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Imagining the Worst: Science Fiction and Nuclear War

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No sooner had the Second World War ended before articles started appearing in American periodicals graphically describing how the USA might fare in a nuclear attack[1]. Paradoxically since America emerged from the war with its mainland unscathed, its economy buoyant, and as the sole possessor of the new super-weapon, these narratives inverted the privilege of monopoly and expressed a fear of how the Bomb might be turned against the very country which devised it. These imagined attacks were all the more fearsome because they had no historical precedent other than the single bombings of Hiroshima and Nagasaki. The coinage of the phrase "Cold War" fed such fears in suggesting a state of war paradoxically present but somehow not happening, a permanent imminence.

"Cold" implies an obvious metaphor which journalists could apply in tracing out the temperature chart of events. *Life* magazine opens an article on the Korean War with the words "The cold war turned piping hot in June 1950" with the invasion of South Korea[2]. In other words the term "Cold" suggested a situation where actual armed conflict was imminent but suspended. It was unusual both in duration (about 40 years depending on how its beginning is dated) and in being a period of expectancy. Looming over all other expectations was the fear of war. In a 1947 Gallup poll 73% of the Americans "believed that a third world war was inevitable" and when the novelist William Faulkner was receiving his Nobel Prize in Stockholm in 1950 he commented grimly: "Our tragedy today is a general and universal physical fear so long sustained by now that we can even bear it. There are no longer problems of the spirit. There is only the question: when will I be blown up?"[3] As a result of this fear time becomes particularly precious in this context. The *Bulletin of the Atomic Scientists* devised its famous "Doomsday Clock" logo showing the hands approaching midnight. And there was a fashion for novels with "count-down" titles: *Seven Days to Never* (Pat Frank), *Almost Midnight* (Martin Caidin), *The Last Day* (Helen Clarkson), and so on. In these the narrative counts down to a zero hour that might spell the end of everything.

It is with the notion of expectation that science fiction can enter the frame. Typically a science fiction novel conducts a thought experiment where one or more criteria of reality are suspended so that a possible impact of technology on experience can be examined from an unusual angle. From this premise there is no reason why science fiction should not engage with as many issues as realist fiction and in fact it was a matter of pride to a whole series of science fiction novelists that they were continuing a tradition of social criticism. In the late

1950s Robert Heinlein described it as the "only fictional medium capable of interpreting the changing, head-long rush of modern life"[4]. More recently, and more ambiguously, Thomas M. Disch has even claimed that "some of the most remarkable features of the present historical moment have their roots in a way of thinking that we have learned from science fiction"[5]. In other words, science fiction has become such a pervasive presence in the post-war period that it is affecting our perceptions of the present. Science fiction can give concrete form to metaphors in order to engage with political issues. For instance, in Lindsay Gutteridge's *Cold War in a Country Garden* (1971) the protagonist is a British intelligence officer reduced to a miniature size and smuggled into Rumania. His reduction reflects an instrumentalisation of humans into means to an end, and reflects too fears of the sheer size of Soviet bloc forces as embodied in the monstrous body of a Rumanian army commander. Gutteridge literalises the traditional association between size and power to present Cold War confrontation as a latter-day version of the David and Goliath story.

No issue was more pressing or more obsessively discussed in the post-war decades than that of nuclear war and in what follows I shall be considering a series of narratives whose authors intervened in an ongoing public debate by raising different questions about the nature and consequences of such a catastrophe.[6] The first question which was raised again and again in the late 1940s and throughout the 1950s was that of shelter. Could Americans survive a nuclear attack? The answer from a government-sponsored booklet was: "certainly – if you are prepared". Richard Gerstell's *How to Survive an Atomic Bomb* (1950) divides a family's responses up with military precision: "After the raid, Dad will make the quick trip upstairs to see whether any fires have started, Brother will inspect the fuse box and gas lines in the cellar, Sister will listen for instructions on the portable radio in the cellar, and Mother will stand by with the first-aid kit"[7]. The one possibility studiously avoided here is that they might be all so traumatised by the experience that they are incapable of doing anything.

Where Gerstell attempts to contain the nuclear threat within domestic security and within an American tradition of practical self-help, the writer Judith Merril refused such a position in her first novel. *Shadow on the Hearth* (1951) describes the experiences of a housewife in the New York suburbs in dealing with a nuclear attack. Merril uses a method that might be called future realism, exploiting every ordinary detail of Gladys Mitchell's experience to show how circumstances force her to reconstruct her household role. The husband – a key figure in Gerstell's scenario – is missing, presumed dead. The house cannot be read as a refuge because the novel shows how radiation penetrates every interior: country, house and body. The country is attacked, the house assaulted by looters, the body of Gladys's youngest daughter penetrated by radiation. Her house opens up into a miniature community taking in neighbours and a blacklisted scientist. But the ultimate casualty, Gladys realises, is the very concept of safety which can never again be taken for granted[8].

The advance in the destructive capability of the H-bombs meant that each estimate of attack rapidly went out of date. Merril questions the effectiveness of the home as a refuge and later novelists questioned whether bomb shelters could succeed at all. Philip Wylie's ironically entitled *Triumph* (1963) is one of the bleakest narratives to deal with this issue which he does by burlesquing the very idea of a shelter. The novel starts in the home of an American millionaire who has equipped an enormous bunker complete with air filtering

system and stores of supplies. When the USA is attacked this installation offers shelter to the guests but how could they ever emerge into a radioactive wasteland? Wylie recognises this by devoting sections of his novel to exposition, simply spelling out the scale of destruction from "ground zero" (the point immediately under detonation): "In a roughly circular area, miles across, underneath this thing, all buildings will have been vaporised. Farther out, for more miles the thrusting ram of steel-hard air will topple the mightiest structures and sweep all lesser edifices to earth, as if their brick and stone, girders and beams were tissue paper"[9]. Wylie confronts a problem in his use of narrative tense. By the nature of the nuclear event it is almost impossible to imagine witnesses who have survived and so he has to fall back on a hypothetical documentary formulation: "will have been vaporised". The immediate location of the action in the millionaire's bunker as a result becomes an increasing irrelevance and the novel virtually loses its narrative base as the whole of the USA is gradually erased from the world map.

In the hands of these novelists nuclear shelters are imagined more often as prisons than refuges or as locations which symbolically relate to the fate of the country as a whole. One of the most bizarre and racist examples of this symbolism occurs in Robert Heinlein's 1964 novel*Farnham's Freehold* where a nuclear war throws a shelter and its inhabitants into a future where whites have been completely displaced by the dark Southern races who fortunately have the power to send them back to their own time where they live through nuclear attack again (with their home playing the role of "Noah's bloody ark", as a character puts it). The novel starts with family / national survival, jumps forward to a future where whites have been superseded, then moves back to a present where the racial other has been blanked out. The freehold property of the title thus becomes a symbol of national survival echoing the pioneer trading posts of the American past while "high above their sign their home-made starry flag is flying – and they are *still* going on"[10]. Heinlein attempts an emblematic harmony in this image between national and commercial interest and the ethic of self-help, but our recognition that it is a nineteenth-century pastiche and the totalitarian future glimpsed by the time travellers contradict this image's resolving force.

How far would survival be compromised by radioactive fallout? This again was debated throughout the 1950s and from the mid-1940s stories started appearing dealing with fears of human mutation. Some by Judith Merril, Poul Anderson, and others show a loss of limbs, in extreme cases an evolutionary reversion to the animal[11]. But mutation does not always carry negative connotations. In Henry Kuttner's "Baldy" stories (about hairless mutants) radiation has induced telepathy and similarly in Wilmer Shiras's novel *Children of the Atom* (1953) a reactor explosion has made children affected by the resulting radiation into intellectual geniuses. In other words radiation is not simply a force to be feared. It is used here as an agency for creating a group which is then subject to social prejudice and hostility. The most famous treatment of this theme comes in John Wyndham's *The Chrysalids* (1955) set in Labrador long after a nuclear war. A totalitarian religious regime enforces social and biological norms with absolute slogans like "THE DEVIL IS THE FATHER OF DEVIATION"[12]. The novel is narrated by a boy who comes to question these principles more and more and it could be argued that genetic mutation is a metaphor of social difference here, except that there is also the dimension of historical enquiry into a past society that could

have caused such widespread destruction. We shall see shortly how history can be built into these narratives as part of their speculations.

In all these examples, information, or rather the *lack* of information, has been a variable factor. In *Shadow on the Hearth* Gladys has to deal with her patchy and incomplete knowledge of radiation. The narrator of *The Chrysalids* strives to penetrate a suppression of history, and so on. But suppose nuclear war itself was a massive illusion promoted by the government, bogus information therefore. This is the situation operating in Philip K. Dick's *The Penultimate Truth* (1964) where the masses have been herded together into enormous underground shelters so that a ruling elite presided over by the "Protector" (Dick's equivalent to Big Brother) can ensure their safety from the pollution from fallout at the surface. The distance between the "tankers" and the surface elite reflects in spatial terms an information gap between the two groups. Down in the tanks the masses only receive their news through a video service which is being totally manipulated. Acting on discrepancies in these programmes, a tanker makes his way to the surface expecting to find a radiated wilderness. In fact there are ruins – a war has happened but the landscape is relatively fertile and the whole video system turns out to be an enormous fake, based in Washington and Moscow, feeding bogus information to the tanks. Dick's novel can therefore be seen as an ironic parable on disinformation where the positioning of the masses underground spatially represents their vulnerability to the official media, especially to the extended fiction of nuclear war[13].

Once again a novel's method can be tied to a particular historical moment. Thomas Disch sees it as the importance of TV in the 1964 presidential race, more generally the period when "national politics began to be dominated […] by the media"[14]. Dick gives us such an extreme instance of manipulation that the very reality of the survivors' situation has become a media construct. Thus their underground dwellings, far from serving as refuges, reflect the tankers' total vulnerability to media power. One of the most important novels from this period gives us a perspective exclusively from a nuclear technician. What would it be like to *conduct* such a war? Or to ask the question which became current in the late fifties, whose finger is on the button? Mordecai Roshwald's *Level 7* (1959) is set in an unnamed dystopia of the near future which is attacked by an unnamed enemy. The blanking out of the enemy's identity was not unusual in this period. In this novel anonymity is one of the major themes[15]. The narrator is just called X-127 and is a functionary in a deep-level nuclear bunker. In other words he is a technician in a totally technological environment where instructions are given over loudspeakers and every event of the day timed electronically. Roshwald shows how the separation from the outside world is a kind of abstraction process detaching the narrator from the physical horrors of nuclear war. When "it" happens, as he puts it, the electronic screens on his console show the following kind of images: "At 09.32 hours the first rocket hit enemy territory and one of the red spots turned into a rather larger circular red blob. Almost at once more such blobs appeared here and there over Zone A"[16]. This sort of vocabulary of zones and different-coloured blobs neutralises the notion of human territory into the schematised spaces of a war game and when it finally dawns on the narrator what he has done, his guilt comes too late. Although the war only lasts 24 hours the casualties are enormous and ultimately include the narrator himself.

What impresses about *Level 7* is Roshwald's demonstration that military technology is a self-enclosed system. He is not interested in a specific kind of super-weapon so much as how technology can create a certain mindset in an operative like X-127. The blackest irony of the novel is that the enemy launch was made in error and that the response was automatic. During the Cold War, the general anxiety expressed in science fiction that technology might supersede humanity took on the specific fear that sophisticated electronic defence systems might develop a "life" of their own. Had X-127 become the slave of a system? In the British writer D.F. Jones's *Colossus* (1966) the designer of a supercomputer literally becomes its slave, living in a controlled cell. A supercomputer is put in charge of US foreign policy and forms an electronic link with its Soviet counterpart, gradually excluding and then controlling human agents[17]. In Bernard Wolfe's *Limbo* (1952), one of the most original treatments of the Cold War, the main computers of East and West achieve a state of parity and a third world war breaks out fantastically because the each side perceives the other to be totally opposite whereas their respective organisations are virtually identical. Wolfe presents mankind as suffering from a collective disease of ambivalence which complicates and even contradicts overt actions[18]. After this nuclear war a pacifist movement gains strength by trying to eradicate human aggression at source – by amputating all limbs. Hence the title of the novel. The metaphor in terms like "disarmament" has been made grotesquely concrete. But another irony follows. Artificial limbs have to be made to continue social life and these limbs turn out to be even more efficient than their originals. So, far from disappearing, the arms race persists in a new guise. Wolfe's novel is grotesquely comic – a series of puns on one level – but also deeply pessimistic. If contradiction is a given state of the human psyche, political events cannot lead to anything but endlessly reconfirm that state.

Lying behind all the narratives considered so far is the ultimate fear: might nuclear war end all life? A theme of ultimacy runs through works with titles like *The Last Day* (Helen Clarkson) or "Grand Central Terminus" (Leo Szilard). An apocalyptic treatment of nuclear war could actually present it as a cataclysmic transformation rather than a simple ending. This is what happens in Ray Bradbury's *Fahrenheit 451* (1954) where the *third* nuclear war in a recent series builds up towards the end of the novel. This is expressed symbolically as an impending apocalyptic storm: "You could feel the war getting ready in the sky that night. The way the clouds moved aside and came back, and the way the stars looked, like the enemy discs, and the feeling that the sky might fall upon the city and turn it to chalk dust"[19]. Little reference there is to politics or armaments here. It is just a quality of expectancy projected into the skies. The absence of any specifics about war reflects a total dissociation in Bradbury's novel between the suburban characters and government action. The citizens are drugged by the television into mindless acquiescence while overhead huge bombers roar by. Media narcosis has completely disengaged Bradbury's suburban characters from participation in political processes.

When the bombs strike the effect is of a surreal suspension of the city in the sky: "For another of those impossible instants the city stood, rebuilt and unrecognisable, taller than man had built it, erected at last in gouts of shattered concrete and sparkles of torn metal into a mural hung like a reversed avalanche, a million colours, a million oddities, a door where a window should be, a top for a bottom, a side for a back, and then the city rolled over and fell

down dead"[20]. The pacing of this description is particularly striking when we remember that the sheer speed of nuclear explosions meant special cameras had to be designed to produce sufficient exposures per second. In Bradbury's description the effect is like slow motion to allow the symbolism to emerge. His focus falls on the physical city not its inhabitants, on displacements of function what we would presume to be thousands of casualties are just blanked out so that we register the symbolic death of the city and therefore of the culture it represents. Apocalypse involves a two-part process, however. The destruction of the old order leads into the creation of the new and Bradbury – again symbolically – represents this phase through a surviving remnant who will rebuild society. But that reconstruction lies in the novel's future – "when we reach the city" is its last line and indicates merely a symbolic possibility.

Bradbury's novel demonstrates symbolically what many simply refer to in their own past: that whether nuclear war is called the "Tribulation", the "Wasting", or simply "it", such a war will create a massive, possibly irreversible, rupture in social order. From the 1940s onwards fictional accounts of nuclear war present it as fragmenting and atomising. Socially as well as physically the American landscape is transformed into no-go areas because of radiation and fiefdoms ruled by self-styled leaders and patrolled by gangs. The change is sometimes presented as a reversal of evolution. The fly-leaf for Dean Owen's *End of the World* (1962) proclaims:

> While atomic fallout was still settling over the ruins of blasted cities, and frantic people were learning to live by jungle law, one family – one tight core of sanity – tried to preserve the dignity of human life.

So far this sounds like an exercise in heroism, and then the description continues:

> But the woman was shocked speechless by loss –
>
> And the girl was an unwilling initiate to lust –
>
> And the boy knew a strange glee in drawing human blood[21] -

By this point we reach an altogether more ambiguous and less high-minded view of human response. Novels like Alfred Coppel's *Dark December* (1960) show single character making his way across a shattered landscape presenting obvious physical dangers to his survival, but the prime danger presented to this man comes from another army officer who uses the necessities of the post-war situation to justify the most savage acts. Again and again nuclear war is shown as stripping away the superego of the survivors[22]. And if social restraints are lost, does this mean that the war allows free play to bloodlust and other impulses held in check? Not quite, since the rupture between pre-war and post-war is never total. In Coppel's novel the protagonist has been serving in an underground bunker when the nuclear attack happened, and so the action of *Dark December*, as well as describing encounters with physical dangers, becomes an extended psychological drama between Gavin's old self and his dark double personified in the crazy Major Collingwood who shadows him everywhere. Collingwood's eventual death therefore symbolises the survival of pre-war civilisation, albeit in a tenuous way.

Again and again in this fiction nuclear war is presented as an ultimate cultural rupture so that, even if any terrain survives unpolluted, the nature of the survivors' community remains problematic; hence the reversion in many cases to neo-feudal or pre-industrial social forms. The firemen in *Fahrenheit 451* are presented as an arrogant institution trying to control history as well as human behaviour and the destruction at the end of the novel can be read partly as a corrective to that pride. The question which arises here is a broad one going beyond the physical fate of individuals: how is history itself to survive nuclear war? How will events be recorded? And how will survivors engage in an act of collective remembering? We have seen how a theocracy in Wyndham's *The Chrysalids* tries to impose firm limits on that sort of enquiry.

Leigh Bracket's *The Long Tomorrow* (1955) describes a similar situation. In this narrative a young boy grows to adulthood by violating the prohibitions his community has put on reading in this post-war world. The religious authorities have forbidden any discussion of pre-war technology and the war itself in a kind of imposed act of denial. But the boy narrator gets access to this suppressed past, first through his grandmother's memories and then through stolen books, one being a *History of the United States*. Following the American tradition, he lights out in search of a legendary underground installation called Bartorstown. When he finds this place, Len Colter symbolically enters his country's nuclear history. Bartorstown functions (paradoxically?) as a secret commemoration through icons like a panoramic photograph – probably of Hiroshima: "It was a terrible picture. It was a blasted and fragmented desolation, with one little lost building still standing on it, leaning over as though it was tired and wanted to fall"[23]. The place is also a storehouse of information with computer memory banks full of data on nuclear technology. Most importantly, Len enters a space of rational discussion with the guardians of Bartorstown. That puts the situation rather idealistically because of course the war has already happened, so Len is also entering discussion with the guilty and that becomes a complex situation to negotiate.

Many nuclear war narratives present the main casualty as history itself. The difficulty of accessing the past is expressed through a number of symbolic actions in these novels: travelling across a dangerous landscape, excavating artefacts, penetrating archives which are represented as bunkers, derelict museums, and so on. In Kim Stanley Robinson's *The Wild Shore* (1984) the young boy narrator starts the novel digging up graves and then travels through California, devastated by Soviet neutron bombs picking up bits and pieces of information from the adults he meets. Here the immediate past has been less obscured than in other novels. For instance, one character says "Seems to me we're like the Japanese themselves were after Hiroshima"; to which his listener asks "What's Hiroshima?"[24] The second speaker is obviously not in a position to register the historical irony that the reader would pick up: that the technologically dominant occupying power of post-war Japan has itself become fragmented and ruled over by that very same power.

What has happened in novels like *The Wild Shore* is that the reader's present has become transposed into a future past, has become history. The tangible signs in the landscape are the ruined freeways and high-rise blocks, i.e. the most modern signs of an urbanised technologically sophisticated civilisation. Does that mean, in turn, that rediscovering history will be a positive and liberating exercise? Again, not necessarily. A gain in knowledge might

produce a fear that the same thing will happen all over again. There are strong suggestions of that in *The Wild Shore* as a movement for American nationalism gets under way. This is designed to restore a lost grandeur but by the end of the novel the young narrator has developed a real suspicion of any presentation of the past as a golden age and his account finally turns in on itself, refusing any conclusion and therefore any certainty.[25].

The novel which makes the most extensive use of historical cycles is Walter M.Miller's *A Canticle for Leibowitz* (1959) which reads like a historical novel with the past overlaid on the present. It starts in a Dark Age resembling one perception of the early medieval period. Of its three sections the first deals with how the Church acts as a custodian of culture; the second with the rebirth of scientific knowledge; and the third with the application of that knowledge in a new nuclear war. But it has all happened before. At the beginning of the novel a monastic stumbles across the ruins of a structure in the desert with a sign carrying the legend FALLOUT SURVIVAL SHELTER. The novice has no conceptual framework for dealing with these terms, especially the first. We are told: "He had never seen a 'Fallout', and he hoped he'd never see one"[26]. Inside the shelter he is confronted with skeletons grinning at him, grim testimony to the failure of the shelter's function. This *memento mori*, this reminder of death, unbeknown to the novice, represents the distant future of humanity. Miller concentrates his main effects on the juxtaposition within scenes of details from different historical periods, which invites the reader to engage in a series of recognitions as if the novel is recapitulating key phases from the history of the West. The culmination to this process comes in the third section of the novel where the fallout shelter as ruin is replaced by the need for a *working* shelter. The main characteristic of the new modern age is a triumphalist urge to expand out into the universe: "It was inevitable, it was manifest destiny, they felt […] that such a race go forth to conquer stars"[27]. But once war breaks out a religious observer revises the notion of manifest destiny into a historical script of endless repetition. He wonders: "Have we no choice but to play the Phoenix in an unending sequence of rise and fall? Are we chained to the '*pendulum of our own mad clockwork* '" (Miller's emphasis).[28] This conclusion gives us one of the longest views of the Cold War, set within massive historical cycles of the rise and fall of empires.

Strictly speaking, there are two endings to Miller's novel: the Earth seems doomed; but a spaceship has been launched to carry a remnant to possible salvation on another planet. To conclude this survey, the final questions present themselves: how might a writer use other planets in this context? And what sort of symbolic epitaph might be constructed to human destructiveness? Isaac Asimov's *Pebble in the Sky* (1980) uses a freak atomic accident to transport a man into a future where Earth is a radioactive wasteland glowing with a blue radiance at night[29]. Earth is ignored and exploited by the Galactic Empire although the latter's citizens originated from the Earth. In other words, the new historical situation resembles an inverted imperialism where once again the superpower (represented here in planetary not national terms) has experienced diminution. The perspective on Earth from another planet is used as an ironic comment on human presumption which has resulted in nuclear catastrophe. In "Grand Central Terminus", one of the physicist Leo Szilard's stories, extraterrestrials visit America on a kind of anthropological expedition, trying to reconcile evident traces of rational life with nuclear destruction. Here the voice of reason has been

displaced on to another planet to reflect its remoteness from the human situation of the present. The same thing happens in the science fiction frame put round the novel version of *Doctor Strangelove* (1963) with an epilogue reading: "Though the little-known planet Earth, remotely situated in another galaxy, is admittedly of mere academic interest to us today, we have presented this quaint comedy of galactic pre-history as another in our series, *The Dead Worlds of Antiquity*"[30]. From the reader's point of view this epilogue acts as a grotesque coda because it totally underestimates the subject which is the ultimate one. The destruction of all human life by massive nuclear devices. The viewpoint of this epilogue is plausibly human, but too rational for the manic, obsessive world of *Doctor Strangelove*. So it can be read as a structural form of estrangement which startles the reader into trying to locate reason within the main narrative with its black presentation of the East-West arms race.

These last examples are heading towards epitaphs on the race. In 1979 when Robert Heinlein was trying to build up public awareness of the nuclear threat, he opened his essay "The Last Days of the United States" with just such a bitter epitaph: "Here lie the bare bones of the United States of America conceived in freedom, died in bondage, 1776-1986"[31]. James Morrow's 1986 novel *This is the Way the World Ends* tacitly recognises the futility of appeals to reason like Heinlein's and ironically takes as its protagonist as graveyard mason, a professional at composing epitaphs. After the holocaust Paxton is taken in a nuclear submarine not to freedom but to a series of surreal places of accusation. Following the apocalyptic destruction of this world he is taken to the Necropolis of History and then, as "prisoner of the murdered future", is put on trial with other survivors for complicity in mass murder. The apparent innocence of the protagonist is no defence and in effect he participates in a fantasy-trial which is at the same time an inquest on a whole murdered species[32]. Morrow's novel is one of the most powerful narratives to use the defeat or destruction of the USA as the occasion for an autopsy on the country, an interrogation, after the event, of the national failings which might have produced that fate.

A number of recurring features emerge from these narratives. In virtually every case the USA plays a reactive role, never attacking first. Secondly, the nation's capacity to cope with such an attack becomes a test of its morale and for that reason the nuclear aftermath, in the short and long term, occasions an interrogation of cherished national values. Thirdly, because nuclear attack can only be mounted with the latest technology, these novels explore anxieties about problems of control. Finally this fiction expresses a collective horror of ultimate endings. Some human presence persists however tenuous or displaced. Cherished human values like reason might be transposed on to extraterrestrial beings; or reader might play out the role of a survivor through the very act of reading a narrative whose deliverer has died. Ultimately there is an unusual circularity to such narratives. By deploying a whole range of strategies to imagine a dreaded future, they function as warnings against such imminent developments[33]. The more the future fails to develop along these imagined lines, the more necessary is the reconfirmation of these narratives as mere imaginary extrapolations.

[1] **“** The 36 - Hour War . ” *Life* 19 Nov. 1945.
[2] Jordan, Killian, ed. “Decades of the 20th Century.” *Life.* Des Moines: Life, 1999: 106.
[3] Solberg, Carl. *Riding High: America in the Cold War.* New York: Mason and Lipscomb, 1973. 105.
-------- . *The Best of Faulkner*. London: Chatto and Windus, 1955. 1.
[4] Davenport, Basil, ed. *The Science Fiction Novel: Imagination and Social Criticism.* Chicago: Advent, 1959. 41.
[5] Disch, Thomas, M. *The Dreams Our Stuff Is Made of.* New York: Free Pres, 1998. 12.
[6] Brians, Paul. *Nuclear Holocausts: Atomic War in Fiction 1895-1984.* Kent OH: Kent State UP, 1987.
All of the narratives discussed here except those by Ray Bradbury and David Morrow are listed in Paul Brians’ *Nuclear Holocausts: Atomic War in Fiction* which remains an invaluable guide to this material.
[7] Gerstell, Richard. *How to Survive an Atomic Bomb.* Washington DC: Combat Forces, 1950. 121 - 2.
[8] Merril was compelled by her editors at Doubleday to write in a happy ending with the husband arriving home. The 1966 Compact edition restored the original more open ending.
[9] Wylie, Philip. *Triumph*. New York: Doubleday, 1963. 40.
[10] Heinlein, Robert. *Farnham’s Freehold*. London: Dobson, 1964. 315.
[11] A valuable anthology of stories dealing with this theme is Robert Silverberg’s *Mutants* ,1974.
[12] Wyndham, John. *The Chrysalids*. Harmondsworth : Penguin, 1969. 18.
[13] Dick gives a spatial version of what was becoming known in the mid-1960s as the ‘credibility gap’ between official US government statements on Vietnam and the reality. One of Dick’s major themes was the art of reality management, as exemplified in *Time Out Of Joint* ,1959, where fear of a nuclear holocaust is used by the government to authorise the construction of a whole simulated environment.
[14] Disch, Thomas M. *The Dreams*. 94.
[15] Frank, Pat. *Alas Babylon*. New York: Bantom, 1976. V.
Even when the enemy is not named it could conceivably only be the Soviet Union. However, it is unusual for a novel like Pat Frank’s *Alas, Babylon*, 1959, to be written in response to the query: ‘what do you think would happen if the Russkies hit us when we weren’t looking – you know, like Pearl Harbor?’.
[16] Roshwald, Mordecai. *Level 7*. New York: Lawrence Hill, 1989. 118.
[17] The 1969 film adaptation carries the title *The Forbin Project.*
[18] Wolfe drew for this on the later writings of Freud and also the works of the Freudian psychologist Edmund Bergler.
[19] Bradbury, Ray. *Fahrenheit 451*. London: Flamingo, 1993. 90.
[20] Bradbury, Ray. *Fahrenheit 451*. London: Flamingo, *1993.* 153.
[21] Owen, Dean. *End of the World*. New York: Ace, 1962. I.
Headed as *The Days after Doomsday*. Novel version of film with the title *Panic in Year Zero* of the same year.
[22] John Varley’s *The Manhattan Phone Book* Abr, 1984. sardonically points to the appeal of ‘after-the-bomb stories’: ‘There’s something attractive about all those people being gone, about wandering in a depopulated world, scrounging cans of Campbell’s pork and beans, defined one’s family from marauders’ (quoted in Paul Brians, *Nuclear Holocausts: Atomic War in Fiction. A Supplement*, http://www.wsu.edu:8080/~brians/nuclear/nh-supplement.html). The 1980s saw the rise of post-holocaust super-warrior adventure series like Jerry Ahern’s *Survivalist* novels.
[23] Brackett, Leigh. *The Long Tomorrow*. New York: Doubleday, 1955. 173. I have discussed this and other novels cited in this essay in *American Science Fiction and the Cold War*. Edinburgh: Edinburgh UP, 1999.
[24] Robinson, Kim Stanley. *The Wild Shore*. London: Macdonald, 1986. 102.
[25] The narrator rejects the ‘part of the story where the author winds it all up in a fine flourish that tells what it all meant’ (*The Wild Shore*, p.370) because he has discovered lies about the former American Empire and the novel closes with an expression of intent to revise the narrative from scratch.
[26] Miller,Walter M, Jr. *A Canticle for Leibowitz*. London: Black Swan, 1984. 22, 23.
[27] Miller, *A Canticle*. 258.

[28] Miller, *A Canticle*. 280-1.
[29] Asimov 1982 afterword.
[30] George, Peter. *Dr. Strangelove Or, How I learned to Stop Worrying and Love the Bomb*. Boston: Gregg Press, 1979. 145.
[31] Heinlein, Robert. *Expanded Universe*. New York: Ace, 1982. 148.
[32] The novel uses a mock-picaresque narrative mode which does not prepare the reader for the surreal interrogation of US nuclear policy which follows the outbreak of hostilities.
[33] For a discussion of this dimension to nuclear war fiction: Schwenger, Peter. *Letter Bomb: Nuclear Holocaust and the Exploding Word*. Baltimore: Johns Hopkins UP, 1992.