Hard Reading: Learning from Science Fiction

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Published by Liverpool University Press

Shippey, Tom.
Hard Reading: Learning from Science Fiction.
Project MUSE. muse.jhu.edu/book/72669.

For additional information about this book
https://muse.jhu.edu/book/72669
This piece had a complex gestation, which may explain some of its awkward spots – though it touched enough of a chord to be adopted as part of the Open University manual in Social Studies (1981), a couple of years after it was printed. In the late 1970s, science fiction criticism was still relatively uncommon in academic circles – I had published four articles in ten years (see items 4, 5, 9 and 10, above), but they had all been in semi-fan or low-circulation journals. The time was ripe, though, for something more ambitious, and, as a Fellow of St John’s College, Oxford, I had the appropriate credentials. I was accordingly approached to contribute to a collection which would put sf criticism on the map.

What would I like to write about? Heinlein, I suggested. No, there was a book about Heinlein already, by Alexei Panshin (1968). OK, I said, I’ll write something theme-based, not author-based, and the theme will be the Cold War. That was fine, but I had not realised how contentious was the topic of who started the Cold War. Was it the case that Truman had dropped the bomb on Japan in order to intimidate the Russians, as has been suggested? Possibly as a result of talking to Brian Aldiss, who in 1945 was a teenage soldier in the Far East, I had always assumed that his likely motive was anxiety over the cost in Allied lives of an invasion of the Japanese mainland (lives which might have included Brian’s, as Brian often remarks). H. Bruce Franklin has added a further dimension to the debate by pointing out in his book *War Stars* (1988) that Truman had been brought up on wonder-weapon stories in mainstream journals like *Saturday Evening Post*, while David Seed’s *American Science Fiction and the Cold War* (1999) has both updated and widened our vision.¹ I had failed, however, to think about such matters, and the article as printed in 1979 was the result of complex rewriting – though in the version printed here I have cut out several pages laboriously trying to place sf

¹ See also Booker 2001, and further in Seed 2005.
within ‘literature’ and within ‘criticism’, much of it repeating points
made in item 5, above about the importance of the magazine contexts.

This was, I think, my first encounter with politics in sf, and it made
me realise how little I thought about politics generally. This was probably
a result of being brought up on science fiction, so much of which tended
to assume that politics was just a third-order phenomenon, a response
to the really decisive developments, which would be technological in the
first place, and ideological in the second, as indeed is set out in the piece
that follows. This was certainly naive, though that naivety was shared
by most sf writers and readers, who (with the honourable exception of
Heinlein’s ‘The Man who Sold the Moon’ (1950)) did not foresee politics
trumping technology. As Jerry Pournelle has said, ‘I always knew I
would see the first man on the moon. I never dreamed I would see
the last’. But working out sf authors’ politics remains difficult. They
are habitually outside the box. Was Poul Anderson a techno-capitalist
libertarian, as many have said? Both he and Harry Harrison have shown
strong sympathy with the Danish model of state-run socialism, which
co-exists happily with efficient capitalism and has made Denmark one
of the richest as well as the most egalitarian countries in the world.
None of this seems to fit the conventional Anglo-American two-party
left/right divide.

Anyway, the five articles that follow are all in one way or another
about politics, and for the most part about America. Parts of the titles –
‘Fall of America’, ‘Critique of America’, ‘The Military and its Discontents’
– make them sound like an exercise in America-bashing, which they
are not. It is relevant here to note that H. Bruce Franklin, mentioned
twice above as a writer on sf, has had the honour of being listed as one
of the ‘101 most dangerous professors in America’ in David Horowitz’s
scattershot book of that title (2006). If you went by what is stated there,
Bruce would come out as someone who should have been locked up
as a menace to national security decades ago. In fact – as anyone who
talks to him would realise – Bruce is a veteran, with many of the
natural sympathies of veterans. He just does not agree with all aspects
of American foreign policy, as determined by the suits down there in
Foggy Bottom, DC, which is a very American thing to do. See, further,
Ursula Le Guin, Kim Stanley Robinson and many of the other authors
discussed in the articles that follow. I conclude that sf readers like me
should indeed have paid more attention to real-world politics, dull and
short-sighted though that may be. But also, and much more vehemently,
politicians would often have done well, even in short-term real-world
electoral terms, to pay attention to science fiction. If the canary keels
over, you need to get out of the mine.
The Cold War in Science Fiction, 1940–1960

There are many definitions of science fiction, but one thing nearly all of them agree on is this: science fiction contains, must contain, some element known not to be true to the-world-as-it-is (see the start of item 1, above). But there is no rule that says you have to tell the reader which element that is. Consider, for instance, the first four statements from ‘Solution Unsatisfactory’, a story by ‘Anson MacDonald’ (really Robert A. Heinlein) published in ASF in May 1941:

In 1903 the Wright brothers flew at Kitty Hawk.

In December, 1938, in Berlin, Dr Hahn split the uranium atom.

In April, 1943, Dr Estelle Karst, working under the Federal Emergency Defense Authority, perfected the Karst-Obre technique for producing artificial radioactives.

So American foreign policy had to change.

The first two statements are science fact; everybody knows about the Wrights, and everybody ought to know about Dr Hahn. The third is science fiction; it is the major technological datum of the story. What is the status of the fourth? In context it, too, is science fiction, the story’s major non-technological datum. With hindsight, though, it becomes hard to take it quite so simply.

For what happens in Heinlein’s story is this: Dr Karst accidentally develops, in a still-neutral USA of 1943, a radioactive dust of unprecedented deadliness. The American government supplies this to Britain to use on Hitler’s Berlin; and is then faced with an appalling and unforeseen problem. For the secret of the dust is not beyond rediscovery, the example of using it has been given, and there is an immediate prospect of many
nations using it on each other out of fear or revenge. The ‘unsatisfactory solution’ of the title is to ground all aircraft, so that there are no delivery systems, and then institute a multinational ‘Peace Patrol’ of dust-carrying bombers to make sure no one evades the embargo. But who is to guard the guardians? The story ends with deliberate uncertainty, feelings of guilt and defeat: Dr Karst inhales her own dust, the I-narrator mentions that he is dying of cumulative radiation poisoning acquired during his delivery of the stuff to the Royal Air Force.

Now, much of this story is irrevocably dated, which may well be why Heinlein did not reprint it for nearly forty years (it is in his posthumous collection *Expanded Universe* (1980)). It has no Pearl Harbor, no Hiroshima, no atomic bomb, while the first sneak-attack of its new era comes from the ‘Eurasian Union’ (a euphemism for the USSR). On the other hand, its non-technical prophesies are almost uncanny: a nuclear weapon, used by the Allies, ending one war, and starting something else – a state of threatened peace whose major premises are a deadly secret, a short-lived technological lead, and the temptation to use both in a manner totally inhumane, but nevertheless in a sense comprehensible, born of the fear that someone else will do the same thing first. This is, in short, the ‘Cold War’, predictable and predicted in 1941.

However, to return to the last sentence of the passage quoted above, the point is not that for once a science fiction author guessed right, nor that he foresaw more than the existence of a new technology. It is that even in 1941, when no one could be in doubt as to which statements were factual and which fictional, Heinlein was trying hard and deliberately to make, through fiction, a true statement about the nature of his own society: that if technology changed, his society’s foreign policy would change, would have to change, and its morality and constitution and everything else with it. The power of his story is indeed a product of two separate things: the provocative nature of the future he shows, and the force with which its premises are made to seem irrefutable – ‘unpredictability’ and ‘plausibility’, one might say, multiplied together.

An underlying (and highly provocative) belief is that history and politics are by-products of scientific research. The A-bomb, of course, appeared to prove this. Diplomacy became ‘atomic’ (or so one thesis put it), and Western society for a while seemed traumatised – not so much, one thinks, from the sheer destructiveness of the new weapon nor from moral doubts about its employment, as from its unpredictable quality, the way it was (unlike aeroplanes, rockets or radar) related to no previously familiar principle. ‘If one shock like that can come out
of the laboratories’, many people must have thought, ‘how can you tell what’s left inside’? The nervousness produced was expressed by many American politicians, writers, military correspondents. Science fiction authors, however, remained largely immune. For one thing, they liked weighing speculative possibilities, for another, they could feel that the world was at last conforming to their notions of how things ought to be, with the scientist firmly established at the top of the totem pole and politics calculable in terms of research and development. Besides, many years of painful scorn for the fantastic element in science fiction (‘Horsemarines, Dan Dare, and bloody Martians’, to quote a character from John Wyndham’s *The Kraken Wakes* (1953)) were being most satisfactorily repaid. For a while, aficionados liked to recall the incident of the visit of Military Intelligence to the offices of *Astounding* in 1944, prompted by Cleve Cartmill’s otherwise undistinguished U-235 story ‘Deadline’ (*ASF* (March 1944)). That showed science fiction had to be taken seriously! If only the rest of America had realised in time!

And yet the genre contained its own drive towards making statements about society-as-it-is, which prevented too long a rest on Cartmill and Heinlein’s laurels. It prevented also the sort of simple ‘extrapolation’ of present into future which was in practical terms exemplified by the ‘arms race’ – A-bomb, H-bomb, cobalt bomb, strategic bomber, submarine missile, ICBM and so on. Stories about these might work, but they would lose in ‘predictability’ what they gained in ‘plausibility’. Something more had to be done. So, while it was no doubt a great achievement to predict the Cold War from 1941, a much more broadly based reaction was to express itself in stories written from within the Cold War itself, after 1945. Society as a whole was adjusting gingerly to the possibility of nuclear extinction, and developing the sort of controls only hinted at in ‘Solution Unsatisfactory’. But, once again, science fiction was groping for the second-order phenomena beyond the immediate horizon of reality: how would people react to these controls? Could anyone afford to let scientists remain at the top of the totem pole? Was there a way out of deterrents? These and other questions litter the science fiction magazines from the very start of the 1950s. In them reality and fantasy intertwine; without that intertwining, science fiction would have lost half its fascination.

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2 *Astounding Science Fiction* changed its name to *Analog: Science Fact/Science Fiction* in January 1960, an interesting fact in itself. Either title is abbreviated in this volume as *ASF*. 
The elementary strategy of extrapolation was, of course, tried, and not without success. The USA might find itself in an atomic war: Judith Merril’s *Shadow on the Hearth* (1950) combined incongruity with probability by relating the event to an American commuter suburb full of housewives. ‘But the war’s over’, says the heroine at the end, as she finally realises that her little girl’s illness comes from her deadly cuddly toy, left out overnight in the radioactive rain; the new phenomenon of ‘half-life’ is integrated with the new indivisibility of war and peace. Meanwhile, the USA could engage in such a war and lose (or just not win): this prospect was explored best by Wilson Tucker’s *The Long Loud Silence* (1952). Least thinkable of all, the USA, for all its ‘minuteman’ traditions, could in the new conditions of mass destruction be forced to surrender and face occupation: this was outlined in C.M. Kornbluth’s *Not This August* (1955, retitled *Christmas Eve* in the UK). But Kornbluth’s novel incidentally demonstrated why all these varieties of ‘hot war’ might be missing something out. For one of his accepted data – of course Hiroshima-derived – is that if one side gains a sufficient technological lead (e.g., by launching an A-bomb-armed satellite) the other side’s fleets and bombs and armoured divisions are all immediately reduced to a value zero. This realisation leads to a further point: if technological lead is so important, the drama lies in achieving it, not exploiting it. Wars are now information wars, they are fought in filing cabinets. Or, to quote a character from Eric Frank Russell’s *With a Strange Device* (1964), ‘In this highly technological age, the deadliest strike one can make against a foe is to deprive him of his brains, whether or not one acquires them oneself’.

By an interesting semantic shift, ‘brains’ in that quotation has become a count-noun, its singular being ‘a brain’, and meaning ‘a scientist capable of furthering weapons research’. The last clause of the quotation further indicates a long-standing popular phobia, especially in America (though Russell is British); for one could hardly fail to notice either the part played in the development of nuclear fission by German émigrés (Einstein, Frisch and in rocketry von Braun), or the belief of many that the Russian A-bomb of 1949 came from the same source, with a fillip from Western traitors (such as Fuchs, Nunn May, Greenglass). ‘Brains’, then, were valuable but treacherous. Russell actually does not develop these notions in this book; the ‘strange device’ of its title is simply a gimmick, a means of ‘automated brainwashing’ that makes scientists think they have committed murder and must flee from their jobs, the police, their friends in Military Intelligence. Still, the clashes between
state and individual, security agent and scientist, are there in potential in a single sentence. If one combined them with the all-politics-is-science belief and the technological-leads-are-total theory, one had a basic plot of intense importance and even human interest. All of it, furthermore, could be felt, like Heinlein’s ‘foreign policy’ statement and Russell’s sentence just quoted, to be fictional but also in essence true. These hints and implications were best exploited by Algis Budry’s famous novel Who? (1958, expanded from a short story in Fantastic Universe (Apr. 1955)).

Its central character is Lucas Martino, a scientist working on something called ‘the K-88’ – Budry’s firm rejection of the ‘gimmick’ strategy is shown by the fact that we never find out what this might be. It is enough to know that (like anything else from the laboratories) it might turn out to be the one vital thing, the thing that decides all human futures. But Martino’s lab in West Germany near the border – this was before the Berlin Wall – blows up, and a Soviet medical team obligingly whisks him off to hospital. What they return is unrecognisable, a man half-metal. Is it Martino, or a Soviet agent trained to impersonate him? If the latter, then Martino is the other side of the wire, and the K-88 may turn out Soviet. One of these days, muses the American Security Chief at the start, his opposite number is going to outwit him critically, ‘and everybody’s kids’ll talk Chinese’. One ‘brain’ (in this scenario) can outweigh the efforts of the rest of the world. But ever since Korea it had been accepted that everybody cracked, that ‘brainwashing’ was as certain as a surgical operation – see the Oxford English Dictionary entry (ii.482), which records the word from 1950, Frederik Pohl and C.M. Kornbluth’s story ‘The Quaker Cannon’ from ASF (Aug. 1961), and the extended study by Seed (2004), which details the reception of the idea in the public at large. Finding out who the metal man is thus becomes very much a fulcrum of destiny. But, of course, he himself does not see things this way. While Who? is in one way a story about technological leads, it is also about the discrepancy between subjective and objective knowledge, about the incapacity of states and security systems to control, predict or even understand the intelligences on whom their existence depends.

So the FBI dog Martino’s every step, try furthermore to find out every detail from his past, to check the one set of actions against the other and determine the presence or absence of a consistent pattern. Their massive filing-cabinet thoroughness is almost a parody of the way scientists are supposed to work, inductively, accumulating facts and waiting for the right truth to emerge. But, of course, induction by itself never pays off. Though Martino is inductive – he ‘couldn’t ignore a fact. He judged no fact; he only filed it away’ – he also works largely by hypothesis, a habit which often leads him directly to the
right conclusion via the traditional ‘flash of genius’, but which also leads him, in youth, to scores of blind alleys and false structures. These are never discarded entirely: ‘Another part of his mind was a storehouse of interesting ideas that hadn’t worked, but were interesting – theories that were wild, but had seemed to hold together. To a certain extent, these phantom heresies stayed behind to colour his thinking’. They mean that when it comes to the K-88, he cannot be replaced. They also mean that, in personal terms, the actions of Martino before or after his accident may be perfectly logical to him (and to the reader who shares his mind); to the watchers and investigators, though, they are random, inexplicable.

This thesis keeps Who? from dating, even though many of its assumptions have been overtaken by events. It also shifts the story in the direction of fable or parable, stressing the element of general truth contained in the setting of particular fantasy. The central scene of the book is the one in which the metal Martino returns to visit one of the two girl acquaintances of his youth, Edith, now a widow with one son. All through his adolescence the peculiar logic of his mind has made it hard for him to form ordinary relationships. Now his half-metal body reflects and magnifies his inner strangeness. Can he get back to one of the few people he ever understood? The FBI men on their microphones wait with bated breath. But the answer never comes, for though Martino and Edith seem for a moment to recognise and understand each other, her little son, waking up, sees only a nightmare monster. Pursued by his screaming, Martino leaves, collides with a girl, sees in her (momentarily and erroneously) his other girl acquaintance, tries to introduce himself – and terrifies her, too, into panic. Driven by his mechanical heart, he rushes away down the street, the FBI trailing behind him in an ineffectual and (for one of them) fatal attempt to keep up. Their exhaustive enquiries afterwards never reveal what happened, nor (since naturally they cannot see the girl’s resemblance to the now-forgotten Barbara) what triggered Martino’s reaction. His phrase of self-introduction – ‘Barbara – e io – il tedeschino’ – becomes a personal analogue of the K-88, forever beyond explanation except in Martino’s mind.

The interpretation of this ‘Frankenstein’s monster’ scene is evident enough. Martino is an image of the scientist post-1945. Both are figures of enormous and world-changing power; yet both remain mortal, isolated, vulnerable. Both would like to be loved, and yet both terrify people through no fault of their own; they are bitterly hurt by ordinary reactions. Martino’s clumsily powerful rush down the street, one might think, is a kind of image of the ‘arms race’ itself.
Meanwhile, the security men who watch with increasing bafflement and impotence, who are always trying to catch up and never to head off (because they never know where Martino is going), they represent the attempts of average men and normal politics to come to terms with the technology they have sponsored, though not created. Naturally, putting it all in these allegorical terms seems over-complicated and may not have been ‘designed in’ by the author. Still, it is in general there, in essence understood. Budrys rubs several of the points in by a sequence of ironies at the end of the book.

For the metal man really is Martino. He ought, then, on the ‘brainwashing’ hypothesis, to have cracked during the period he was in Soviet hands. He did not, simply because so much of him was then non-organic. However, the Soviet security chief did indeed have a scheme to replace him with another manufactured double from Martino’s past, his old room-mate from MIT. This would give him time to complete the cracking, to steal the K-88. The plot failed because it depended on a ‘sleeper’, an American turned traitor by his own emotional vulnerability. But people like that are ipso facto weak, unreliable. The ‘sleeper’ reneges, the double drowns, the plot fails. Martino is returned in what ought to be a moment of Western triumph. ‘A man is more than just a collection of features’, he thinks, as he approaches safety in the last, ‘flashback’ scene, ‘I haven’t lost anything’. He is, of course, completely wrong. Where Soviet security inadequacies stop, American ones take over. Endemic suspicion and the inability to clear him totally mean that Martino never works again. Genius is crushed, pure science castrated by fear, incompetence, inductive thinking. The moral of Who? is that in scientific matters security systems are counterproductive (as useless as the descent of Military Intelligence on Astounding back in 1944). Admittedly, the fear that generates them is entirely explicable too, so there may be no cure. Still, the G-man and the genius are now yin and yang, growing out of each other but fundamentally opposed. In a sense, the most daring theme to which science fiction authors were attracted during the 1950s was that of inner treason: the obligation to resist at once the Federal government and constitutional processes.

For there had been more than one ‘Cold War’ going on within the USA. The true date of hell’s birthday – according to a character in Wilson Tucker’s The Time Masters (1953, also published in abridged form in Startling Stories, 1954) – was neither 6 August 1945 (Hiroshima) nor 16 July 1945 (Alamogordo), but 8 March 1940. On or about that date ‘the President set up the National Defense Research Committee; both the Manhattan District and our organization grew out of that’. What ‘our
organization’ is never appears clearly, but Tucker is thinking of such events as the creation of the CIA in July 1947, the Bill for FBI investigation of Atomic Energy Commission applicants in August 1949, the ban on sending technical publications to the Soviet bloc in March the same year, and a series of other moves in the direction of tight control over atomic power. All this was highly illiberal. But the complaint voiced by Tucker and other science fiction writers was that it was unrealistic, too. They knew that whatever its etymology ‘science’ was not the same as ‘knowledge’; the ‘Deadline’ affair had shown there was no need of a security leak to tell people about U-235 and critical mass. So you could not keep ‘secrets’ this side of the Iron Curtain just by restricting the passage of information. To quote Tucker again: ‘There are only two kinds of men in all the world who still believe there are keepable secrets in modern science! One of those men is the blind, awkward and fumbling politician … The other man is a jealous researcher … Realistic secrecy in modern science is a farce’. The new exemplar of the clown, one might add, is the security agent trying to censor references to data which can be revealed by experiment.

There is no doubt here that science fiction was correct, nor that it was opposing a powerful orthodoxy. J. Robert Oppenheimer (‘the father of the atomic bomb’) had said ‘you cannot keep the nature of the world a secret’, and Eisenhower in 1945 had agreed with him, suggesting that the USA should make a virtue of necessity and share nuclear information, so aborting the arms race. But both were readily outvoted. By November 1945, the USA had decided not to share nuclear technology with Britain and Canada, who had helped to develop it. Because it was thought that this decision settled matters, many politicians were horrified by the Russian nuclear explosion of 1949. An easy explanation was treason. Loyalty investigations got fiercer, and the Rosenbergs were sentenced to death in March 1951. Meanwhile, the real secret of the hydrogen bomb had been revealed on television by a US senator trying to educate the nation in security!3 By a final irony, Oppenheimer himself (who appeared in Murray Leinster’s The Brain Stealers (1947) as the head of a security system dedicated to keeping nuclear technology safe), had been tried and convicted in a case seen by many as a trial of the USA. The phobia over nuclear security was there before Senator McCarthy, and went straight back to the unpredictability trauma of 1945. Its development showed once more the split between those who felt science was still human endeavour and those who saw it as a djinn to be stuffed

3 For a lengthier account of these events, see Fleming 1961, esp. i. 315, 321, 411, 525.
back in the bottle. As McCarthyism advanced, science fiction became increasingly angry and sarcastic.

One can, for instance, turn over the pages of *Astounding* during the worst of the arms-race years and see one story after another about security: ‘Security Risk’, by Poul Anderson (Jan. 1957), ‘Security’, by Ernest M. Kenyon (Oct. 1955), ‘A Matter of Security’, by W.T. Haggert (March 1957). Others present the theme under less obvious titles. In Poul Anderson’s ‘Sam Hall’ (Aug. 1953), the Major in charge of Central Records in a near-future state broods over the ‘Europeanization of America: government control, a military caste ... censors, secret police, nationalism and racism’. All this has been created by a Third World War the USA lost, with a consequent revanche in the Fourth World War leading to world domination. The Major himself has a relation arrested by Security. To protect himself he rubs him out of the records, then creates a fictitious rebel ‘Sam Hall’ as a kind of therapy. The fiction comes to life (not in any supernatural sense) and cannot be caught because Security itself breeds rebels and traitors – as it has done with the Major. The point of the story is again the self-fulfilment of fear. Analogous or complementary points are made by the other stories listed. They insist that the USA has no moral or natural right to its technological leads, and that attempts to impose the contrary opinion will lead only to stagnation and totalitarianism. Security systems are the delusions of people who had not understood the nature of scientific discovery before 1945, and had learnt nothing since. Science is a tool, not a reservoir of knowledge which can be dammed.

‘Abandoning security’

Following on this, or overlapping with it, came a further point about the nature of discovery: if science is not the same as knowledge, it is also not to be identified with truth. To put it another way, science does not progress additively any more than discovery works by induction. To advance, one has to discard. The true obstacle to development may then be that what needs discarding is deeply integrated in personalities and academic systems, too familiar to be challenged. In this view, the intellectual equivalents to security chiefs may well be senior researchers – both groups are committed to the status quo that has brought them eminence. A basic plot along these lines is given in Raymond F. Jones’s novelette ‘Noise Level’ (*ASF* (Dec. 1952)).

This begins, conventionally enough, with Dr Nagle, the expert in electronics, sitting in the anteroom of the Office of National Research
while his colleagues try to get him security clearance to attend the vital conference to which he has been summoned. The first few paragraphs make clear Jones’s lack of faith in the FBI and the ‘bureaucrats’ who think they can ‘button up the secrets of nature which lay visible to the whole world’. But the concept of ‘visibility’ (or ‘audibility’) gets more thoughtful treatment in the rest of the story. For this conference has been called by the Office of National Research to inform senior physicists that antigravity has been discovered and demonstrated; there are films, tapes and eyewitness accounts to prove it. Unfortunately, an accident has killed the inventor and mangled his apparatus before the secret could be disclosed. The physicists’ job is to make the rediscovery. But there is a distracting factor: the original inventor was close to madness, with a compulsive belief in levitation, mysticism, astrology, etc. and a reluctance to accept convention of any kind. Clues to his invention may lie in one of the ‘mad’ areas rather than one of the ‘sane’ ones.

‘This was a project in psychology, not physics’, observes its controller at the end. His physicists have in fact polarised. One faction, represented by Nagle, has accepted the real-life data offered and concluded that, since antigravity is ruled out by the state of scientific knowledge, something in that knowledge must be wrong: they identify Einstein’s ‘postulate of equivalence’ as the root error, and by rewriting it manage to produce a feeble, clumsy, hundred-ton antigravity device (their films had shown a one-man flying harness). At the other extreme, Dr Dykstra of MIT insists that the whole thing – and especially the stuff about levitation! – cannot be true, eventually retreating into madness himself when his premises become untenable. The irony is that Dr Dykstra is, in a practical sense, right. The whole thing has been a fraud, concocted by the Office of National Research, its mainspring being the notion that invention is checked not by ignorance but by prior assumptions. To give the analogy of the psychologist-director: (1) all information can be expressed in a series of pulses, and is therefore contained in ‘pure noise’; (2) ‘there must be in the human mind a mechanism which is nothing but a pure noise generator, a producer of random impulses, pure omniscient noise’; (3) and somewhere else in the human mind there is a filtering mechanism set by education to reject ‘all but a bare minimum of data presented by the external universe, and by our internal creativeness as well’. Nagle has managed to override the filter; Dykstra has had in the end to shut out all the noise.

This story evades some vital issues (such as the propriety of driving professors mad so the USA can have antigravity), and its sequels, ‘The School’ (ASF (Dec. 1954)) and ‘The Great Grey Plague’ (ASF (Feb. 1962)) are not inspiring. One might note, though, that just as Algis Budrys
in some ways paralleled the ideas of Karl Popper, so ‘Noise Level’ anticipated the central thesis of Thomas Kuhn’s much-admired book *The Structure of Scientific Revolutions* (1962), offering a proto-structuralist view of science as an activity in practice culture-bound, though in potential (science fiction’s fundamental loyalty) infinite. In one form or another, discrepancy between this potential and this practice became a staple of science fiction plotting: the characters embodying one side tended to be government officials, senior professors, security agents and politicians, those on the other, crackpots, engineers, social misfits and businessmen – anyone, in short, more interested in results than explanations. The theme is a good one; it relates to reality as well as to wish-fulfilment; perhaps the main criticism one can make of it is that, in the ‘participatory’ world of science fiction magazines, it leads easily to a kind of paranoia, in which the underlying statements about the world and those who run it turn sour and strident. One can see the dangers in two series of stories by Mark Clifton (some all his own work, others, rather bewilderingly, in collaboration with either Alex Apostolides or Frank Riley).

The more attractive of these is the sequence about the problems at ‘Computer Research Inc.’, in which the hero is not a scientist at all, but a personnel manager – another embodiment of the good or pragmatic paradigm. Much to his horror, he finds himself (in ‘What Thin Partitions’, *ASF* (Sept. 1953)) controlling an antigravity device – a bagful of curious cylinders. But he needs a poltergeist to activate any more, and he has done his job too well in curing the one he began with. At the end of the story he sends the US Army (who are interested in antigravity) a requisition in proper form for six more poltergeists, assuming that will be the end of it. Unfortunately, at the start of ‘Sense from Thought Divide’ (*ASF* (Mar. 1955)) the Army’s Division of Materiel and Supply proves equal to the task – it delivers a swami – a fake, they admit – but nevertheless one who can sometimes do more than is theoretically possible. Production problems begin once again. The basic principles of this series, note, are exactly those of ‘Noise Level’: orthodoxy has built-in limits; frauds may contain an element of truth; real advance comes from amateur initiative plus professional finish. But the whole argument is handled with grace and humour. In an *Astounding* serial, however, *They’d Rather Be Right* (Aug.–Nov. 1954), Clifton and Riley put a similar thesis much more aggressively. The novel’s plot need not be summarised, but in its central scenes an organic computer offers human beings health, beauty, rejuvenation – in exchange for their abandonment of ‘single-valued logic’, all belief-structures of any kind. Very few, in the authors’ opinion, could pay such a price; the unexpressed concluding
words of the title are ‘... than go on living’. This might be acceptable, even true, if not for the ominous word ‘they’.

Readers of Astounding were evidently encouraged to see themselves as the leaven and the rest of America as the lump – something they appear to have enjoyed, since the 13th World Science Fiction Convention of 1955 voted the book the ‘Hugo’ award as best science fiction novel of the previous year. The ‘ghettoising’ of science fiction was not entirely imposed from without. If general readers, even after the A-bomb, kept on thinking of science fiction fans as ‘escapist’ or ‘unrealistic’, many writers and readers inside the genre responded equally thoughtlessly by regarding the bulk of their own society as mistaken, ill-informed and probably uneducable. They had a point, in the 1950s. But they took it too far.

A better-judged example of the same reaction can be seen in James Blish’s, in retrospect, highly courageous book, Year 2018! (British title, They Shall Have Stars, published first in 1956, in Britain, but going back in outline to two more Astounding novelettes: ‘Bridge’ (Feb. 1952) and ‘At Death’s End’ (May 1954)). The audacity of this is shown by the fact that even the earlier version contained a perfectly recognizable caricature of Senator McCarthy in the guise of ‘Senator Francis Xavier MacHinery, hereditary head of the FBI.’ The expanded version began, furthermore, with two Americans deliberately plotting treason: one, Senator Wagoner, the other, Dr Corsi, senior member of the American Association for the Advancement of Science, ‘usually referred to in Washington’, remarks Blish in evident allusion to the Oppenheimer affair, ‘as “the left-wing triple-A-S”’. The speakers’ discussion dovetails neatly into a joint politico-scientific opinion: the USSR has won the Cold War (this is Wagoner, by the end of the book), and it has done so because ‘scientific method doesn’t work any more’ (Corsi, at the start). As another quasi-true statement this aphorism is particularly provocative: scientific method is supposed to work everywhere. But it is not a natural law, argues Blish/Corsi, only ‘a way of sifting evidence’, a new kind of syllogism. The reasons it need not work in the twenty-first century are, first, the control of technical information, and second, the low quality of those drawn to government research

\[4\] He is ‘D.O. MacHinery’ in the magazine version. The change to ‘Francis Xavier’ in the book version later points the finger more definitely at McCarthy, whose connections with the Order of Jesus were well known. In the British magazine edition of October 1954, meanwhile, ‘MacHinery’ actually appears in one place as ‘McCarthy’, though we do not know whose Freudian slip this was.
(familiar notions in science fiction, as has been said), but third, the nature of the facts eventually under investigation – increasingly subtle ones, to be proved only by experiments of increasingly fantastic cost. This view (not entirely without prophetic force, as one can see from the NASA experience) means that Manhattan District Projects will have to stop. It is the crackpot ideas that must be winnowed now, the rejected hypotheses, the notions that are not senseless but out of style. The rebellions that Wagoner and Corsi lead are against scientific method and the ‘McCarthyite’ US. Behind them lie deeper loyalties to empiricism and to Western tradition, labelled though these may be (in 2018 or 1957) as treason and folly.

The projects set up finally eventuate as the ‘graviton polarity generator’ or ‘spindizzy’ and the ‘anti-agathic drugs’ which halt old age; the two between them make interstellar flight a possibility. They also lead to disaster within the world of the novel. The impact of anti-agathics will destroy the West, and the Soviets only marginally later. The fact that such initiatives have been concealed will give power to MacHinery and his associates, whose suspicions (like Dr Dykstra’s) will for once turn out to be true. Both originators of the new initiative will die by torture, Dr Corsi without knowing what he has brought to life, and Wagoner by the standard treason-penalty of immersion in the waste-dump of a radioactive pile. ‘It’s a phony terror’, says Wagoner. ‘Pile wastes are quick chemical poisons; you don’t last long enough to notice that they’re also hot’. Still, the macabre vindictiveness of the notion offers a final opinion on the ‘decline of the West’ that Blish foresees, on the long-term effects of victory at Hiroshima, on the way the Cold War could be fought and lost. It took courage to offer such a picture of America in the mid-1950s, when the Korean War was over, the Vietnamese one not yet on, and when the Strategic Air Command still held more than the balance of power. Even more daring, though, was the rejection of ‘scientific method’ and official physics so soon after their most apparent triumph. Science fiction authors have often been accused of letting themselves be mesmerised by mere technology. *Year 2018!*, however, shows one of them shaking off the glamour of nuclear power and the Manhattan Project while the rest of America was still trying to adjust to it. The rejection is as creditable, as implausible, as Heinlein’s equally unnoticed predictions only a decade and a half before.
“Steam-engine time” versus the brain “in hiding”

All the stories discussed so far have their root in a critique of the relationship between science and society. The latter either cannot control the former (as in ‘Solution Unsatisfactory’), or else breaks it in the attempt at control (as in Who?), or else provokes it into rebellion (as in Year 2018!). Failure of comprehension is embodied in the two emasculating theses of science as a body of information (some of it ‘classified’), and of science as revealed truth to be dispensed through the educational system by the proper authorities. And yet in spite of all these antagonisms science was much more deeply integrated with society than the latter liked to admit. In science fiction this last notion is expressed by the aphorism ‘steam-engine time’. ‘When a culture has reached the point when it’s time for the steam-engine to be invented’, lectures a character from Raymond F. Jones’s ‘The School’,

the steam-engine is going to be invented. It doesn’t matter who’s alive to do the inventing, whether it’s Hero of Greece, or Tim Watt of England, or Joe Doakus of Pulaski – the steam-engine is going to get invented by somebody. Conversely, if it’s not steam-engine time nobody under the sun is going to invent it no matter how smart he is.

This opinion contradicts a popular stereotype of the Great Inventor, promoted in the movies about Young Tom Edison which attract Budrys’s scorn, and in the ‘rituals of mass entertainment’ pilloried in one of the epigraphs to Year 2018! – the ‘hero-scientist … discovered in a lonely laboratory crying “Eureka” at a murky test-tube’. But the raison d’être of that stereotype is that it makes it easy to fix responsibility on single men or single events. ‘It is steamboat time’, says someone at the end of Harry Harrison’s In Our Hands, the Stars (ASF serial (Dec. 1969–Feb. 1970)); but he says it sadly, because the deadly and plausible image of science as one man’s secret has led the security agents of many nations (the USA and Israel prominent among them) to join in a multiple fatal hijacking of the new spaceliner built by Denmark and employing the ‘Daleth Effect’. The irony is that the secret was no secret all along. The discoverer’s data were freely available. Once other scientists had the clues of knowing what had been done and who had done it, they could duplicate his work and even make his ‘Effect’ commercial; they were about to do the latter just as the hijack started. ‘Steamboat time’ means that the deaths were all pointless. And this is not just a fantasy, Harrison insists (via his character). The Japanese independently reinvented radar,
magnetron and all, in this way, during the Second World War; and as Wilson Tucker had said much earlier, Russian production of the A-bomb followed exactly the same pattern. ‘Stimulus diffusion’ is a fact of the modern world, not merely an anthropologist’s curiosity. But people prefer to think of science as a kind of magic controllable only by individual adepts, because it gives them idols/ scapegoats – Einstein, or Oppenheimer. To use the terms introduced in item 4, above, they prefer a ‘Whig’ interpretation of the history of science to a ‘Malthusian’ one: in science fiction, the debate over the causes of contemporary innovation paralleled the debate over innovations in history.

A serious issue raised was the mutual responsibility of the individual innovator and the society that made his innovation possible. Several approaches to this question are visible in 1950s science fiction. One could consider Astounding’s long and quarrelsome discussion, in stories, articles, and letters, of patent law – something felt to symbolise and encapsulate America’s ambiguous relationship with the inventor. On a much broader scale one might reflect that the many social satires or ‘dystopias’ published during the period tend to share one opinion, which is that the self-images of society are so powerful and so delusive that they channel rebellion just as much as they channel innovation. The heroes of Frederik Pohl and C.M. Kornbluth’s The Space Merchants (1953), originally serialised in Galaxy as ‘Gravy Planet’ (1952), and of Kurt Vonnegut’s Player Piano (1952) both start as agents of the system, and have to be virtually excommunicated from it before they can think of going into opposition. Deep in the core of the former book’s assumptions, too, is the argument that just as the ‘Consies’ or Conservationists are necessary scapegoats of the consumer society, so the ‘Commies’, or forever-rumoured, forever-invisible American Communist traitors of the McCarthy era, are figments of the capitalist imagination, part of a drama which American society has written for itself, and into whose villain roles weak characters are drawn or thrust. However, full consideration of that issue would lead us away from weapon-makers and towards weapon-users. It is a point that the two are related: the A-bomb was publicly accountable, even if secretly produced. But next time that something like the A-bomb came up, where would a future Einstein’s duty lie? It is this narrower question which underlies the Harry Harrison novel just mentioned; and also, more surprisingly, many of the ‘telepathy’ stories published during this period in Astounding and elsewhere.

Signs of it can be seen even in such an apparently low-level story as Eric Frank Russell’s Three to Conquer (1956), serialised in ASF as Call Him Dead (Aug.–Oct. 1955). This opens with a man, a telepath, ‘hearing’ in his mind the dying call of a shot policeman. He goes to help, tracks
down evidence of what seems to be an interrupted kidnapping, and then, when he comes on the ‘kidnapped’ girl, shoots her dead. Her mind was projecting alien gabble; her body had been taken over by a parasite-organism from space. The rest of the story is devoted, very naturally, to fighting off the invasion. Yet it is, strangely, almost comic in tone, marked by the habitual irreverence of its hero, Wade Harper. He never obeys orders, always answers back, takes deliberate pleasure in waving at generals when he should salute them. Childish behaviour, especially for a telepath? The story itself insists that it is not. During the first few pages, for instance, we keep hearing, over the radio, of the apparently unrelated battle going on between the US government and the ‘Lunar Development Company’. ‘According to the latter the government was trying to use its Earth-Moon transport monopoly to bludgeon the L.D.C. into handing itself over complete with fat profits. The L.D.C. was fighting back. It was the decades-old struggle of private enterprise against bureaucratic interference’. One might note, again, the characteristic switch from definite fiction to hypothetical fact. What has this to do with Harper? Nothing immediate: but he sees himself analogously as a man under threat, one who will (from his job as a microforger) become ‘federal property the moment war breaks out’; and will become it even sooner if they know he can read minds! The Venusian emergency makes him declare himself, but nothing less would have. And his continuous irreverence is a form of protest against government infringements of liberty.

There is something slightly crazy about this, even (much worse in science fiction criminology) contra-survival. After all it is sheer chance that the one telepath in the USA crosses the invaders’ trail right at the outset. The odds were against it, they were even more against Harper as private citizen being able to undo the effects of (say) Soviet telepathic espionage managed by their more autocratic government. Surely Harper should know his public duty, indeed his duty to science. But Russell suppresses this obvious line of argument in favour of appeal to anti-government sentiment, and – traditional Astounding train of thought – to a continuing equation of government with social repression, conservatism, scientific orthodoxy. Harper’s conversations with scientists are punctuated by their cries of ‘Impossible!’ ‘Unthinkable!’, while the FBI repeatedly let him down through their rigid obedience to orders. Both groups, though, are only manifesting an attitude that Harper (and Russell) see as essentially human – fear of the unknown, a wish to shut it out or deny its existence rather than make it a part of one’s world. ‘At the ripe age of nine’, we are told, Harper ‘had learned that knowledge can be resented, that the means of acquiring it can be feared’. So he is
secretive as well as irreverent. At the end of the story it is presented as a triumph that he has contacted and married a female telepath without letting his watchers realise – if they did, of course, children of the union would probably become ‘federal property’ too. Harper is ‘in hiding’. That’s where innovators ought to stay.

The ‘in hiding’ theme relates closely to the ‘noise level’ one and that of ‘stimulus diffusion’, as well as to the stories about the failure of Security. They all assume that education is essentially education in acceptability, that society acts as a governor on human minds to prevent them realising their full potential, and that some similar mechanism triggers hate-and-fear reactions in those who detect novelty. ‘In Hiding’ itself is a story by Wilmar H. Shiras, published in *ASF* (Nov. 1948), and one of the many examples of amateur authors articulating one classic theme and never succeeding (or trying) again. It deals with the discovery of a super-intelligent child by a sympathetic psychologist, rather like Olaf Stapledon’s *Odd John* 13 years before. But Shiras’s Tim is a ‘mutant’ created not by Darwinian chance but by the exposure of his parents to radiation. He is also non-competitive, conscious above all of his own vulnerability to the hate-and-fear reaction. Sequels to the story in *ASF* (Mar. 1949 and Mar. 1950) recede into blandness. Other variants, like Mark Clifton and Alex Apostolides’s ‘Crazy Joey’ (*ASF* (Aug. 1953), and the forerunner of the *They’d Rather Be Right* serial) take a grimmer view.

However, the most thorough development of the theme – the book is dedicated to ‘Paul Breen, wherever he may be hiding’ – comes in Wilson Tucker’s *Wild Talent*, serialised in *New Worlds* (Aug.–Oct. 1954): Superman versus the government.

The central irony of this book is that Paul Breen, the telepath, the ‘new man’, is by nature a loyalist. Like Russell’s Wade Harper, he first displays his telepathic talent by hearing the call of a dying man – in this case an FBI agent or G-man (symbolic figure!) shot by the villains he is pursuing. But Breen, unlike Harper, is still only a boy, still ‘in hiding’. With complete confidence, however, he writes down what he knows and posts the letter, covered in fingerprints, to: The President, The White House, Washington, DC. Eleven years later, in 1945, they get him. Drafted into the army, he has his fingerprints checked against the FBI’s files with the massive, routine thoroughness then (as in *Who?*) ascribed to this organisation. His secret penetrated, he too becomes ‘federal property’. But they do not like him. If ‘brains’ are valuable but potentially treacherous, ‘brain-readers’ are bound to be a good deal worse.

The 1945 date is of course a vital factor in all this. ‘What’s an atomic bomb?’ asks Paul casually, having picked the phrase from the mind of a passer-by. The panic that ensues determines the official view taken of
telepathy: (1) it is something which shatters security (for if Paul were a Russian agent no screen could stop him); (2) but it might make security 100 per cent effective (for as long as Paul is not a traitor he can be a traitor-detector); (3) further, it is a potentially aggressive development (for Paul can mastermind a spy-ring himself).

The mixture of exploitation and anxiety mirrors reactions to the A-bomb itself. Its compulsive nature provides a sort of excuse for society; but then one is needed, for in an obvious way *Wild Talent* is a story of disillusionment. Its hero begins as a normal go-getting teenager riding the rails to the 1934 Century of Progress Exhibition in Chicago. By the end, he has chosen exile, alienated by the collapse of all his early father figures (the President, the FBI), and even more by his government’s disregard of his own rights, the continuous ‘bugging’ by no means compensated by occasional pandering. And yet, in a sense, the American ideal remains intact. Mutant and superman himself, Breen nevertheless retains a respect for some of his associates, and a deeper, undervalued feeling for the mores of his youth – thrift, work, privacy, ‘dating’ and so on. ‘We can’t come here again’, he says regretfully to his telepath fiancée at the end, as they wait for the escape boat. But she disagrees, and has the final word. To translate back into real-life terms, Tucker seems to be arguing that though contemporary societies are not fit to be trusted with new powers (whether nuclear or telepathic) this may nevertheless be a temporary phenomenon sprung from fear and militarisation, not a universal law. Hate-and-fear reactions should not be provoked – and that is why Superman goes ‘into hiding’ – but may be overridden.

Of course, in the case of telepathy, ‘stimulus diffusion’ was not imposing a panic-breeding time-limit. Not all science fiction was as balanced as this in its view of the merits and demerits of nationalism. In 1957, Sputniks I and II (with the ominous 2,000 lb payload of the latter) created something of a Pearl Harbor mentality, reflected in *Astounding* by several flights to familiar icons – Yankee inventiveness, teenage secret weapons and the like. ‘Murray Leinster’ produced a totally reassuring ‘Short History of World War III’ for *ASF* (Jan. 1958), while ‘Darrell T. Langart’ (or Randall Garrett) contributed a success-oriented reprise of *Who?*, ‘What the Left Hand was Doing’, to *ASF* (Feb. 1960). Yet even Garrett a little later wrote a novel in which the FBI lets the US collapse sooner than start the Last War – *Occasion for Disaster, ASF* (Nov. 1960–Feb. 1961), this time in collaboration with L.M. Janifer and under the pen name ‘Mark Phillips’. Probably the most creditable sign of science fiction’s detachment from and immunity to the worst crazes of the Cold War lay in its reaction to Vietnam involvement. Its authors were on the whole
unsympathetic to the anti-industrial and ‘technophobe’ bias of many of the war-protestors, and showed as much in many stories (such as James Blish’s bad-tempered ‘Skysign’ from *ASF* (May 1968), or Wade Curtis’s sarcastic ‘Ecology Now’ and ‘Power to the People’ in *ASF* (Dec. 1971) and (Aug. 1972) respectively). However, as early as 1959, John W. Campbell Jr – *Astounding’s* editor, son of a Daughter of the American Revolution, and a man addicted to neat but callous solutions – was explaining in an editorial (*ASF* (Nov. 1959)) why attempts to impose democracy overseas were unlikely to be successful, and why Communism was probably the best option for members of some developing nations. The area he had particularly in mind was South-East Asia. And the editorial was called ‘How to Lose a War’. Campbell had the grace to refrain from saying ‘I told you so’ ten years later, but he had provided one more example of a certain flexibility of mind producing better results than professional evaluations based on professional prejudices.

**Conclusion**

However, the value of science fiction and the science fiction magazines during this period is not to be quantified in hits and misses. What should have emerged from this essay is that the fantastic elements of the stories were a cover, or a frame, for discussion of many real issues which were hardly open to serious consideration in any other popular medium: issues such as the nature of science, the conflict of business and government, the limits of loyalty, the power of social norms to affect individual perception. It is this which science fiction fans felt they could not get anywhere else. Of course, a great quantity of science fiction was not about these themes, but dealt with robots, mutants, aliens, starships, asteroids, time travellers or any one of twenty other plot motifs. It would be a mistake, though, to think that even these did not contain a high proportion of serious thought, with a reference to real life not beyond recovery. Even more than most literature, science fiction shows a strong conventional quality which makes its signs and symbols interpretable only through familiarity; to instance only matters touched on above, it was a provocative act to polarise *Odd John* into ‘Crazy Joey’, while, after so many novels (*The Space Merchants, Wild Talent, Year 2018!*) had ended with innovators escaping from governments, it was a striking move by Harry Harrison to make *In Our Hands, the Stars* start with the same scene – and with the innovator’s knowledge that his government was going to come after him. It was this collective quality which made much science fiction of the 1940s and 1950s, and later, a ‘thinking machine’
for the convenience of people largely, it should be remembered, without academic support or intellectual patronage. Science fiction has moved up-market since then, and some of the Cold War issues have died with the Cold War itself. Not all of them, though: and the generally low quality of historical and scientific education in the Western world still creates an appetite, and a need, for thinking outside the educators’ control.