

PATRICK PARRINDER

SCIENCE FICTION

1 WORKING DAYDREAMS, WORKSHOP DEFINITIONS

THE idea of literature is unthinkable without the conception of genres, or conventional literary forms. Many of the forms which still dominate our literature go back to the beginnings of Western civilization; these include the lyric, the drama, the satire, and the fable. Others, such as the novel, the crime story, and science fiction, came to prominence in very recent times. To refer to these new classes of writing as genres is to make a double assertion. At the very moment of insisting on their novelty and modernity, we imply that they have precursors and a history, that the contemporary practice is a combination of elements (which can now be seen with a new understanding) in the literary past.

Science fiction, though in many ways a highly conventional kind of writing, is one that cannot be defined uncontroversially. At first glance, it might appear to invite self-evident definition, as detective fiction is fiction about detectives and the art of solving crimes. Yet this is not the case, as is proved by the innumerable attempts that have been made to define it. On close inspection science fiction turns out to be a highly self-conscious genre: that is, the way it has been defined has an unusually close and symbiotic relationship with the way it has been written. For this reason, the question 'What is science fiction?' will be initially

answered by looking at the critical history of the term itself and of its antecedents. Definitions of science fiction are not so much a series of logical approximations to an elusive ideal, as a small, parasitic sub-genre in themselves.

'Science Fiction' owes its name – though certainly not, as has sometimes been claimed, its existence – to Hugo Gernsback. Gernsback invented the term 'scientifiction' in 1926 to characterize the contents of *Amazing Stories*, one of the many magazines that he edited. Three years later, he switched to the more euphonious 'science fiction'. The widespread adoption of the latter term is signaled by the re-christening of the rival magazine *Astounding Stories* (originally *Astounding Stories of Super-Science*) as *Astounding Science Fiction* in 1938. For many years after this the term remained exclusively attached to magazine fiction and to the anthologies which reprinted such fiction; it was only in the 1950s that the SF label began to be applied to paperback novels.

From the start Gernsback had insisted, both in editorials and through the medium of a shrewdly commercial reprint policy, that the precursors of 'science fiction' were Edgar Allan Poe, Jules Verne, and H.G. Wells. In other words, there was a direct and acknowledged continuity between twentieth-century SF and the nineteenth-century tradition of the 'scientific romance'. Even the term 'science fiction', we now know, was not of Gernsback's invention. Scholars have recently traced it back to a long-forgotten tract of 1851, William Wilson's *A Little Earnest Book upon a Great Old Subject*, which predicts the spread of a new form of didactic literature:

[Thomas] Campbell says that 'Fiction in poetry is not the reverse of truth, but her soft and enchanting resemblance.' Now this applies especially to Science-Fiction, in which the revealed truths of Science may be given interwoven with a pleasing story which may itself be poetical and *true* – thus circulating a knowledge of the Poetry of Science clothed in a garb of the Poetry of Life.¹

In Wilson's use of the term, as in Gernsback's, there is a blend of prediction and retrospection, of the new and the old. The idea that the truths of science could be interwoven in a pleasing story was soon to receive its most thoroughgoing realization in the early novels of Jules Verne – novels packed with useful knowledge in the fields of engineering, astronomy, physics, geology, zoology, oceanography, palaeontology, and other sciences. Wilson, however, seems blind to the speculative and prophetic potential of such romances, and his idea of science fiction sounds a lot duller and more orthodox than the reality of a Verneian 'extraordinary voyage'. In fact, to speak of the 'Poetry of Science' as something altogether separate from the 'Poetry of Life' was already old-fashioned in 1851, when the industrial revolution had reached the stage at which science was visibly changing life. Such a development had been anticipated fifty years earlier by William Wordsworth, in a passage from the Preface to *Lyrical Ballads* which is perhaps the most famous of all pronouncements on the 'Poetry of Science':

If the labours of Men of science should ever create any material revolution, direct or indirect, in our condition, and in the impressions which we habitually receive, the Poet will sleep then no more than at present; . . . The remotest discoveries of the Chemist, the Botanist, or Mineralogist, will be as proper objects of the Poet's art as any upon which it can be employed, if the time should ever come when these things shall be familiar to us, and the relations under which they are contemplated by the followers of these respective sciences shall be manifestly and palpably material to us as enjoying and suffering beings. If the time should ever come when what is now called science, thus familiarised to men, shall be ready to put on, as it were, a form of flesh and blood, the Poet will lend his divine spirit to aid the transfiguration, and will welcome the Being thus produced, as a dear and genuine inmate of the household of man.

Despite its visionary rhetoric, this is again a highly conservative statement, though its conservatism is of a different kind from Wilson's. Guided by a naturalistic aesthetic of poetry as a record of men's actual impressions and feelings, Wordsworth does not see it as the poet's duty to anticipate the coming scientific revolution, but to wait until it is ready to put on a 'form of flesh and blood'. Nor does he doubt that this form will be benign – a gentle house-guest rather than a Frankenstein's monster. His commitment to the human nature that he believed he saw around him was, in fact, so rock-like that he could only allow the subject-matter of science into poetry once it had become 'familiarized'. Yet even so classically-minded a critic as Samuel Johnson, in the *Preface to Shakespeare* (1765), had recognized the claims of that sort of literature which takes hold of the strange and *makes* it familiar:

Shakespeare approximates the remote, and familiarizes the wonderful; the event which he represents will not happen, but if it were possible, its effects would probably be such as he has assigned.

Accounts of wonders and marvels have a venerable place in literature itself, if not always in critical discussion. The emergence of an aesthetic outlook bringing together the ideas of the 'Poetry of Science' and the familiarization of the wonderful was one of the fruits of the late-eighteenth-century taste for the Gothic – a taste which both Johnson and Wordsworth deplored. The Gothic preoccupation with the sensational and the exotic lies behind the immediate predecessor of science fiction, the nineteenth-century 'scientific romance'.

The scientific romance

Scientific romance at its simplest consists in the use of scientific (or, more often, quasi-scientific) elements in highly-coloured romantic fiction. Perhaps the best-known examples are Nathaniel Hawthorne's tales, such as 'The

Birthmark' (1843) and 'Rappaccini's Daughter' (1844), in which the gruesome labours of a demonic scientist serve to blight the happiness of the hero or heroine. Similarly, in Fitz-James O'Brien's 'The Diamond Lens' (1858), Linley, the 'mad microscopist', constructs a perfect microscope which enables him to see the interior of the atom. As he increases the magnification, the water-drop on his slide is resolved into the apparition of a beautiful female, Animula, who of course is doomed to shrivel and disappear as the water evaporates. Hawthorne, O'Brien, and their many followers are not so much science-fiction writers as romancers dabbling in the scientific exotic. It is when an author becomes conscious of an obligation to bring the 'Poetry of Science' within the sphere of the probable that we approach science fiction proper. As Scott wrote in his review of *Frankenstein*:

In this view, the *probable* is far from being laid out of sight even amid the wildest freaks of imagination; on the contrary, we grant the extraordinary postulates which the author demands as the foundation of his narrative, only on condition of his deducing the consequences with logical precision.²

In many ways *Frankenstein*, like 'Rappaccini's Daughter' and 'The Diamond Lens', is written in the mode of 'scientific romance'. The monstrous creature pining for a mate, and the slaughter of Frankenstein's bride on her wedding-night, are prime examples of Gothic eroticism. Yet the original preface to *Frankenstein* (reportedly written by Mary's husband Percy Shelley) joins with Scott in emphasizing that this is no supernatural tale of uncontrolled horrors:

The event on which this fiction is founded has been supposed, by Dr Darwin and some of the physiological writers of Germany, as not of impossible occurrence. I shall not be supposed as according the remotest degree of serious faith to such an imagination; yet, in assuming it as the basis of a work of fancy, I have not considered myself as merely weaving a series of supernatural terrors. The

event on which the interest of the story depends is exempt from the disadvantages of a mere tale of spectres or enchantment. It was recommended by the novelty of the situations which it develops, and however impossible as a physical fact, affords a point of view to the imagination for the delineating of human passions more comprehensive and commanding than any which the ordinary relations of existing events can yield.

Whatever we make of *Frankenstein* itself, the preface unmistakably claims for it the status of science fiction. The whole story is said to depend on a single 'event', the creation of human life in the laboratory, which certain scientists have alleged to be possible. (Mary Shelley had in mind the recent discoveries in the field of atmospheric electricity and galvanism, and Erasmus Darwin's observations of the activity of bacteria in dead vegetable matter.) But the possibility of reanimating a corpse is viewed hypothetically, in a mood of wary scepticism rather than credulity. *Frankenstein* is thus a piece of speculative fiction which does not rely on myth-making or supernatural terrors to get its effects. The author has preserved 'the truth of the elementary principles of human nature', even though she does not scruple to 'innovate upon their combinations'. The result is a tale which looks at human life from a distanced and (to use the modern term) estranged point of view, one not available to realistic fiction with its 'ordinary relations of existing events'. While this interpretation of *Frankenstein* unquestionably plays down the more lurid and romantic aspects of the story, the preface may be allowed to stand in its own right as an aesthetic statement closely anticipating modern theories of the science-fiction genre. It is with this brief manifesto that the self-consciousness of science fiction might be said to begin.

After Mary Shelley, it is true, there is a prolonged gap. Although the scientific romance played a minor if underappreciated part in the output of such writers as Hawthorne, Melville, and Mark Twain, and although the

popularity of the form dramatically increased in the later Victorian decades, it did not undergo systematic development until the work of Jules Verne and H.G. Wells. Verne's most important predecessor was Edgar Allen Poe, whose note to 'The Unparalleled Adventure of One Hans Pfall' (1835) claims priority in the 'application of scientific principles (so far as the whimsical nature of the subject would permit) to the actual passage between the earth and the moon'.³ Poe's attachment to '*verisimilitude*', however, is as deceptive as that of earlier satirist like Swift in *Gulliver's Travels*. The more he protests it, the greater is the reader's suspicion of being the victim of an outrageous hoax. (Thus the critic David Ketterer argues that, far from successfully completing his balloon-voyage to the moon, Hans Pfall is actually blown to pieces at the moment of take-off.)⁴ Nothing in Poe's world is plausible in the sense that the adjective may be applied to Verne, who set his face against 'irresponsible' scientific speculation and confined himself, for the most part, to short-range extrapolations from existing knowledge and existing technology. The type of naturalism pursued in his 'extraordinary voyages' is brought out in his much-quoted dismissal of Wells's *The First Men in the Moon*:

I make use of physics. He invents. I go to the moon in a cannon-ball, discharged from a cannon. Here there is no invention. He goes to Mars in an airship, which he constructs of a material which does away with the law of gravitation. *Ça c'est très joli* . . . but show me this metal. Let him produce it.⁵

Not only has Verne apparently confused *The First Men in the Moon* with another contemporary space-voyage, but his mode of space-travel now seems no less impossible than Wells's. Nevertheless, Verne's fiction is a logical extension of the engineering mentality of the Age of Steam. It is probably quite superfluous to effect a rigid separation between his 'scientific' fiction and a non-science-fictional travel epic such as *Around the World in Eighty Days*. The romanticization

of science accomplished in his novels is somewhat superficial, given that his submarines, airships and space projectiles can all be traced back to contemporary prototypes and blueprints. Verne's fiction today is being rescued from the status of boys' fiction to which it has long been confined, but recent critics have emphasized the quality of his social and mythical, rather than his strictly scientific, imagination.

Although both Verne and Wells have usually been described as authors of scientific romances, their achievement – above all, that of Wells – was to free science fiction from its initial dependence on the romance form. The lineage of the nineteenth-century prose romance includes the works of Scott, Hawthorne, Dumas, and Victor Hugo. In the late Victorian period these writers were succeeded, not only by bestselling entertainers like Rider Haggard and Stanley J. Weyman, but by such self-conscious literary artists as William Morris and Robert Louis Stevenson.

Stevenson is the most persuasive of the nineteenth-century apologists for romance, which he sees as a necessary reaction to the ascendancy of realistic and naturalistic (or, as they were often described, 'scientific') attitudes in fiction. His outburst, in a letter to Henry James, against the tyranny of everyday detail suggests the extent to which he thought of realism as a curb placed on the free-ranging imagination: 'How to get over, how to escape from the besotting *particularity* of fiction. "Roland approached the house; it had green doors and window blinds; and there was a scraper on the upper step." To hell with Roland and the scraper!"⁶ Against the Jamesian aesthetic of 'solidity of specification', Stevenson is the spokesman of 'significant simplicity', of a stripping-down of fiction to the essential elements which make up the adventure-story and the fairy-tale. The mark of great writing, he argues in 'A Gossip on Romance' (1882), is to

satisfy the nameless longings of the reader, and to obey the ideal laws of the day-dream. The right kind of thing should fall out in the right kind of place; the right kind of thing should follow; and not only the characters talk aptly

and think naturally, but all the circumstances in a tale answer one to another like notes in music.

It is possible to share the impatience with Zolaesque realism that Stevenson expresses in such essays as 'A Note on Realism' (1883) without being more than momentarily beguiled by his ideal of the romance. His ideal reader appears to be a juvenile reader, totally absorbed in an illusory world of 'clean, open-air adventure' told in words which 'run . . . in our ears like the noise of breakers'.⁷ This is a soothing and nostalgic, not a challenging ideal, and it seems to confuse the 'timelessness' of great art with the temporal suspension of the daydream.

Stevenson came nearest to science fiction in *Dr Jekyll and Mr Hyde* (1886), a proto-Freudian romance of the 'war in the members' of the human frame which is undoubtedly serious in subject, if not in treatment. *Dr Jekyll and Mr Hyde* is a near-classic case of a fantasy drawing on scientific themes which should nevertheless be excluded from the category of science fiction.⁸ Dr Jekyll, the epitome of Victorian respectability, transforms himself into the shape of the criminal Hyde as the result of taking a chemical concoction. The transformation defies physiological explanation and, in addition, it is not caused by the otherwise harmless drug but by an unknown impurity. Eventually, Jekyll finds himself degenerating into Hyde willy-nilly and without chemical assistance. At this point we do not doubt that we are reading an allegory of a species of diabolic possession rather than a science-fiction story. Stevenson's use of a laboratory atmosphere is simply one of the many layers of mystification with which the central character is surrounded. The novel is a remarkable attempt to exploit the melodramatic conventions of the age in such a way as to expose Victorian hypocrisy and self-division. Its science-fictional trappings, however, are a rather transparent concession to the 'besotting particularities' of late-nineteenth-century life. They are neither coherent in themselves, nor do they in any way affect the nature of Stevenson's allegory.

Logical speculation: H.G. Wells

It may be noted that *Dr Jekyll and Mr Hyde* is no more acceptable as a detective story, in the tradition of Poe and Conan Doyle, than it is as science fiction. Both science fiction and the classical detective story can be seen to define themselves by their opposition to Stevensonian 'timeless' romanticism. For the 'ideal laws of the day-dream' they substitute a detailed account of its material conditions. The logical and rational attitude of science fiction takes up the reader's 'nameless longings' with the intention of showing just how and why they might become actual, and what their unforeseen – and often highly unpleasant – consequences might be. The result is not primarily an 'aesthetic' fiction, aiming to delight the reader's sensibility, but rather a working model of an alternative reality. One of the places where this is most evident is in the utopian writings of the late nineteenth century. There are different kinds of rationality, and different ways in which it may be embodied in fiction; if nothing else, the contrast between the technological anticipations of Edward Bellamy's *Looking Backward* (1888), and the combination of romance with visionary politics in William Morris's *News from Nowhere* (1890), would show this. Yet the crucial point is that in the utopian fictions of both Bellamy and Morris, romance enters the domain of political philosophy and becomes associated with ideological struggle. Similarly, H.G. Wells's 'romances' express a scientific philosophy, and their narrative framework is underpinned by a direct intellectual appeal to the reader, rather than by psychological allegory and symbolism. Their affinities are as much with the satire and the realistic novel as with the romance proper.

Wells, who began publishing in the mid-1890s, is the pivotal figure in the evolution of the scientific romance into modern science fiction. His example has done as much to shape SF as any other single literary influence. This is partly because of his mastery of a range of representative themes (time-travel, the alien invasion, biological mutation, the future city, anti-utopia) and partly because his stories

embody a new generic combination, which proved attractive both to 'literary' and to scientifically-minded readers. By the time that he made his most influential contribution to the definition of science fiction, in his Preface to the 1933 edition of his *Scientific Romances*, his example had been studied and copied for over thirty years. The 1933 Preface, indeed, is anachronistic in that it betrays no awareness of the popular SF magazines, although Wells himself was aware of their existence, and had engaged in a prolonged and unsatisfactory correspondence with Hugo Gernsback over the appropriate fees for reprinting his work.⁹ Wells had no objection to letting his popularity with the *Amazing Stories* readership help to pay his bills, but, in the context of a discussion which stresses the high antiquity of his brand of science fiction, he evidently felt the opportunist antics of the pulps to be beneath his dignity.

In his essay Wells distinguishes between the Verneian 'anticipation' of future possibilities, based on extrapolation from contemporary social and technological trends, and the purely hypothetical scientific 'fantasy'. Although he himself had significantly contributed to the first type of story (as his reputation as a prophet of the tank, the atom bomb and aerial warfare indicates), his major science fiction belongs to the second category. In his account of these works he contrasts the purely speculative nature of the hypotheses on which they are based with the rigour with which he pursues the consequences of these hypotheses. The initial premise requires of the reader no more than the willing suspension of his disbelief; as the narrator of *The Time Machine* says to his hearers, 'Take it as a lie – or a prophecy. Say I dreamed it in the workshop.' Though backed up by a display of scientific patter, the premise, whether of time-travel, invisibility or (to take more recent examples) teleportation or telepathy, is comparable to the traditional marvels of magic and fairy-tale. Once the premise is granted, however, its consequences are explored in a spirit of rigorous realism:

In all this type of story the living interest lies in their non-fantastic elements and not in the invention itself. . . .

The thing that makes such imaginations interesting is their translation into commonplace terms and a rigid exclusion of other marvels from the story. Then it becomes human. . . . As soon as the magic trick has been done the whole business of the fantasy writer is to keep everything else human and real. Touches of prosaic detail are imperative and a rigorous adherence to the hypothesis. Any *extra* fantasy outside the cardinal assumption immediately gives a touch of irresponsible silliness to the invention. So soon as the hypothesis is launched the whole interest becomes the interest of looking at human feelings and human ways, from the new angle that has been acquired.

The significance of Wells's contribution to the definition of SF lies in this combination of fantasy and realism. In scientific terms the restrained fantasy that he advocates is reminiscent of the controlled experiment, in which the variables at work are subjected to rigorous analysis and only one variable is changed at a time. His statement in the Preface that 'Nothing remains interesting where anything may happen' may be compared with the Occam's Razor principle that 'entities should not be multiplied beyond necessity'. Nevertheless, the excitement of Wells's best science fiction lies in the process by which the original premise is combined with further, more genuinely scientific premises to produce conclusions which seem increasingly fantastic, though the reader is convinced by the narrative rhetoric that they are logical and necessary. The idea of a 'single premise' fantasy consisting of no more than a displaced realism does not do justice to this process, in which new elements and considerations (none of which, however, appears as gratuitous as the original hypothesis) are progressively introduced to provide a deepening sense of speculation and mental experiment.

The fiction of the magazines

Wells's 1933 Preface ends on a note of disillusion, suggesting that in the light of the Great War and the rise of Hitler he

had come to regard his earlier science fiction as largely escapist: 'The world in the presence of cataclysmal realities has no need of fresh cataclysmal fantasies.' In science fiction, too, this was the end of an era. Wells's is the last of the old-style, 'literary' definitions of this form of writing, the last which could afford to ignore both Gernsback's term and the cultural phenomenon that it was coming to represent. The American magazines, for one thing, did not share Wells's gloom about the immediate future. In them, commitment to scientific values was becoming synonymous with a near-euphoric fascination with the prospects of technology such as Wells had felt in the early years of this century. In commercial terms, Gernsback and his successors showed that stories embodying social change, providing that they offered a Verne-like combination of boyish adventure with nuts, bolts and blueprints, could more than hold their own against other descendants of the nineteenth-century romance such as the mass-produced tales of horror and supernatural fantasy. Gernsback's editorial for the first number of *Science Wonder Stories* (June 1929) stated his intention of rejecting all stories outside the realm of scientific possibility: '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.' A panel of experts was being formed, he added, to pronounce on the scientific correctness of the stories submitted.¹⁰

Gernsback's enthusiasms are sufficiently indicated by the titles of some of his other magazines: *Modern Electrics*, *Air Wonder Stories*, *Science and Invention*. (One of his main interests was in promoting the sale of crystal sets.) He is without doubt a representative figure, even though the originality of his contribution to SF history has at times been grossly overrated. The rough-and-ready critical terminology which has grown up within the 'ghetto' of popular SF owes much to the emphasis on scientific correctness and technological forecasting in his magazines. Stories devoted to the technological outlook for man and his possible ways of meeting new physical challenges (above all, those of space-travel)

came to be known as 'hard' or 'engineer's' science fiction. Where the social and human sciences, or those of other races, were involved, it became customary to speak of 'soft' or speculative SF. Other recognized kinds of story were 'science fantasy', in which the science was likely to be transparently pseudo rather than genuine, and the melodramatic and comparatively non-intellectual 'space opera'.

Despite some recent attempts, the project of basing a comprehensive rhetoric of science fiction on these highly ambiguous categories is hopeless. (The *reductio ad absurdum* of this sort of critical empiricism would presumably involve some benighted researcher in distinguishing between the literary categories of the 'amazing', the 'astounding' and the 'weird' on the basis of the publication policies of *Amazing Stories*, *Astounding Science Fiction* and *Weird Tales*.) If one looks at the sociology and economics of magazine fiction it is readily understandable that the writers' anxiety to get published, the editors' tedious task of wading through piles of semi-literate manuscripts, and the taxonomic instincts of the fans all led to reliance upon formulas and categories which disregard the many-sidedness of any really complex use of science fiction or fantasy. In the so-called 'golden age' of the magazines it seems to have been widely assumed that writing science-fiction stories was as simple and saleable a skill as the ability to tune a carburettor. The commercialism of magazine fiction is typified by Lloyd Arthur Eshbach's *Of Worlds Beyond: The Science of Science Fiction Writing* (1947), a manual for potential writers which sets out both the tricks of the trade and the dollar value of learning its mysteries. In this volume the editor of *Astounding Science Fiction*, John W. Campbell, Jr, writes that the act of buying a magazine is tantamount to 'hiring an author', while Jack Williamson repeats Wells's prescription for fantasy founded on a single basic premise, emphasizing that this is the best way to a 'publishers cheque'.

Of the critical terms which arose in the magazine era, the only two which appear to be definable with reasonable precision are 'hard' science fiction and 'space opera'. 'Hard' SF

is related to 'hard facts' and also to the 'hard' or engineering sciences. It does not necessarily entail realistic speculation about a future world, though its bias is undoubtedly realistic. Rather, this is the sort of SF that most appeals to scientists themselves – and is often written by them. The typical 'hard' SF writer looks for new and unfamiliar scientific theories and discoveries which could provide the occasion for a story, and, at its more didactic extreme, the story is only a framework for introducing the scientific concept to the reader. In 'space opera' (the analogy is with the Western 'horse opera' rather than the 'soap opera') the reverse is true; a melodramatic adventure-fantasy involving stock themes and settings is evolved on the flimsiest scientific basis. SF films, TV serials and comic strips are normally of this type. It is commonly supposed (though Samuel R. Delany has recently questioned this assumption)¹¹ that space opera would not undergo any essential alteration if its ray-guns were turned into six-guns and Princess Lia's battle-squadron into the sheriff's posse. Certainly there is a level of response at which the similarities between commercial westerns, war films and a large proportion of popular SF are more striking than the differences.

Extrapolation: Robert A. Heinlein

In some of the best magazine fiction of the 1940s and 1950s, fascination with the technological future merges into a broader and more critical concern with the nature of social change. The prospect of space-travel which was held out for mankind by Wells and other twentieth-century scientific prophets took form and substance as writers began to imagine the colonial prospects, the temptations of power, the military and scientific codes of behaviour and the possibilities of a relapse into barbarism that this new imperial mission was likely to breed. Robert A. Heinlein was perhaps the most influential of the writers who explored such prospects while claiming to present an essentially realistic picture of social development. Heinlein, indeed, viewed SF as

'Realistic Future-Scene Fiction' and suggested the following definition: 'realistic speculation about possible future events, based solidly on adequate knowledge of the real world, past and present, and on a thorough understanding of the nature and significance of the scientific method.'¹² Heinlein's commitment in this essay ('Science Fiction: Its Nature, Faults and Virtues', 1959) was to the didactic function of science fiction, which was 'preparing our youngsters to be mature citizens of the galaxy'. There is a hint of over-protestation in his definition; after all, he was prepared to argue that time-travel stories were admissible on the grounds that the nature of time was not yet scientifically understood. Heinlein always insisted on the 'speculative' nature of SF – thus anticipating the 'New Wave' writers of the 1960s who tried to re-christen the genre as 'speculative fiction' – but his definitions of the form all tend to suggest that the writer's concern is with logical forecasts or extrapolations from present trends. Although he makes it clear that SF is concerned with the human problems brought about by technological change, his definition of 'Realistic Future-Scene Fiction' makes it sound indistinguishable from the products of the so-called science of 'futurology'. The actual development of space-flight and the resulting demand for SF writers as media pundits and commentators did much to confirm their Heinleinian self-image as futurological prophets.

'In the speculative science fiction story', Heinlein wrote in 1947, 'accepted science and established facts are extrapolated to produce a new situation, a new framework for human action.'¹³ Clearly the field of speculation was limited if it could be no more than extrapolation from established facts; there was no room for Wells's 'impossible hypothesis'. A slight modification of this position is suggested in an essay by John W. Campbell, which appeared alongside Heinlein's piece:

To be science fiction, not fantasy, an honest effort at prophetic extrapolation of the known must be made. . . . Sociology, psychology and para-psychology are, today,

not true sciences; therefore instead of forecasting future results of applications of sociological science of today, we must forecast the *development of a science* of sociology.¹⁴

The projection of new sciences, as it turned out, would hardly be confined to such an orthodox candidate as sociology. One of the writers Campbell printed in *Astounding* was L. Ron Hubbard, later to become notorious as the inventor of 'dianetics' and the founder of the Church of Scientology.

The 'New Wave'

During the 1960s Heinlein's own fiction began to change to some extent, while a new generation of writers emerged to interpret the term 'speculative fiction' with a latitude that he can hardly have envisaged. Heinlein was typical of the SF writers who had learned their craft in the pulp magazines, and had followed it in self-confident isolation from any wider artistic trends. The organs of the so-called 'New Wave' – the British magazine *New Worlds* edited by Michael Moorcock, and the series of *Dangerous Visions* anthologies produced by Harlan Ellison – introduced a tone of knowingness and literary sophistication, with an almost obligatory commitment to formal experiment. The much-publicized cultural innovations of the 1960s, from the wave of psychedelic drugs and alternative life-styles to the Tolkien cult and the fantastic, 'postmodernist' fictional mode of novelists such as John Barth, Richard Brautigan, and Thomas Pynchon, all contributed to the sense that experience as a whole was becoming 'science-fictional' – though, of course, it was becoming rather more difficult to say what exactly such a statement might mean. The evident connections between J.G. Ballard's insistence that 'outer space' fiction was really a projection of inner space and the popular psychoanalytic theories of the decade are a case in point. (To add to the confusion, one might note that an eminent 'mainstream' novelist, Doris Lessing, began to write scientific

fantasies embodying the theories of the leading anti-psychiatrist R.D. Laing.) No doubt a new area of surrealism and fantasy was annexed for serious fiction in the 1960s and early 1970s, and certain science-fiction writers such as Kurt Vonnegut, Jr contributed heavily to this postmodernist mode of contemporary expression. Nevertheless, it is significant that their progress has been regarded within the SF field as one of defection.

Perhaps the most representative 'orthodox' reaction to the rise and subsequent fall of the New Wave is to be found in James Blish's critical essays, published as *More Issues at Hand* by 'William Atheling, Jr' (1970). Blish's concern is to judge science fiction by the professional standards both of literature and of science. He welcomes SF's 'gradual re-assimilation . . . into the mainstream of literature'; this is both a sign of growing maturity and a warning to writers and fans who would like to keep the genre exempt from the 'usual standards of criticism'.¹⁵ At the same time, Blish mounted a vigorous — and perhaps rather narrowly conceived — sanitary campaign against the spread of 'science fantasy' and 'mytholatry' in SF. The writers whom he attacks on this score, in essays written between 1960 and 1970, include Brian Aldiss, J.G. Ballard, Charles Eric Maine, and Roger Zelazny. Aldiss and Maine, for example, are accused of producing 'science-fantasy', 'a kind of hybrid in which plausibility is specifically invoked for most of the story, but may be cast aside in patches at the author's whim and according to no visible system or principle'.¹⁶ Though he concedes that rather little SF may be wholly scientific in spirit, it is only with the advent of the New Wave that writers have deliberately set out to travesty the scientific imagination.

In retrospect, it is not difficult to identify the exaggerations of Blish's polemic. The New Wave both reflected (and to some extent anticipated) popular disillusionment with scientific advance, and expressed the anxiety of a group of young writers to take science fiction out of the mode established by Gernsback, Heinlein, and Campbell. Since SF has

retained its familial identity, the episode of the New Wave now appears as part of the normal succession of literary generations. At the same time, science fiction has made enormous strides in complexity and self-awareness since Blish began his sanitary efforts in 1960. Those of the younger novelists who have done most to shape an awareness of their craft have done so by writing criticism which deliberately circumvents the old style of logical, simplistic definitions of SF. In *Billion Year Spree*, his vividly impressionistic history of the genre, Brian Aldiss refers to it as a 'search for a definition of man and his status in the universe which will stand in our advanced but confused state of knowledge (science) and is characteristically cast in the Gothic or post-Gothic mould'. This is not the language of someone whose main interest lies in generic demarcation, and, indeed, the onus of defending the coherence of science fiction as a literary category seems recently to have passed from writers and editors to academic theorists. Their impulse, as Samuel R. Delany notes, is to define the genre not as a group of themes and conventions but as 'a particular type of discourse, a particular sort of "word machine", that performs certain functions'¹⁷ – that is, to define it not in terms of content but of literary structure. Such an attempt is justified by the heterogeneity of science fiction once it breaks away from the Verneian and Heinleinian modes of 'engineer's fiction', of linear extrapolation and the future history. Nor is it necessarily incompatible with the approach that is found in Wells's Preface to his scientific romances and, implicitly, in Shelley's Preface to *Frankenstein*.

Definition by structure

The problem of a structural approach is that SF has normally been defined in terms of its content: science. It is not difficult to show that the inclusion of science entails certain formal requirements, but the question is whether these are of major literary significance. For a story to be acceptable by the science-fiction magazines, the writer was expected to

provide a scientific or quasi-scientific explanation of the technology innovations that he portrayed. Thus, to take a well-known example given by Frederic Brown in his introduction to *Angels and Spaceships* (1955), the Midas legend can be turned into SF provided that the faculty of turning everything you touch into gold can be explained as a new development in molecular physics:

Mr Midas, who runs a Greek restaurant in the Bronx, happens to save the life of an extraterrestrial from a far planet who is living in New York anonymously as an observer for the Galactic Federation, to which Earth for obvious reasons is not yet admitted. . . . The extraterrestrial, who is master of sciences far beyond ours, makes a machine which alters the molecular vibrations of Mr Midas's body so his touch will have a transmuting effect upon other objects. And so on. It's a science fiction story, or could be made to be one.

In Wells's terms, however, it would not yet be a science-fiction story, despite the particularity of futuristic detail. Everything would depend on what happened next. And here we may return to the original legend, as Brown conveniently states it:

Midas wishes that anything he touches henceforth shall turn into gold. The wish is granted and Midas finds that golden food is difficult to chew or digest. Wiser, he asks to have the gift taken away and is told to bathe in a certain river.

This pre-scientific legend turns on the logical twist that 'anything he touches' is to be taken literally. But the story's didactic warning against greed is moderated by its conclusion, which reintroduces the idea of supernatural benevolence. Midas has received a 'gift' (of wisdom), but it is not the one he foolishly asked for. A modern reconstruction of the whole story which eliminated the supernatural element would unquestionably be science fiction; to be good science fiction, it would probably have to eliminate Frederic

Brown's magically-endowed extraterrestrial. Yet it is the core of resemblance between the new SF story and the ancient legend which would be of prime interest to the structural theorist.

Clearly this is not a matter of 'science', but science is in any case a problematic concept, limited in time and place. In English it carries a very strong bias toward the natural sciences, so that French *science* and German *Wissenschaft* are often better translated as 'knowledge'. Darko Suvin, perhaps the most influential contemporary theoretician of SF, proposes that 'science' in this context should be replaced by the more neutral term 'cognition'; thus science fiction becomes the 'literature of cognitive estrangement'. It is 'estranged' by the introduction of some novelty which transforms the author's empirical world, and 'cognitive' by virtue of its affiliation to science and rationality. (The concept of estrangement will be further discussed in chapter 4 below.) Since the idea of cognitive estrangement assumes the dynamic interaction of its two terms, its force is clearly normative as well as descriptive. Such a definition suggests that the work in which the potentialities of science fiction are most fully realized will be that in which the 'novelty' is not only significant in itself, but is developed in the most thoroughly cognitive or scientific spirit. Cognition must be understood as embracing the polarities of the human intelligence; that is, it is at once logical and imaginative, rational and empirical, systematic and sceptical. This model of the thought-process is opposed by Suvin to the submissive and credulous attitudes of the religious or ideological believer. Thus, like many of the definitions that have been cited, the idea of cognitive estrangement takes its stand in the ongoing battle between agnostic materialism and mystical idealism. Where the genres of supernatural and heroic fantasy appeal to the 'higher' or intuitive logic of the occult, science fiction of the last two centuries, Suvin writes, is distinguished by the presence of cognition as 'the sign or correlative of a *method* . . . identical to that of a modern philosophy of science.'¹⁸

By extension, the criterion of proto-science fiction in

earlier periods, all the way back to the Greek legends, must be not so much its anticipation of the specific themes of later SF (such as the journey to other worlds), as its relationship to the body of cognitions in its own day. Only this can determine whether we are in the presence of a cognitive thought-experiment or an irresponsible fantasy. (The great majority of actual science fiction, it might be noted, lies somewhere between the two.) One consequence of this argument is that it becomes necessary to identify a body of what may be called anti-science fiction, the work of writers using some SF conventions but totally opposed to scientific philosophy. In the aftermath of the science-versus-religion debates of the mid-nineteenth century, a whole tradition of such anti-science fiction was produced, from Bulwer-Lytton and Marie Corelli through to A.E. Van Vogt and H.P. Lovecraft. This body of fiction remains a powerful and – many would argue – a largely pernicious force in contemporary culture; it should, of course, be sharply distinguished from the work of writers committed to a scientific or liberal-humanist world-view who occasionally dabble in occult themes. The work of C.S. Lewis, the novelist, scholar and Christian apologist, has an intellectual seriousness foreign to the Corellis and Lovecrafts, and is rightly considered to exemplify the anti-scientific position. Lewis does indeed have some cognitive insights denied to the proponents of what he calls 'scientism', but the main intention of his science-fiction trilogy is to take his readers out of the universe of modern astronomy and back to that of traditional Christianity. He was very frank about the propagandist intent of his fantasies. For this reason, readers would do well to be wary of his more strictly literary defence of mythopoeic fantasy, in his pioneering critical essay 'On Science Fiction':

In this kind of story the pseudo-scientific apparatus is to be taken simply as a 'machine' in the sense which that word bore for the Neo-Classical critics. The most superficial appearance of plausibility – the merest sop to our critical intellect – will do. I am inclined to think that

frankly supernatural methods are best. I took a hero once to Mars in a space-ship, but when I knew better I had angels convey him to Venus. Nor need the strange worlds, when we get there, be at all strictly tied to scientific probabilities. It is their wonder, or beauty, or suggestiveness that matter.¹⁹

Since all modern fiction embodies an inherent world-view or metaphysic, there is no such thing as a complete innocence of wonder or fantasy. Even such a naive literature as that produced in our society for young children is ideology-laden, as recent feminist criticism has abundantly shown. Similarly, the various attempts to view science fiction as traditional mythopoeic imagination in modern dress seem to imply that the sources of creativity are ultimately mysterious and unchanging, and that these are matters before which the scientific intelligence had best stand in abeyance. Only from this point of view could the choice between taking one's hero to Mars in a space-ship or to Venus by angel-ship appear an indifferent one. Angel-transport is a characteristic device of modern Christian fantasy, but in science fiction it could only appear in a spirit of self-conscious antiquarian parody or burlesque.

Generic hybrids

The extreme narrative sophistication of some contemporary science fiction, fantasy, and postmodernist realism does, admittedly, pose problems which make the foregoing discussion appear oversimplified. While it may be true that such fiction eludes generic classification, the confusion is often deliberately contrived, and a generic approach can provide the best means of giving a critical description of the work in question. In the field of science fiction today, the relationship between theory and practice is sufficiently close for there to be a very real possibility of the novelist bringing his cognitive scepticism to bear on the definitions put forward by academic critics.

A comparison of two recent novels, Samuel Delany's *The*

Einstein Intersection (1967) and Brian Aldiss's *The Malacia Tapestry* (1976), will serve to illustrate the complexities of science-fiction genology. *The Einstein Intersection* won a Nebula Award and has been widely regarded as one of the major SF novels of the 1960s. Despite the jejune sophistication of its 'New Wave' mannerisms, this novel makes use of various readily identifiable SF conventions. It is a story of 'future history' in which alien 'psychic manifestations' from the other side of the universe have taken over the culture and bodies of human beings, who have mysteriously vanished, perhaps after a nuclear holocaust. Delany rather sketchily accounts for their disappearance in terms of Goedel's Theorem and Einstein's Theory of Relativity. These two rarefied summits of modern science are said to have had practical effects, beginning with the exploration of the known universe and ending with the migration of humanity into another continuum. So far, the story is tenable as an experiment in cognitive logic, since it may be claimed that its narrative premise is no more outlandish than the theories themselves once were. Delany's plot hinges, however, on the meaning of the human culture that the aliens have inherited. Not only do they experience this culture as a mythology, but they seem destined to live through an extraordinary assortment of mythological roles, from Christ and Orpheus to Jean Harlow, the Beatles, and Billy the Kid. Lobey, the main character, is reared in a pastoral setting where the main occupations are herding and dragon-droving. However, he is a born musician, who soon finds himself on an Orphic quest for his girl-friend Friza, who died mysteriously but returns periodically in hallucinations. His quest is a failure, but he comes back from his journey to the 'underworld' and his confrontation with Kid Death unharmed. The story's narrative development (heavily influenced by the contemporary cults of the drop-out, rock music, and LSD) clearly belong to mythopoeic fantasy.

It might be argued that such an analysis fails to acknowledge Delany's sophisticated, anthropological awareness of

the functions of myth. In addition, his hero comes to believe that humanity and its inheritors are not necessarily bound by the mythical archetypes, though they must, apparently, 'exhaust the old mazes before [they] can move into the new ones'.²⁰ The appearance in the novel of extracts from the author's journals suggests that Lobey's entanglement in the myths of the past should be read as a projection of Delany's own search for artistic maturity. However, the level at which this parallel is established is one at which (as one of the characters remarks) 'Things passing in a world of difference have their surrealistic corollaries in the present.'²¹ The meaning of *The Einstein Intersection* (which I myself would judge to be an artistic failure) must be sought among the half-realized suggestions of its fantastic world. Delany's invocation of the mythical archetype has the effect of glamourizing, rather than elucidating, his underlying allegory. Despite the superficial attractiveness of its mixture of science fiction and fantasy, Delany's novel (if this analysis is correct) has in the end the advantages of neither. In any case, the possibility of artistic failure is one of the many complicating factors in generic classification.

Difficulties of another kind are raised by Aldiss's *The Malacia Tapestry*, a novel where the reader is in no doubt of the author's mastery of his chosen material. Just as *The Einstein Intersection* appeared at first glance to observe the conventions of science fiction, Aldiss's novel seems an exercise in deliberate fantasy. Malacia is a feudal city-state in a 'parallel world' populated by astrologers, wizards, 'flighted people', satyrs and other curious fauna. The narrative focuses on the erotic exploits of two careless young gallants, Perian de Chirolo and his faithless friend Guy de Lambant. Belatedly de Chirolo comes to recognize his own selfishness and blindness to the evil around him; but this theme of moral awakening is more a narrative convenience than a source of any great insight into human experience. The result is an entertaining, quasi-historical extravaganza which was not published under the science-fiction category.

Nevertheless, a case can and has been made for *The*

Malacia Tapestry as science fiction. Aldiss's imaginary world is based on a series of cognitive premises, which include an alternative process of evolution (the dinosaurs have not died out), the establishment of a 'near-utopian' city somewhere in the Byzantine empire with a regime dedicated to the preservation of stability at all costs, and – most curiously of all – an attempt to create a narrative to which the magicians and satyrs portrayed in a series of mythological drawings by G.B. Tiepolo can serve as realistic illustrations. The political situation in the fabulous city is presented in convincing detail, despite de Chiolo's heedlessness of his own ambivalent role in it. Malacia is a place of squalor and oppression, a theatre both of decadent pleasures and of class struggle. De Chiolo, by profession an underemployed actor, veers between the frivolities of the rich and a half-hearted, unstable sympathy for the people. He pursues his career as a matinee idol with the help of two new inventions (ballooning and photography) which threaten Malacia's ancestral stagnation. Eventually we realize that he is only a pawn in the ruthless struggle between the Progressives and the city's rulers. The presence of this political theme makes *The Malacia Tapestry* something very different from ordinary fantasy. (Rex Warner's political fantasies, *The Wild Goose Chase* and *The Aerodrome*, spring to mind as possible analogues). Yet, though Aldiss is a leading science-fiction writer and his novel has clear affinities with 'parallel world' SF such as Philip K. Dick's *The Man in the High Castle* or Kingsley Amis's *The Alteration*, to claim for it unquestioned science-fictional status seems somewhat extravagant. Malacia's soothsayers and 'flighted people' (cherubs) are evidence of Aldiss's predilection for a kind of whimsical, neo-Gothic fabulation which has little in common with the scientific or cognitive spirit. To attempt to account for everything in *The Malacia Tapestry* as arising from the project of an alternative historiography would be to take the political and social themes of this highly entertaining fantasia a good deal more seriously than they deserve.

It is an unfortunate result of applying a normative defi-

nition of science fiction that it is difficult to exclude a given novel without implying an adverse judgment. The catholic experimentation of a novelist like Aldiss may be more pleasing to the reader than to the puritan critic. The appearance of hybrids like *The Einstein Intersection* and *The Malacia Tapestry*, together with the revival of critical and creative interest in fantasy of all kinds which is characteristic of the later twentieth century, have led many observers to advocate the abandonment of the separate science-fiction category, or at least to prophesy its steady extinction. There are two points which may be made in reply to this. Firstly, though there are many similarities and points of contact between science fiction and the postmodernist fantasy of writers like Pynchon, Brautigan, and Lessing, similarity is not the same as identity. To take a nineteenth-century example, *Moby Dick* is a romance whose author imparts a great body of knowledge about whales and whaling with true cognitive enthusiasm; but it does not seem helpful to call it a scientific romance. Postmodernist fantasy likewise represents an adjunct rather than an addition to the genre of science fiction outlined in this chapter.

Secondly, the advantages to be gained from a gradual abandonment of SF by those equipped to write it should be questioned. Verne's and Heinlein's 'future realism', however limiting it may now seem, gave popular expression to a genuine imaginative excitement about technological and scientific possibilities, and it was widely read with a sense of exhilaration and discovery. The recent discussion of 'speculative fiction' is, from one point of view, symptomatic of mid-twentieth-century disillusionment with scientific prospects. Our civilization is founded on scientific and cognitive attitudes, so that the issues raised by the science fiction/fantasy distinction ultimately involve the survival and continued advance of humanity as a whole. These are cataclysmal realities which dwarf the day-by-day concerns of the literary analyst of cataclysmal fantasies. Nevertheless, a world in which there was no longer a branch of writing giving special expression to the scientific and cognitive

reaches of the imagination would be a different and, in all probability, a much grimmer world than the one in which we live. The mere act of imagining such a world and how it might come about is a rudimentary form of science fiction.