912 – was effaced by the war and its aftermath. The Russian revolutions of 1917 interrupted a burgeoning tradition including such innovative works as Valery Brussov's futuristic fable 'Respublika yuzhnavo kresta' (1905) and rocket pioneer Konstantin Tsiolkovsky's ground-breaking account of extraterrestrial colonization *Vne zemli* (*Out of the Earth*, 1916). The futuristic socialist rhetoric of Alexei Tolstoy's *Aelita* (1922) founded a very different tradition, although Mikhail Bulgakov managed to produce the fine Wellsian satire 'Rokovy'e yaitsa' ('The Fatal Eggs', 1922) before being silenced.

Because the USA came late into World War I and was remote from its battlefields, the interruption of the domestic tradition of American speculative fiction was much less pronounced. Even more important, the effect of the war on American attitudes to technological progress was much less caustic. As in Europe, the development of late nineteenth-century American

speculative fiction had been handicapped by the lack of convincing narrative frames. Tentatively adventurous works by Edward Bellamy, including *Dr Heidenhoff's Process* (1880) and 'The Blindman's World' (1886), and Edgar Fawcett, including *Solarion* (1889) and *The Ghost of Guy Thyrlle* (1895), were hamstrung by their formulation as visionary fantasies. Bellamy overcame the barrier in his best-selling utopian romance *Looking Backward, 2000–1887* (1888), whose last chapter defiantly cast aside the conventional apology that it was all a dream, but Fawcett never could, even though he took the trouble to preface *The Ghost of Guy Thyrlle* with a defiant manifesto for a new genre of 'realistic romances'.

As in the UK, it was an explosion of new periodicals in the 1890s that opened up market space for experimental exploitation by such writers as Jack London, whose Wellsian short stories such as 'A Thousand Deaths' (1899) and 'The Shadow and the Flesh' (1903) paved the way for the prehistoric fantasy *Before Adam* (1906) and the apocalyptic fantasy *The Scarlet Plague* (1912). Like Wells, London was a committed socialist, and his political fantasy *The Iron Heel* (1907) carried forward a sceptical tradition founded by Ignatius Donnelly's spectacular dystopia *Caesar's Column* (1890), the most extreme of many reactions to Bellamy's account of a peaceful evolutionary transition from capitalism to socialism.

The ready availability in the USA of cheap paper made from woodpulp encouraged the rapid growth of 'pulp magazines' specializing in garish melodramas, which inherited the commercial genres identified by the dime novels. One of the many new sub-genres developed in this medium consisted of uninhibited extraterrestrial adventure stories, pioneered by Edgar Rice Burroughs's extraordinarily influential 'Under the Moons of Mars' (1912; reprinted as *A Princess of Mars*). This was an unashamed dream story which did not trouble to establish a plausible mechanism for its hero's abrupt transplantation to the planet Mars. Although the image of Mars presented in the story owed something to speculative descriptions offered by the astronomer Percival Lowell in such books as *Mars as the Abode of Life* (1908), Burroughs used the ideas he borrowed as a backdrop for a fantasy of extraordinary derring-do.

Almost all of the colourful fantasies written in imitation of *A Princess of Mars* were essentially dream stories, although relatively few of them were as scornful of facilitating devices – even Burroughs, when he began to write a similar series set on Venus, condescended to employ a spaceship. Many of the writers, having read H. G. Wells, were enthusiastic to deploy pseudoscientific jargon in support of their facilitating devices, and some went so far as to use it to attain and define new imaginative spaces. J. U. Giesy employed a variant of Flammarionesque reincarnation to transport the hero of *Palos of the Dog*



*Star Pack* (1918) across interstellar distances. Ray Cummings pioneered the microcosmic romance in the hybrid Wells/Burroughs pastiche 'The Girl in the Golden Atom' (1919). Ralph Milne Farley extended the idea of radio broadcasting to include matter transmission in *The Radio Man* (1924). Once their preliminary journeys were complete, however, pulp fantasies of this kind became straightforward costume dramas in which stereotyped heroes fought sneering villains and grotesque monsters in order to win the hands of lovely heroines.

Burroughs's chief rival as a pulp fantasist was Abraham Merritt, an unashamed master of purple prose who was even less concerned to cloak his facilitating devices in scientific jargon. Even so, his ground-breaking story 'The Moon Pool' (1918) gave a new gloss of plausibility to the folkloristic notion that our world is juxtaposed with far more fantastic 'parallel worlds' which can be reached via magical portals. This device was immediately borrowed by other pulp fantasists, most notably 'Francis Stevens' (Gertrude Barrows Bennett), who elaborated it considerably in the futuristic *The Heads of Cerberus* (1919).

Pulp-dependent writers who were ambitious to produce morally challenging works, including Jack London and Upton Sinclair, usually had to issue their political fantasies in other formats, although Victor Rousseau Emanuel – who used his forenames as a pseudonym in the USA – was able to serialize *The Messiah of the Cylinder* (1917), a ringing ideological reply to Wells's *When the Sleeper Wakes*, and George Allan England serialized the political fable *The Golden Blight* (1912) before becoming the third major pulp fantasist with a trilogy of post-holocaust romances begun with *Darkness and Dawn* (1912–13; collected in book form 1914). England was, however, unable to serialize his angry condemnation of predatory capitalism *The Air Trust* (1915).

It was the gaudy exotica of pulp fiction rather than these more earnest speculative fictions that provided the backcloth for Hugo Gernsback's invention of the new genre of 'scientifiction', although the popular science magazines in which it was first featured, including *The Electrical Experimenter* and *Science and Invention*, were not themselves pulps. Scientifiction was a didactic enterprise intended to spread enthusiasm for the various technological devices (including radio sets) that Gernsback imported and sold. Although it was extremely crude in literary terms, and had no more interest in moral fabulation than any other kind of pulp fiction, it had perforce to develop new methods of story-telling in order to fulfil its didactic purpose.

The format that early writers of scientifiction found most useful was a variant of the conversation piece: anecdotal tall tales spiced with technically inclined questions. Series of this type, in which zany scientists and inventors

would explain their new ventures to curious innocents, included Gernsback's own accounts of 'Baron Munchausen's New Scientific Adventures' (1915–17) and Clement Fézandie's Doctor Hackenshaw series (1921–5); they established a method of using a mock-comedic mask for the exposition of extravagant ideas that was carried forward into genre sf when Gernsback founded the first scientifiction magazine, *Amazing Stories*, in 1926. Gernsback was, however, almost as great an admirer of Burroughs and Merritt as he was of Jules Verne and H. G. Wells; he encouraged both American writers to produce more speculatively inclined works so that he could publish them, and when their responses were lukewarm he encouraged other writers to take over that particular crusade.

While it was still gestating in its pulp womb, therefore, American sf had already brought about a zygotic fusion of European scientific romance and American other-worldly exotica, lightly leavened with casually extravagant tall tales of scientific miracle-making. It was from this point that the collaborative work of horizon-expansion, social extrapolation and moral re-sophistication which has been the labour and triumph of modern science fiction began anew.