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NUCLEAR FABLES: A STUDY OF NARRATIVES FROM THE ATOMIC AGE

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ABSTRACT

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This thesis is an investigation of the relationship between imaginative writing and the nuclear state. As one ethnographer of nuclear societies, Hugh Gusterson, has argued recently, 'if there is any culture that deserves to be denaturalized and exoticized, hence opened up to a fresh and potentially critical perspective, it is surely that of America's generals, admirals, nuclear scientists, and defense contractors'.This thesis proposes a study of the literary representation (the 'nuclear fables') of that culture.

Chapter One considers the scope of the relationship between representation and the bomb. It begins with an extended critique of recent attempts to generate a nuclear criticism from within a literary-critical framework. A new critical methodology is then developed, integrating these previous strategies with recent ethnographic accounts of life in the nuclear state. This introductory chapter concludes with the illumination and definition of a specific 'nuclearist subjectivity'.

The four chapters which follow trace the historical shifts in the representation of this 'nuclearist subject' in two waves of publication in the 1950s and the 1980s. Chapter Two is organized around a reading of Dexter Masters's popular novel, The Accident (1955). This novel is treated as a representative nuclear fable from the first wave, and the reading is focused on the intersection of an anxious nuclearist subject with discourses of the body, of gender, and of ethnicity.

Chapter Three continues the investigation of early nuclearist subjectivity, tracing the evolution of a confident nuclearist subject able to control atomic anxiety. It begins with readings of Michael Amrine's novel, Secret (1950), and Nothing So Strange (1947), a novel by James Hilton. C.P. Snow's 1954 novel, The New Men, is then used to suggest that the nuclearist subject is best understood as a particular reorganization of a pre-atomic social order.

Chapter Four places the nuclear fable in the wider context of atomic war fiction. It is organized around a comparative reading of two representative fantasies of post-nuclear survival: Pat Frank's Alas, Babylon (1959), and Denis Johnson's Fiskadoro (1985). It is argued that these texts display the limits of nuclearist subjectivity, representing the possibilities and limitations of a space predicated on the loss of atomic self-control.

Chapter Five focuses on the second wave of fictions, investigating the tropes of a modern nuclearist subject. Through a reading of Françoise Zonabend's The Nuclear Peninsula (1993), and a popular fiction, Martin Cruz Smith's Stallion Gate (1986), it identifies the breaks and continuities between the representation of an emergent nuclearist subjectivity in The Accident, and the kind of nuclearist subject that exists after four decades of the atomic age. Concluding remarks consider the re-inscription of the nuclearist subject in Douglas Coupland's *Generation X* (1992).

CONTENTS

PREFACE

In a recent primer on nuclear criticism Ken Ruthven notes that 'the sheer size of the bibliography of items concerning the military and civilian consequences of the discovery of the principles of nuclear energy this century might be perceived as a reason for leaving it alone and moving on to something more manageable'.[1] Three factors, in particular, have kept me going: Peter Middleton's shared interest in the content of the nuclear archive; his thoughtful supervision of this thesis; and Rose Lindsey's insistence, in many conversations, and in her own work, that the relationship between militarism and representation is both complex and a necessary object of study in the 1990s.

For their help during a long process of bibliographic filtering, I would like to acknowledge the Inter-Library Loan staff at LSU, who have produced many obscure items of nuclear criticism, and the staff at Southampton Central Library, for locating many once-popular nuclear fictions from county stacks. In presenting parts of this work to friends and colleagues, I have found that many people have been more than willing to share their personal geographies of nuclear threat, and I would like to formally acknowledge them here.

I have received a great deal of intellectual and emotional support from friends, colleagues, and family during this project. Specifically, my thanks are now due to: Rose, Zoë and Blue for being patient, renegotiating the deadlines of threat, and hiding the scissors; to Katharina Hall for scrupulous reading of earlier drafts, and for asking all the best questions; to Claire Jowitt for proving it could be done; to Siân Jones for a brilliant friendship; to the October Books Collective, for helping me to keep a life-in-balance; and, finally, to English Department colleagues at LSU for support in difficult times.

I would also like to thank my family, especially my father, Derek, for supporting my move towards the humanities. For making that move possible, my thanks to John Peacock are long overdue.

This thesis is dedicated to the memory of Gill Dorney, and to her belief in the value of writing.

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[1] Ken Ruthven, *Nuclear Criticism* (Carlton, Victoria: Melbourne University Press, 1993), pp. 4-5.

INTRODUCTION

This thesis is an investigation of the relationship between imaginative writing and the nuclear state. According to the ethnographer, Hugh Gusterson, 'if there is any culture that deserves to be denaturalized and exoticized, hence opened up to a fresh and potentially critical perspective, it is surely that of America's generals, admirals, nuclear scientists, and defense contractors'.[1] This thesis, then, proposes a study of the literary representation of that culture.

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The use of atomic weapons in August 1945 took the English-speaking public by complete surprise. The existence of the bombs and the possibility that they might be used against Japan had been a remarkably well-kept military secret.[2] The first White House Press Release announced the new bomb as 'a harnessing of the basic power of the universe', and this tone became swiftly characteristic of Western media coverage of atomic issues.[3] This dramatic tone had been rehearsed before the war, in fiction and in the popular press, when radical issues in the science of the atom, including the possibility of a weapon, were the subject of public debate. As a result of rigorous wartime censorship of atomic information, the dreamt-of 'harnessing' of atomic power was now presented as a *fait accompli*. This had enormous shock value. The almost immediate consensus view was that any celebration of the wonders of American technical achievement would be inextricably mingled with fear. According to the hero of *Secret*, a 1950 novel that I discuss later, 'it was the worst of things; it was the best

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1 Hugh Gusterson, 'Exploding Anthropology's Canon In The World Of The Bomb: Ethnographic Writing On Militarism', *Journal Of Contemporary Ethnography*, 22 (1993), 59-79 (p. 65).

2 See, for instance, General Leslie M. Groves, *Now It Can Be Told: The Story of the Manhattan Project* (1962; New York: Da Capo, 1983), pp. 138-148. Many nuclear texts originally published in the 1950s and 1960s were republished in the newly-anxious decade of the 1980s. I have indicated this, where appropriate, by including the date of first publication. Unless stated, all references in the text are to the later editions.

3 'White House Press Release on Hiroshima, August 6, 1945', in Robert C. Williams and Philip Cantelon, eds., *The American Atom: A Documentary History of Nuclear Policies from the Discovery of Fission to the Present, 1939-1984* (Philadelphia: University of Pennsylvania Press, 1984), pp. 68-70 (p. 68). See Paul Boyer's *By The Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age* (New York: Pantheon, 1985), pp. 3-6, for examples of contemporary media responses. Boyer's research into the early cultural response to atomic power is a standard text for work in this field. My opening comments are indebted to his analysis of the primary sources.

of things; everyone heard that from The Paper and The Radio'.[4]

With hindsight, this widespread anxiety seems extraordinary. In 1945 there were no atomic weapons outside of the United States, but the American public was instantly in fear for itself. In contemporary accounts, the events at Hiroshima were imagined repeatedly as the destruction of an American city. For instance, the news organization, NBC, noted that what had happened at Hiroshima 'would be the same as Denver, Colorado, with a population of 350,000 persons being there one moment, and wiped out the next'.[5] The *New York Herald Tribune* noted how the news had produced a public mood that was 'weird, incredible, and somehow disturbing'.[6] It was possible, the editorial suggested, to forget 'the effect on Japan, or on the course of the war, as one senses the foundations of one's own universe trembling' (p. 22). The Nagasaki bomb sealed this public mood. In summary, it appeared to Americans that the end of the world had suddenly become available to humanity in a way that had previously only been imagined in works of fiction.[7]

Reports about what had happened to Hiroshima and Nagasaki were carefully controlled by the Occupation administration in Japan. Although the sense of apocalyptic devastation could not be censored, less immediately obvious concerns about lingering radiation exposure and potential genetic damage were subjected to rigorous restrictions.[8] The censorship, the ready source of imaginative accounts in pre-war fiction, and the perceived enormity of the events, combined to produce a gap between the lived atomic reality in Japan and the imagined atomic future in America.[9] As I shall

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4 Michael Amrine, *Secret: A Novel* (New York: Heinemann, 1950), p. 1. This novel is discussed in more detail in Chapter 3.

5 Cited by Boyer in *By The Bomb's Early Light*, p. 5.

6 'The Atomic Bomb', *New York Herald Tribune*, 7 August 1945, p. 22.

7 This fictionalization of atomic destruction has a long history. Paul Brians documents Robert Cromie's 1895 novel, *The Crack of Doom*, as the first instance of a nuclear war in fiction (*Nuclear Holocausts: Atomic War in Fiction, 1895-1984* (Kent, Ohio: Kent State University Press, 1987), pp. vi, 4, and 172.) Paul Brians's bibliographic research has been a key resource for this thesis.

8 For a detailed account of the Occupation censorship see Glenn D. Hook, 'Roots of Nuclearism: Censorship and Reportage of Atomic Damage in Hiroshima and Nagasaki', Working Paper No. 16, First Annual Conference on Discourse, Peace, Security and International Society (La Jolla: University of California Institute of Global Conflict and Cooperation, 1988).

9 This thesis does not aim to be a study of A-bomb Literature, the term that Robert Lifton has used to name writing that struggles to adequately represent Hiroshima and Nagasaki. See Robert Jay Lifton, *Death In Life: The Survivors of Hiroshima* (London: Weidenfeld & Nicolson, 1968), especially Chapters 10 and 11, for an extended discussion of the creative response to the bomb from Japanese writers. I have included some relevant titles in my bibliography, including a Japanese account of the Manhattan Project, Makoto Oda's *The Bomb*, trans. by D.H. Whittaker (Tokyo: Kodansha International, 1990)

discuss in more detail later, writing in the atomic age is strongly marked by this split between the social impact of the development of atomic weapons and the fantasy space of imaginary apocalypse.

The force of this Western reaction to the atomic bombs can best be summarized in the contemporary notion that the atomic age would be very brief if 'we do not adapt ourselves to it'.[10] By the 1980s this adaptation was so all-pervasive that it could be named as nuclearism; the institutionalized belief that the West was better off with nuclear weapons than without them. It is my contention that this adaptation to the apparatus of nuclear apocalypse can best be explored through an analysis of the tropes of what I have termed nuclearist subjectivity. These tropes are particularly visible in a group of popular fictions that I have termed nuclear fables. Fables have a fictional and a didactic aspect. They are both 'fictitious narratives' and 'stories designed to convey some useful truth'.[11] Thus, the term signals the importance of an analysis of *narrative* in any understanding of the 'useful truths' that must be learnt in the adaptive process of nuclearism. A literary-critical analysis of the nuclear fable, I suggest, can deconstruct the tropes of nuclearism, and reveal what it might mean to co-exist with the apparatus of apocalypse. I begin by asking, what would be the dimensions of a subjectivity predicated on adaptation to the atomic age? This is the focus of my first two chapters. In three subsequent chapters, I analyse the ways in which this subjectivity has been articulated, assimilated and resisted in narrative since 1945.

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Chapter One, entitled 'The Politics of Nuclear Fables', considers the scope of the relationship between representation and the nuclear state, with a view to explaining in detail the provenance of the term nuclear fable, and how it might be used in a critical discussion of nuclearism. I discuss previous attempts to generate a nuclear criticism within a literary-critical framework, and suggest that these need to be integrated with recent ethnographic accounts of nuclearist subjectivity. In a concluding section, I draw these two epistemological strands together in a reading of a sample nuclear fable.

There have been three clearly identifiable paths for a literary criticism engaged with nuclear issues. Firstly, there is a humanist critique that looks to narrative fiction for a moral answer to the nuclear threat; secondly, there is a critical school that explores these texts as a sub-genre of popular fiction; and thirdly, there is a post-structuralist

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10 Dexter Masters and Katherine Way, eds., *One World Or None: A Report to the Public on the Full Meaning of the Atomic Bomb* (London: Latimer House, 1947), p. 157.

11 *O.E.D.*

critique that organizes itself around the absence (to date) of a real nuclear referent. This latter critique, which names itself Nuclear Criticism, is particularly concerned with a reading of the nuclear referent as the absence of signification, a destruction of the world's archive. In the first part of Chapter One, I illustrate the way Nuclear Criticism is limited by its tendency to treat the relationship between text and world as an unresolvable *aporia.* I then argue that a workable nuclear criticism must pay attention to *both* the epistemic and material orders of nuclear violence.

This discussion of literary-critical strategies is followed by an examination of the concept of nuclearism. I argue that it is important to see nuclearism as a social process, rather than a fixed ideological position. I contend that nuclearism is a special case of militarization: the organization of civil society towards the production of violence.[12] The value of this term, I suggest, is that it enables a view of nuclearist subjectivity as both contradictory and contested. As a series of brief examples from ethnographic material confirm, nuclearism is *acquired*; it is a set of behaviours and internalized paradoxes that is produced and reproduced between subjects. Chapter One ends with two brief examples of the kind of analysis that can be expected from a critical strategy that combines an emphasis on the social process of militarization with a literary critique of nuclear texts. A reading of Richard Feynman's wartime experience, as a Manhattan Project scientist, provides initial evidence of a particularly strong technological determinism associated with atomic weapons. In the post-war period, I argue, there have been people who have understood themselves to be totally subject to the imperatives of the atomic threat.

In the chapters that follow I have traced the historical shifts in representations of nuclearism, beginning with a group of popular realist novels from the 1950s, and ending with contemporary narratives. This structure is informed by bibliographic evidence that there have been two distinct waves of publication for nuclear texts. The first wave peaks at the end of the 1950s, and is contemporary with Sputnik, and fears about fallout from atmospheric tests. The second wave peaks in the mid-1980s, and this wave is contemporary with the end of *detente*, with Ronald Reagan's Star Wars initiative, and with the deployment of ground-launched Cruise missiles in Western Europe. Numerically, the second wave was bolstered considerably by re-issued nuclear texts from the first wave, many of which had substantial new sections added to them.

Chapter Two contains an extended reading of a text from the first wave. *The Accident*, by Dexter Masters, is a widely-read 1955 novel that fictionalizes a little-

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12 See John R. Gillis, ed., *The Militarization of the Western World* (New Brunswick, New Jersey: Rutgers University Press, 1989), p. 1, for a full discussion of the term.

known death from radiation exposure.[13] I treat *The Accident* as a representative nuclear fable, focusing on the way it foregrounds the political and moral compromises of an emergent nuclearist subjectivity in post-war America. In an opening section, I identify the key nuclearist theme of self-control. A second section examines the historical context of the Manhattan Project, the atomic scientists' post-war political campaigns, and the dominance of nuclearist views in contemporary America. Chapter Two closes with an extended discussion of the marginalization of an explicit anti-nuclear politics in post-war subjectivity, and points to the significance of literary form. This intersection of narrative form, a historical referent, and the procedures of nuclearist self-control, provides a paradigm for my further investigation of the nuclear fable.

Chapter Three continues to explore early representations of nuclearist subjectivity, tracing the emergence of a confident nuclearist subject able to control atomic anxiety. I discuss the appearance of just such a subjectivity in Michael Amrine's *Secret*, and in *Nothing So Strange*, a novel by James Hilton.[14] Then, drawing on the notion of militarization, I analyse C.P. Snow's 1954 novel, *The New Men*.[15] I argue that it is important to see the emergence of a nuclearist subject as a particular reorganization of a pre-atomic social order.

Chapter Four aims to link the two waves. It is organized around a reading of two representative fantasies of post-nuclear survival, one from each wave of publication: *Alas, Babylon*, and *Fiskadoro*.[16] I argue that the limits of nuclearist fantasies about control over the self are clearly displayed in the post-nuclear landscape. In a second section, I illustrate certain recurrent elisions and silences, and discuss their significance in terms of nuclearism.

Chapter Five investigates the tropes of a nuclearist subjectivity contemporary with the second wave. I read a sociological study, Françoise Zonabend's *The Nuclear Peninsula*, alongside a popular fiction, Martin Cruz Smith's *Stallion Gate*.[17] I identify the breaks and continuities between the emergent nuclearist subjectivity of *The Accident*, and the kind of nuclearist subject that exists after four decades of the atomic age. In a concluding discussion I return to the question of assimilation and resistance in the nuclear fable.

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13 Dexter Masters, *The Accident* (1955; New York: Penguin, 1985).

14 James Hilton, *Nothing So Strange* (Boston: Little, Brown and Company, 1947).

15 C.P. Snow, *The New Men* (1954; London: Penguin, 1984)

16 Pat Frank (pseudonym of Harry Hart), *Alas, Babylon* (1959; New York: Bantam, 1977); Denis Johnson, *Fiskadoro* (1985; London: Faber, 1994).

17 Françoise Zonabend, *The Nuclear Peninsula*, trans. by J.A. Underwood (Cambridge: Cambridge University Press, 1993); Martin Cruz Smith, *Stallion Gate* (New York: Ballantine, 1987).

CHAPTER ONE: THE POLITICS OF NUCLEAR FABLES

> Los Alamos: The all-American - that is to say, totally cosmopolitan - city on the hill. Shining - with radioactivity. Cradle of the atomic age. How many acres of paper, how many gallons of ink, have been devoted to it![1]

Part 1: Nuclear Criticisms

Writers have persistently returned to nuclear themes in the five decades since Hiroshima. Referring to this nuclear archive, the critic Michael Messmer has suggested provocatively that 'more nuclear wars have been fought than any other type of war in human history'.[2] Nuclear planners employed to script war scenarios have occupied a remarkably similar cultural space to their literary counterparts, but as Paul Brians has pointed out , the most striking aspect of this archive is that 'apocalypse is often rumored but seldom portrayed'.[3] Even if there seems little desire to narrate The End itself, the sheer number of texts that organize themselves around a nuclear moment is enough to suggest a 'Scheherazade-like' faith in narrative's ability to ward off humanity's extinction.[4]

This faith is visible, for instance, in Maggie Gee's *The Burning Book*. Here the nuclear absence of The End is given a literal representation by three black pages.[5] The characters do not survive beyond this moment of burning and extinction, but the narrative does. For Gee then, words must 'beat on against death' (p. 304), but there is no such residual faith in narrative in a less well-known nuclear text, N.P. Figgis's novel *The Fourth Mode*.[6] Figgis uses a remarkably similar device to Gee in order to represent 'the fourth mode' (extinction), but the black pages here are the *final* pages.[7] By contrast, in some of the work of J.G. Ballard the End is not figured but the narrative inhabits the nuclear moment and becomes stuck in a repetitive nuclear time and

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1 Ruth Brandon, *Tickling the Dragon* (London: Cape, 1995), p. 89.

2 Michael W. Messmer, '"Thinking It Through Completely": The Interpretation of Nuclear Culture', *The Centennial Review*, 32, 4 (1988), 397-413 (p. 398).

3 Brians, *Nuclear Holocausts*, p. 54.

4 The argument is that in a nuclear context, the 'social function of literature and criticism is, Scheherazade-like, to keep us talking in order to defer the apocalypse' (Peter Schwenger, 'Postnuclear Post Card', *Papers on Language and Literature*, 26 (1990), 164-181 (p. 175).

5 Maggie Gee, *The Burning Book* (London: Faber, 1983), pp. 299-301.

6 N.P. Figgis, *The Fourth Mode* (London: Penguin, 1989).

7 Although even this is just the end of one narrative. The reader of *The Fourth Mode* will, of course, continue to encounter narrative elsewhere, in other texts.

space.[8] The specialized, often experimental narrative structures required by nuclear texts marked by The End have attracted considerable critical attention. *The Burning Book*, for instance, is read by Steven Connor as 'representative of the particular kind of resourcefulness that the novel displays in postwar history'.[9] These terminal texts are very rare. In by far the greatest number of nuclear texts The End is revealed to be in fact a new beginning. Human survival of nuclear war is an impossible fiction for Gee, Figgis, and Ballard, but it is a hugely popular trope in these post-holocaust narratives. Paul Brians records over eight hundred items in his bibliography, and another two hundred in a 1995 supplement. The vast majority of these narrate post-apocalyptic survival.[10]

As Peter Schwenger has suggested, this relentless textual inscription of the nuclear referent as the future has a certain seductive quality, as if writing about nuclear war might charm away the appearance of a real nuclear referent in the present. The perhaps unintended result of this relentless nuclear future-watching in criticism *and* literature is that it occludes the systematic preparation for war that has been a significant organizing feature of the nuclear *present* for most of the post-war period. It is therefore a contention of this thesis that a nuclear criticism worth its name must address more than this phenomenal nuclear textuality. On the other hand, as Ken Ruthven has convincingly argued, nuclear criticism should not fall back onto an unexamined technological determinism. Ruthven points to a tendency in some critiques for the real weaponry to be privileged over the cultural response. The 'principal objection to this ... [must be] that it places nuclear physics and nuclear technology outside culture by treating them as if they somehow pre-exist and therefore antedate "cultural" responses to them'.[11] Less obviously, nuclear texts can also encourage a textual determinism. For instance, the existence of a large number of narratives of nuclear war that pre-date the

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8 See, most famously, 'The Terminal Beach', in *The Terminal Beach* (1964; London: Dent, 1984), pp. 134-155.

9 Steven Connor, *The English Novel in History, 1950-1995* (London: Routledge, 1996), p. 245. The thesis that these texts mark a particular narrative topos is also visible in Brian McHale's *Postmodernist Fiction* (London: Methuen, 1987), especially in Part Six, 'How I learned to stop worrying and love postmodernism'.

10 Brians attributes this numerical difference to 'the vigorous tradition of post-holocaust adventure stories in science fiction' (*Nuclear Holocausts*, p. 54). There is a fan culture associated with the survivalist type of nuclear text, but in general, 'almost everyone seems to feel adequately informed by reading one book about nuclear war' (p. 4). See also Paul Brians, *Nuclear Holocausts: Atomic War in Fiction: A Supplement* (http://www.wsu.edu:8080/~brians/nuclear/nh-supplement.html). In this 'still incomplete' supplement Brians 'annotates only works I have actually read, and omits a host of "Radioactive Rambo" thrillers that I couldn't bring myself to open' (Web document, no page numbers).

11 Ruthven, *Nuclear Criticism*, pp. 5-6.

Manhattan Project has lead some critics to propose that 'our actual superweapons originated in their imagined history'.[12] Indeed the invention of a real atomic bomb is sometimes attributed to the influence of H.G. Wells on the atomic physicist Leo Szilard.[13] In the face of these 'unidirectional models which seek to privilege science over fiction or fiction over science', Ruthven is surely right to insist on the need for a 'transactional model of influence' (p. 5).

The desire that literature, or literary criticism even, *should* be able to engage with the nuclear threat is understandable, but the articulation of an explicit nuclear critique is essentially a property of the 1980s. It is, for instance, visible in the *Diacritics*-led articulation of a 'nuclear competence' for critical theorists; in the occasional focus of the Cardiff Text Analysis Group in *Textual Practice*[14]; in Terry Eagleton's thoughts on the relevance of literary theory to the nuclear stalemate of the mid-1980s[15]; in a special edition of *Papers on Language and Literature*[16]; and in the existence of the International Society for the Study of Nuclear Texts and Contexts (ISSNTC)[17]. Drawing on this body of work in the remainder of this section, I seek to demonstrate how the nuclear fable can provide a 'transactional' critical analysis of the relationship between the material order of nuclear weaponry and the representational order of narrative.

Nuclear Criticisms 1: Humanism

In the urgent desire for an anti-nuclear critique, the analysis of the relationship between nuclear war and literature can lead to naive affective demands on the literary text. Thus Patrick Mannix, in a recent book-length study of 'anti-nuclear fiction',

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12 H. Bruce Franklin, *War Stars: The Superweapon and the American Imagination* (New York: Oxford University Press, 1988), p. 4. For Franklin, 'fascinating as they may be as expressions of psychology and culture, American fantasies about superweapons are not primarily fantasies at all. For when they shape the thinking of inventors and leaders and common people, they become a material force. Ever since the dawn of the nation, Americans have actually been trying to build their imagined superweapons, with more and more success' (p. 5).

13 See, for instance, Richard Rhodes, *The Making of the Atomic Bomb* (London: Penguin, 1988), especially Chapter One, 'Moonshine'.

14 'Disarming Voices (A Nuclear Exchange)', *Textual Practice*, 2 (1988), 381-93.

15 Terry Eagleton, *Literary Theory: An Introduction* (Oxford: Blackwell, 1984), p. 194: 'As I write, it is estimated that the world contains over 60,000 nuclear warheads ... . Anyone who believed that literary theory was more important than such matters would no doubt be considered eccentric, but perhaps only a little less eccentric than those who consider that the two topics might be somehow related'.

16 Volume 26, 1990.

17 The society produced an occasional newsletter from 1988 to 1992, the first issues of which were edited by Paul Brians and Jean Kittrell, and funded by the Department of English at Washington State University.

concludes that 'the people of the world can discover in fiction the horror of their technology of destruction and the hope - and the sense of moral purpose - that will help them overcome that technology'.[18] This humanist response to nuclear war themes in literature relies on two assumptions: firstly, it proposes a universal reader unmodulated by specific histories and geographies ('the people of the world can discover'); and secondly, it contends that 'moral purpose' is located unproblematically in literature. In a similar vein, Antony Rowland has argued recently that 'a [nuclear] holocaust might be avoided if writers and theorists anticipate it in texts. It is an idealistic viewpoint, but if the horror of such an event is adequately communicated, readers might be jolted out of an apathetic attitude towards nuclear weapons'.[19] This is not just an idealistic viewpoint, it is also politically naive. It is true that certain kinds of anti-nuclear political rhetorics mobilize horror as an agent of change, but I can see no reason why the same affective logic could not equally produce readers that would make a renewed commitment to deterrence theory, thus becoming advocates of adequate nuclear protection.[20]

The idea of a uniform reader response to nuclear horror is simply not sustainable. This moral-affective argument also forgets Adorno's insight that 'the so-called artistic representation of the sheer physical pain of people ... contains, however remotely, the power to elicit enjoyment from it'.[21] This can be illustrated by the fact that within the genre of fictional representations of nuclear war there are texts in which nuclear war is clearly '*celebrated*' rather than reviled.[22] Thus, in Adorno's terms, 'the moral of this art ... slithers into the abyss of its opposite'.[23] The twenty volumes of the *Survivalist* series of post-nuclear-apocalypse fantasies written by Jerry Ahern between 1981 and 1990 are typical in their utilization of the post-apocalyptic space as meditations on conflict resolution through extreme violence.[24] As the hero and his

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18 Patrick Mannix, *The Rhetoric of Anti-nuclear Fiction: Persuasive Strategies in Novels and Films* (London: Associated University Press, 1992), p. 177.

19 Antony Rowland, 'Silence and Awkwardness in Nuclear Discourse', *English*, 43 (1994), 151-160 (p. 152).

20 This double-edged effect of mobilizing nuclear fear is discussed by both Paul Boyer in *By the Bomb's Early Light*, and by Spencer Weart in *Nuclear Fear: A History of Images*(Cambridge, Mass.: Harvard University Press, 1988).

21 Theodore Adorno, 'Commitment', trans. by Francis MacDonagh, in Ernst Bloch, et al., *Aesthetics and Politics*, ed. by Ronald Taylor (1965; London: New Left Books, 1977), pp. 177-195 (p. 189).

22 Paul Brians, 'Red Holocaust: The Atomic Conquest of the West', *Extrapolation*, 28 (1987), 319-329 (p. 326).

23 Adorno, 'Commitment', p. 189.

24 See, for instance, Jerry Ahern, *The Survivalist, No. 1: Total War* (London: New English Library, 1983).

family triumph over bikers, communists, cannibals, and teenage gangs, these positive apocalypses make the 'technology of destruction' attractive rather than horrific.

The humanist anti-nuclear critique also assumes a fixed link between representation and referent. Reading anti-nuclear fiction leads directly to overcoming nuclear weapons. Thus it takes no account of a post-Saussurean understanding of representation. The importance of this point in the nuclear context is emphasized by William Chaloupka in a discussion of a student debate held at Richland High School in 1988.[25] Richland is located close to the Hanford nuclear site in Washington state, and the issue of the day was the school baseball team's use of a mushroom cloud as a mascot. One student articulated the consensus view as follows: '"I don't think the student body sees [the mushroom cloud] as a symbol of destruction or weaponry. I don't think it signifies anything other than Richland High School"' (p. xii). As Chaloupka points out, it is surely necessary to take this anecdotal evidence for the gap between sign and referent seriously. The nuclear sign is not invested with a special category of agency unavailable to less ideologically contested signs.

Even if this referential problem is left on one side for a moment, there is very little empirical evidence to support a view of nuclear war texts as unproblematically didactic. John Hersey's widely-read account of Hiroshima for *The New Yorker* in August 1946 provides a good example here.[26] Hersey used the modernist artifice of documentary realism to show readers events as they affected a number of real citizens of Hiroshima.[27] There is no question that it was widely read, nor that it had a profound effect on its readership, but how much it contributed to specifically anti-nuclear opinions is debatable: 'If *Hiroshima* has enduring appeal, its precise impact on readers from 1946 to the present is difficult to gauge'.[28] Hersey's work, argues Yavenditti, 'aroused many readers but incited few of them' (p. 48). Although *Hiroshima* 'enabled American readers to reaffirm their humane sentiments and to examine their consciences, ... [it] did not require Americans to question the legitimacy of the bomb's use' (p. 48). This is an important insight, since it refutes the humanist assertion that representations

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25 William Chaloupka, *Knowing Nukes: The Politics and Culture of the Atom* (Minneapolis: University of Minnesota Press, 1992), pp. xi-xiii.

26 The text was published by Penguin in book form later the same year. All references are to the revised Penguin edition: John Hersey, *Hiroshima* (London: Penguin, 1985).

27 Hersey's presumption to speak for the victims has become less acceptable in the light of a more recent understanding of the politics of representation, often based around Holocaust literature. See, for instance, Saul Friedlander, ed., *Probing the Limits of Representation: Nazism and the "Final Solution"* (London: Harvard University Press, 1992).

28 Michael J. Yavenditti, 'John Hersey and the American Conscience: The Reception of "Hiroshima"', *Pacific Historical Review*, 43 (1974), 24-49 (p. 25).

of nuclear horror may lead inextricably to calls for the removal of the apparatus of apocalypse. Interestingly, when *Hiroshima* was republished in 1985, Hersey added a new chapter called 'The Aftermath'. This supplement detailed what had happened to the individual subjects of Hersey's account in the intervening years. Yet this is in itself evidence of the weakness of the 'persuasive strategies' of the original text. Despite its status as classroom text and its wide translation, *Hiroshima*, like many other nuclear texts, has remained firmly informative rather than didactic.[29]

Nuclear Criticisms 2: Reading the Popular

Paul Brians lists over eight-hundred pieces of writing that meet his criteria of the explicit representation of nuclear war. By contrast, Mannix discusses a handful of nuclear 'classics'. In a review of Brians's archive for *Diacritics*, Roger Luckhurst identifies a contentious quality issue surrounding nuclear war fictions. He points out that since most of the fictions are located under the sign of 'the popular' (i.e. science-fiction) their existence is often ignored by the 'protocols of selection and formation of canonical literature'.[30] The texts chosen by Mannix invariably coincide with those which Brians himself identifies as having enough 'literary merit' to rescue the form from cliche.[31] As Luckhurst suggests, Brians is caught between attempting to foreground the literary merit of 'certain texts that can act as standard bearers for the genre' on the one hand, and resenting the gap between representation and referent that accompanies the less literal order of discourse in literariness on the other.[32] As Luckhurst is keen to suggest, any analysis of nuclear texts needs to take account of both the literary quality of highly individual texts *and* the popular replication of theme and content elsewhere. In this sense, the humanist attention to didactic effect might be better replaced by 'attending to repetition *itself* (p. 94).

As I have suggested, it is clear from the most cursory dip into Brians's annotated references that reader-response to nuclear war fiction is *not* monolithic, and that there can even be a pleasure in the text of nuclear holocaust. Even those nuclear texts which narrate survival are offering a seductive fantasy of a post-apocalypse *tabula*

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29 See also Paul Boyer, 'Exotic Resonances: Hiroshima in American Memory', in *Hiroshima in History and Memory*, ed. by Michael J. Hogan (Cambridge: Cambridge University Press, 1996), pp. 143-167. Boyer notes the ambiguous effects of teaching Hiroshima material. Thus, whilst 'visual material from Hiroshima heightened apprehensions about a future nuclear war, ... print material convinced some students that Truman's 1945 decision was justifiable and wise' (p. 162).

30 Roger Luckhurst, 'Nuclear Criticism: Anachronism and Anachorism', *Diacritics*, 23, 2 (1993), 89-97 (p. 93).

31 Brians, *Nuclear Holocausts in Fiction*, p. 3.

32 Luckhurst, 'Nuclear Criticism', p. 93.

rasa at the same time as berating readers with what Luckhurst has usefully termed 'pious admonition' (p. 91). An analysis that pays attention to repetition must think in terms of genre rather than canonical texts. Previous work in this field is not very convincing. Thus, Ken Ruthven's otherwise astute critique of nuclear texts falters at the point where the nuclear text becomes a text of genre.

> To write a novel about nuclear attack ... may well begin as an attempt to shock your readers out of their complacent assumption that such a thing couldn't happen here. But as the number of such novels increases, they become correspondingly counter-productive as anti-nuclear statements. This is partly because the more of them there are in circulation the greater the likelihood that they will be treated ... merely as examples of a particular type of fiction, and just as constrained by generic conventions as any run-of-the-mill spy novel or detective novel - so much so as to be not about the real world at all. Furthermore, as each example of the genre weakens the shock-value of the very first one, they collectively rehearse the scenario we began by dreading, and rehearse it so often as to familiarize it, to normalize it and in that way to get us to accept the unacceptable as inevitable.[33]

I agree with Ruthven about the existence of a 'normalizing' effect in the nuclear war genre, but I believe that he is wrong to attribute this to a loss of reference through a simple numerical count. According to Ruthven's reading, the function of the generic nuclear text is 'shock-value', which steadily declines as more and more texts dilute that moral affect. In this sense, he offers a humanist account of genre, in which writing is basically 'constrained' by its repeated form. From this point of view, finding the 'familiar' in any given text becomes a measure of inadequacy. I want to take issue with this approach because of the way it ignores the deliberate, crafted way in which the familiar is circulated and announced in the text of genre, be it 'spy novel or detective novel', or nuclear text.[34]

The work of Albert I. Berger suggests that generic nuclear texts are read more for their particularly unrealistic articulation of 'interpersonal relations' than their moral affect.[35] These fantasy 'political, social, and economic relations' (p. 280) can be ideologically diverse. Thus, characters either threatened by or surviving nuclear apocalypse have a license to reorganize their immediate social relationships in ways that might previously have been prohibited. This can be a license to exterminate the

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33 Ruthven, *Nuclear Criticism*, pp. 42-43.

34 I have the work of Janice Radway in mind here. Radway's insistence in *Reading the Romance: Women, Patriarchy and Popular Literature* (Chapel Hill, N. Carolina: University of North Carolina Press, 1984) that romance is not simply a reactionary discourse can be mapped onto a more productive account of other genres.

35 Albert I. Berger, 'Love, Death and the Atomic Bomb: Sexuality and Community in Science Fiction, 1935-55', *Science Fiction Studies*, 8 (1981), 280-296 (p. 280).

threatening other. Equally it can be a license to celebrate difference.[36] My point is that nuclear war texts, like those of any large genre, produce (in Stephen Neale's useful phrase) 'a variety of articulations of subjectivity distributed across and constitutive of a variety of audiences'.[37] The power of this way of reading genre is that it can begin to explain the very fan culture that Ruthven dismisses as normalization. The reader of nuclear war fiction orientates him- or herself to nuclear apocalypse through identification with a particular articulation of threat. Following Neale, the interaction between specific text, generic convention and the subject is modulated by these repeated and particular 'textual codifications' (p. 19). One effect of this reading of genre is to foreground the fact that it is not possible to credit feminists *and* right-wing survivalists with bringing about the conditions for a nuclear war in the same text. Hence the difference between Ahern and McKee Charnas and their respective readerships is revealed to be a question of narrative form as a carrier of *various* ideological meanings.

The important point for my analysis of nuclearist subjectivity is that genres 'provide a means of regulating memory and expectation, a means of containing the possibility of reading'.[38] As I have suggested, the most common 'textual codification' in the nuclear text is the placing of apocalypse in the future. In terms of genre then, this futurity of the referent is a containment of reading in the important sense that it elides present-day nuclearism. Thus, I cannot agree with Ruthven that it is the numerical rehearsal of apocalypse that gets 'us to accept the unacceptable as inevitable'. Rather, it is the effacement of the present, and the consequent possibility of social change in the present. Viewed in this way, it is not surprising that descriptions of anti-nuclear political action are notable by their absence in nuclear texts. Complicity cannot lie simply in the repeated representation of apocalyptic threat, since reader-response to nuclear horror is so uncontrollable and ideologically various. Instead, the genre's capacity for 'regulation of memory and expectation' is complicit with nuclearism because of its inability to either represent a world free of nuclear weapons, or a subjectivity predicated on successful anti-nuclear politics. Thus there is a sense in which repeated representations of nuclear war might lead to an acclimatization to nuclear extinction, not through a deadening effect but through a normalization of the

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36 Thus the right-wing fantasies of Jerry Ahern (see earlier) compete for the post-apocalyptic space with feminist fantasies such as Suzy McKee Charnas's *Motherlines* (London: Women's Press, 1989).

37 Stephen Neale, *Genre* (London: British Film Institute, 1980), p. 19. Neale's account of genre in the cinema (heavily informed by Althusser's notion of an interpellated subject) emphasizes the way that a reader is 'hailed' by the text and encouraged to adopt a particular reading position. Neale's critique is directed at the cinema, but his formulations are equally applicable to nuclear war fiction.

38 Neale, *Genre*, p. 54.

apparatus of apocalypse. I shall return to this link between generic nuclear texts and contemporary nuclear reality in Chapter Four.

Nuclear Criticisms 3: *Diacritics*

Reading nuclear texts is primarily a study of violence, both latent and explicit. The critical dimensions of such a study were explored by Nancy Armstrong, Leonard Tennenhouse and their contributors in a 1989 collection of essays on the violence of representation:[39]

> While all our authors argue that politics and poetics are inseparable concerns, they locate violence at very different places within cultural production and, on this basis, can be roughly divided into two different camps. Some are interested in the symbolic practices through which one group achieves and others resist a certain form of domination at a given place or moment in time. .... Others of us are less careful of the line between ... forms of violence that are represented in writing and the violence committed through representation. They consider writing but one more symbolic practice among the others that make up cultural history. From their point of view, writing is not so much about violence as a form of violence in its own right (p. 2).

This latter position on epistemic violence was enthusiastically taken up by the loose alliance of post-structuralist critics that made up the school of 'Nuclear Criticism'. The textuality of culture was foregrounded in a sustained attempt to reconcile the insights of post-structuralism with an anti-nuclear cultural critique. The idea that there is a causal relationship between nuclear apocalypse and its morally informative representation is anathema to this school of nuclear critics. Specifically, Nuclear Criticism seeks to differentiate itself from 'abundant past efforts to imagine narrative scenarios, fictional or pseudo-documentary, that aim to represent or pretend to document a war without precedent, perhaps without a model'.[40] In other words, Nuclear Criticism sets out to reject humanist assumptions about the representational function of literature. Their manifesto, published in *Diacritics* in 1984 proposed a more sophisticated understanding of 'nuclear' determinism. Nuclear Criticism has two key aims. Firstly, to be interested in 'the sort [of criticism] that reads other critical or canonical texts for the purpose of uncovering the unknown shapes of our unconscious nuclear fears' (p. 2). Secondly, to 'show how the terms of the current nuclear discussion are being shaped by literary or critical assumptions whose implications are often, perhaps systematically ignored' (p. 2).

Central to this project was the critical understanding that the relation between

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39 Nancy Armstrong and Leonard Tennenhouse, *The Violence of Representation: Literature and the History of Violence* (London: Routledge, 1989)

40 Richard Klein, editor of *Diacritics*, cited by Luckhurst, 'Nuclear Criticism', p. 91.

text and world is not a simple one-way determinism. This carries with it a post-Saussurean insistence on the constitutive nature of discourse, and a post-structuralist scepticism towards any easy conception of that constitutive model. A typical 'nuclear critical' project proposed by the manifesto might be the exploration of the 'dialectic of mimetic rivalry' between the superpowers, in order to 'explore further the nature of its compulsion, the consequences of its application to the mutual representations and policy decisions of the antagonists' (p. 2). Thus Nuclear Criticism tries to claim an enabling competence for critical theory in the field of nuclear strategy. The textual critic's skills should, in this instance, be called upon to lay bare the internal logic and institutional effect of the rhetoric of superpower deterrence. More generally, this revitalized competence was to be exercised in diverse discursive territories as an anti-nuclear political strategy. The manifesto special issue carried pieces on constructions of the nuclear sublime in insurance policies; strategies for effective communication between nuclear states; the organization of American inner-cities as an expression of the American desire to 'experience' the bomb; and the comparative contemporary discourses of abortion and disarmament.[41]

The claim to competence was made most strongly in a contentious essay which has since been taken widely to be representative of Nuclear Criticism: Jacques Derrida's 'No Apocalypse, Not Now (full speed ahead, seven missiles, seven missives)'.[42] Restating the main case of Nuclear Criticism, Derrida argues that until now, 'nowhere has the dissociation between the place where competence is exercised and the place where the stakes are located ever *seemed* more rigorous, more dangerous, more catastrophic' (p. 22). In essence, this is a call for the humanities academy to actively engage with the nuclear threat. Textual specialists in particular have a special responsibility to engage with the 'fabulous textuality' of the nuclear age.

> Nuclear weaponry depends, more than any other weaponry in the past, it seems, upon, structures of information and communication, structures of language, including non-vocalizable language, structures of codes and graphic decoding. But the phenomenon is fabulously textual. Also to the extent that, for the moment, a nuclear war has not taken place: one can only talk and write about it. ... The terrifying reality of the nuclear conflict can only be the signified referent, never the real referent (present or past) of a discourse or text.[43]

Thus nuclear war becomes the perfect model of the gap between signification and a "real" referent. A "real" nuclear war would close the signifying gap once, *and* for

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41 See *Diacritics*, 14, 2 (1984), Special Issue on 'Nuclear Criticism'.

42 *Diacritics*, 14, 2 (1984), 21-31.

43 p. 23.

all time. This leads Derrida to argue that there is much common ground between the condition of the nuclear age and the condition of literature itself. In both cases there is no referent outside textuality. 'Total nuclear war' is a 'non-event' (p. 23) in the double sense that is has not yet occurred, and would not be available to memory or representation if it did. Peter Schwenger reads this situation as follows: 'even if it were to come to pass, a nuclear war would bring with it "no apocalypse"; for in its total and irreversible destruction, it would obliterate memory and even comprehension'.[44] Thus nuclear war is the archive's absence. For Derrida, literature is also haunted by this potential destruction of the archive. Indeed, the condition of literature is the effacement of this possibility. The movement of literature's inscription 'is the very possibility of its effacement' (p. 27). The implications for an anti-nuclear critique are as follows:

> one cannot be satisfied with saying that, in order to become serious and interesting today, a literature and a literary criticism must refer to the nuclear issue, must even be obsessed by it. This has to be said, and it is true, but I believe also that, at least indirectly, they have always done this. Literature has always belonged to the nuclear epoch, even if it does not talk "seriously" about it. And in truth I believe that the nuclear epoch is dealt with more "seriously" in texts by Mallarmé, of Kafka, or Joyce, for example, than in present-day novels that would offer direct and realistic descriptions of a "real" nuclear catastrophe (pp. 27-28).

For Derrida, the most interesting, revealing, nuclear texts are those linguistically exuberant texts in which the archive's absence can be glimpsed. The 'fabulous textuality' of the nuclear referent is, therefore, merely the limit case of a more generalized crisis in representation previously pointed to by a pre-atomic avant-garde.

Up to this point, Derrida's nuclear criticism is certainly more convincing than the humanist version. I have argued that the relationship between textuality and the nuclear age cannot be read as a simple question of mimesis. The trouble is that in that locating nuclear serious-ness in Joyce and Kafka, Derrida seems unable to address the phenomenon of the generic nuclear text. Joyce might well have more to say about the nuclear age than Nevil Shute, but in terms of readership at least, subjectivity is more likely to be modulated by an encounter with Shute than with Joyce. The critical question posed by 'No Apocalypse, Not Now' is, however, unavoidable. Even if the nuclear referent can never be 'the real referent', what *is* the relationship between the 'signified referent' of textuality and a material world in which there exists a machinery of nuclear war available to make the referent 'real'?

The way in which Derrida deals with this issue has split critics. This split is in fact signalled in his own essay with the expectation that his readers will 'find it

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44 Peter Schwenger, *Letter Bomb: Nuclear Holocaust and the Exploding Word* (Baltimore: John Hopkins University Press, 1992), p. 109.

shocking to find the nuclear issue reduced to a fable [i.e. textuality]' (p. 23). Thus Derrida recognizes the ethical imperative of an anti-nuclear critique, but is insistent that any such critique must confront the crisis of representation signalled by the unavailability of a "real" nuclear referent. This textuality, this fable of nuclear war (as Derrida names it), is locked in a mutually reinforcing relationship with the materiality of nuclear weapons, for 'who can fail to recognize the massive "reality" of nuclear weaponry' (p. 23)? In addressing this situation however,

> one has to distinguish between this "reality" of the nuclear age and the fiction of war. But, and this would perhaps be the imperative of a nuclear criticism, one must also be careful to interpret critically this critical or diacritical distinction. (p. 23)

For J. Fisher Solomon, this tortuous manoeuvring is symptomatic of an epistemological flaw at the heart of *Diacritics* Nuclear Criticism. In trying to address both the 'growing multiplication of discourse' (p. 23) *and* the 'massive "reality" of nuclear weaponry' Derrida 'simultaneously assents to th[e] deconstruction of the referent while maintaining [a] desire to cross from the word to the act, from the text of the critics to the goal-oriented world of political activity'.[45] For Solomon, this is 'not really credible' (p. 30). To express the issue rather crassly, how exactly would a Nuclear Critical reading of Joyce (for instance) be shaped into a positive political agenda? The key passage is cited in full below.

> the "reality" of the nuclear age and the fable of nuclear war are perhaps distinct, but they are not two separate things. It is the war (in other words the fable) that triggers this fabulous war effort, this senseless capitalization of sophisticated weaponry, this speed race in search of speed, this crazy precipitation which, through techno-science, through all the techno-scientific inventiveness it motivates, structures not only the army, diplomacy, politics, but the whole of the human socius today, everything that is named by the old words culture, civilization, *Bildung*, *scholè*, *paideia*. "Reality", let's say the encompassing institution of the nuclear age, is constructed by the fable, on the basis of an event that has never happened (except in fantasy, and that is not nothing at all), an event of which one can only speak, an event whose advent remains an invention by men (in all senses of the word "invention") or which, rather, remains to be invented.[46]

When Derrida implies that the 'fabulous war effort ... which structures ... the whole of the human socius' is a 'fable', this is the moment for Christopher Norris that 'No Apocalypse, Not Now' 'lean[s] over into the kind of nihilist posturing that

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45 J. Fisher Solomon, *Discourse and Reference in the Nuclear Age* (Norman: University of Oklahoma Press, 1988), p. 30.

46 'No Apocalypse, Not Now', p. 23-4.

disfigures so much of the recent debate on so-called "nuclear criticism"'.[47] Thus the essay as a whole 'fall[s] in with the postmodern-textualist line', in the sense that Derrida appears to be arguing here that 'we lack any resources ... for distinguishing "reality" from its various orders of fictive or fantasy substitute' (p. 45). Passages like this 'possess most appeal for literary theorists venturing into this field of 'nuclear criticism', treating everything (war, mass-destruction and the arms-race included) as just another 'kind of writing', a textual 'archive' that opens up marvellous new prospects for rhetorical deconstruction' (p. 46). Peter Schwenger is one of the few Nuclear Critics who have produced book-length studies of this kind. The aim of *Letter Bomb* is unapologetically textualist: 'to initiate more books, at a time in which both letter and bomb continue their tendencies to critical mass' (p. xviii). In the nuclear age, critical *motion* may be 'more useful than revelation' (p. xvii) since 'the suspended and continually postponed moment of nuclear annihilation affects all the moments of our lives in ways we are not fully aware of and cannot be, never having known any other mode of existence' (p. 4). Thus the very fact of writing itself becomes an anti-nuclear political gesture in the sense that it continues to suspend the 'moment of nuclear annihilation'. This feeds through into his analysis of 'No Apocalypse, Not Now'. Schwenger recognizes that the 'ontological status ... of the nuclear end' (p. 109) is problematical, but his critique organizes itself around the irreducibility of the aporia in Derrida's argument. As the title of one of Schwenger's essays suggests, the point is to tirelessly 'circle ground zero'[48] in criticism by accepting that the 'bombs are real ... while arguing that nuclear holocaust is not'.[49] For a textualist like Schwenger any attempt to resolve this aporia is to invite apocalypse.

The political issues here can be explained with reference to a materialist critique of 'No Apocalypse, Not Now'. In a recent article for *Textual Practice*, Joseph Cleary has attempted to rethink 'the problematic of force' in a nuclear age from within Marxist critical theory.[50] Earlier economic analyses of the nuclear age considered the 'issue of militarism' to be 'at best an issue of secondary politico-conceptual importance' (p. 453). Later attempts, exemplified by E.P. Thompson's writings, accounted for the

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47 Christopher Norris, *Uncritical Theory: Postmodernism, Intellectuals and the Gulf War* (London: Lawrence & Wishart, 1992), p. 44. Roger Luckhurst suggests that Norris uses 'No Apocalypse, Not Now' as a 'site on which a "good" Derrida is to be divided from a "bad" Derrida' ('Nuclear Criticism: Anachronism and Anachorism', p. 90).

48 Peter Schwenger, 'Circling Ground-Zero: Nuclear Holocaust and the Exploding Word', *Proceedings of the Modern Language Association*, 106 (1991), 251-261.

49 Schwenger, *Letter Bomb*, p. 109.

50 Joseph N. Cleary, 'Theory in the Age of Mechanical Annihilation', *Textual Practice*, 6 (1992), 452-477 (pp. 453-454).

economic inconsistencies of the nuclear state through an analysis of the relative autonomy of nuclear weapons. Derrida's more recent analysis takes this relative autonomy to its epistemic extreme. From Cleary's point of view,

> a fundamental problem with 'No Apocalypse, Not Now' is that by taking its starting-point from the hypothesis of a total nuclear war, rather than from the actuality of nuclear militarism, Derrida circumscribes the possibility of any effective engagement with institutional materiality of military-political force. ... For Derrida, nuclear violence is merely the logical limit, the ultimate completion, of an epistemic violence deemed to be inherent to the conditions of the production of meaning. This tends towards a distension of the concept of 'violence' that glosses any distinction between epistemic violence and material force, between individual and institutionalized force, between violence in its localized and international manifestations (p. 470).

This reads to me more as a fair comment on the textualist exuberance of Peter Schwenger rather than that of Derrida. My reading of the key passage from 'No Apocalypse, Not Now' is that Derrida is concerned precisely *not* to gloss the distinction between epistemic violence and material force. As he says, 'the "reality" and the fable ... are perhaps distinct, but they are not two separate things'. As I have been arguing, the 'fundamental problem' for a nuclear criticism *is* precisely the relationship between nuclear texts ('the hypothesis of total nuclear war') and nuclear weapons ('the actuality of nuclear militarism'). Thus, Cleary is surely misreading Derrida to suggest that he comes down on one side of the equation. As Norris is also careful to point out, it is Nuclear Criticism that has taken the 'nihilist' textualist route, not Derrida.

Nuclear Criticisms 4: The Nuclear Fable

So what is the way forward? Is it possible to move beyond Derrida's aporia to generate a materialist critique? Cleary's way past 'current theoretical impasses' is to propose an analysis of the 'complex network of institutions and formations which regulate the machinery of modern coercion'.[51] The essay therefore concludes with a brief discussion of Althusser's 'differentiation between ideological and repressive state apparatuses' (p. 473) as the best starting point for an analysis of the textual *and* the real of nuclearism. The Gulf War, though, has also demonstrated how the 'apparatuses can shift from one to another of ... [the ideological/repressive] modalities' (p. 473). It was a conflict which 'blurred any easy distinction between rhetorical nuclear fantasy and the calculus of conventional military strategy. Conventional military calculus ... was actively inhabited by the negative materiality of the nuclear referent' (p. 453). Spin-off technologies from the Allies institutional preparation for nuclear war appeared in the

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[51] Cleary, 'Theory in the Age of Mechanical Annihilation', p. 473.

desert as conventional weapons. For instance, the Gulf War saw the widespread use of depleted uranium as a *conventional* battlefield weapon, and the large-scale use of cruise-missiles without their eponymous nuclear payload. As Cleary notes, this negative materiality was also apparent in the Allied agenda to disable Iraq's nuclear capability;[52] in the apparent willingness of Israel to make a pre-emptive nuclear strike; in the ease of the media with the language of mass destruction; and in the 'predictions of catastrophic ecological fall-out of near-nuclear dimensions'.[53] This analysis of the way the Gulf War 'blurred any easy distinction' between discursive and material orders of experience illustrates why Althusser's model is both useful and outmoded. This 'slippage' between the nuclear and the conventional underlines a 'complicity between the productive and coercive dimensions of power' that is not directly accessible through Althusser's model of the superstructure (p. 473).

The epistemological gap between a materialist analysis of 'the productive and the coercive dimensions of power' and a textualist analysis of 'real' and fictive orders of experience is contained within the scare-quotes Derrida insists on placing around 'reality' in 'No Apocalypse, Not Now'. Cleary and Derrida are in fact caught in an exemplary marxist/post-structuralist impasse. If the scare-quotes were able to be absent (which, of course, they are not), then Derrida's account of the inextricable links between the 'reality' and the 'fable' of nuclear war might map precisely onto Cleary's account of 'complicity between the productive and coercive dimensions of power'. There is however, one site at which the 'real' might be said to meet the fictive such that the complicity of power becomes visible. This cultural location is the representation of the nuclearist subject. In Part 2, 'Nuclearist Subjectivity', I have demonstrated ways in which, for the nuclearist, reality *is* constructed by the fable of nuclear war. This is because the *nuclearist* subject can mobilize a material reality around a particularly nuclear transcendental signified. In other words, the way I propose to move past 'current theoretical impasses' is to watch for the moment when the nuclearist subject generates an ontology of the self by reference to nuclear weapons. Consider, for instance, the following exemplary interview conducted at Lawrence Livermore.

> Like most of his colleagues, [this particular scientist] is confident that nuclear weapons can be controlled by humans, that technical progress is unavoidable and beneficial, and that *nuclear weapons are the embodiment of a transcendent rationality*, which alone can discipline the

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52 The significance of this has been underlined recently by Donald Mackenzie: 'If, in 1990, Saddam had thought that his scientists were about to give him a nuclear arsenal, he would surely have postponed the invasion of Kuwait until they had done so'. ('Wasting Assets', *London Review of Books*, 23 January 1997, pp. 24-25 (p. 25)).

53 Cleary, 'Theory in the Age of Mechanical Annihilation', p. 452.

dark impulses leading humans to make war.[54]

This interview would suggest that there *are* places where it can legitimately be argued that the fable of nuclear war structures the human socius, albeit in a limited way. In this formulation, the nuclearist subject is constituted at the point where the apparatus of nuclear war is understood precisely and paradoxically to suspend its own use. For Derrida, 'reality' is the 'whole human socius' and it is structured by the fable of nuclear war. For the nuclearist, reality (without the scare quotes) is the human socius structured by the fable of nuclear *weapons*, by the apparatus of apocalypse. It is my contention that an examination of the way this ideological subject position has been represented since 1945 can provide the critical analysis of nuclearism required by Cleary, *and* pay serious attention to the relentless textuality of the atomic age. Nuclear fables, then, are nuclear texts in which nuclearism is the *dominant* focus.

Representing War: A Model for Nuclear Criticism?

My attempt to think through the relationship between the representation of violence, a large narrative archive, and subjectivity has one clear literary methodological precedent: Evelyn Cobley's *Representing War*.[55] Previous critical assessments of First World War literature, she argues, 'have so far been conducted mainly on cultural and thematic lines' (p. 3). Her study is therefore an attempt to bring a 'more theoretically informed methodology' to the field (p. ix). There has been a critical concentration on 'how trustworthy the reproduction of events seems to be' (p. 14), but this, at least in part, elides the epistemological gap between the horror of the battlefields and its representation. Her study proceeds from the assumption that this is a body of work 'intent on representing a historical event which was so far beyond ordinary experience that it often [seemed] unnameable' (p. ix). The war writers often 'struggle to communicate through autobiographical, fictional, and documentary means what they felt no words could adequately express' (p. x). In many texts, 'the primary motivation was less to produce literature than to provide an alternative history which was scrupulously accurate in its depiction of everyday events' (p. 6). In terms of these First World War *narratives* (as distinct from poetry), this produces an effect reminiscent of Ken Ruthven's dismissal of the nuclear text of genre: 'From a reading of previous criticism, it might be deduced that First World War narratives are too unsophisticated to deserve concerted formal attention' (p. x). Cobley's intervention in this debate moves

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54 Emphasis added. Hugh Gusterson, 'Exploding Anthropology's Canon in the World of the Bomb', p. 69.

55 Evelyn Cobley, *Representing War: Form and Ideology in First World War Narratives* (Toronto: University of Toronto Press, 1993).

beyond ideas of historical mimesis and moral humanism with a post-structuralist account of First World War narratives as the site 'of contradictory articulations' of the war experience (p. 15).

It follows that she is much less confident that First World War narratives could, or indeed should, be read as 'a literature of protest', as the traditional view demands (p. ix). Most important, she argues, is the post-structuralist insight that 'no rendering of the war experience is in a position to reproduce reality as such' (p. 15). From this point of view, the war experience can only be a signified referent, never a "real" referent. Thus,

> if reality remains inaccessible or unnameable, then all narrative renderings produce rather than reproduce the war experience. These discursive productions are consequently motivated or interested rather than objective or neutral; they are the enunciation of a historically situated subject which not only speaks but is spoken by a contradictory cultural site (pp. 16-17).

This is not to make the 'absurd' claim that the 'First World War was nothing more than a textual web', but it is to suggest that 'formal choices determine, at least to some extent, what kind of events can be included and how they are to be treated' (p. 15). The prescience of Cobley's critique is visible in the new wave of First World War narratives by writers such as Pat Barker and Sebastian Faulks, and published after her own text. Geoff Dyer, for instance, has recently pointed to the effective regulation of memory and experience through form in Sebastian Faulks's *Birdsong* (1994). The events that can be included this text are so determined and mediated by certain key representations of the war experience (Sassoon, Owen, Remarque) that one character's comment that he "seemed unable to say things without suggesting they were quotations from someone else' ... has [an] ironic relevance' for the novelistic project as a whole.[56] For Cobley, then, a study of *form* is the critical move that suspends textualist nihilism.

Clearly, there are parallels here with my own critique of humanist nuclear criticism's insistence on a moral effect, and Nuclear Criticism's potential to disengage from material political concerns. Cobley's approach would seem to confirm that an analysis of the form of nuclear narratives would be a valid literary response to Derrida's aporia of the "real" and the fable. Thus, her point is contiguous with my own earlier suggestion that the nuclear text needs to be read as a 'regulation of memory and experience, and a containment of reading'. Cobley's more general point is that 'since formal choices are never ideologically innocent, they must be taken into account in discussions of narratives about a historical crisis of consciousness like the First World

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56 Geoff Dyer, *The Missing of the Somme* (London: Penguin, 1994), p. 80.

War'.[57] They must surely also be taken into account in discussions of narratives about a historical crisis of consciousness like atomic power. The question, of course, is precisely how?

Cobley articulates the marxist/post-structuralist impasse by referring to Susan Wells's comment that for the post-structuralist Paul de Man 'history is a system of tropes [whereas] for [the Marxist Fredric] Jameson, tropes are the clever disguises of history' (cited, p. 21). Her own way past this impasse is to 'explore the ideological implications of attempts to close the gap separating experience and discourse' (p. 21). Derrida's nuclear aporia of the fable and the war can be mapped precisely onto Cobley's sense that 'discourse produces the referent (the war experience) at the same time as the referent constrains the discourse' (pp. 21-22). They are distinct, but they also 'are not two separate things'. Cobley's exploration is ultimately textualist, and indeed her study neither 'condemns nor exonerates; it seeks to preserve the complexities of the narratives and to problematize the formal choices from an ideological perspective' (p. x). Like the Nuclear Critic, Peter Schwenger, she is not prepared to stop 'circling' the referent. Nevertheless, her critical methodology for exploring the aporia of experience and discourse can provide one part of my own critical analysis of the nuclear fable.

Her second enabling move is to refer to Fredric Jameson's sense, in *The Political Unconscious*, that the 'individual narrative, or the individual formal structure, is to be grasped as the imaginary resolution of a real contradiction'.[58] This is as far as Cobley wishes to take Jameson's arguments. Tempting as it might be to read First World War narratives for their revelation of a master narrative of history (Jameson's third political horizon), she limits herself to appropriating Jameson's ideological reading of the individual text to 'investigate how different modes of representation denote different ways of imagining one's relationship to the 'real conditions of existence'' (p. 23). As my next section will make clear, there are very strong reasons for not being tempted to read the nuclear text as a master narrative of post-war history. I agree with Cobley (and Derrida), that discourse (the fable) cannot be said to simply structure reality ('the whole human socius'). However, my analysis will proceed from this methodological understanding that different narrative strategies in the individual nuclear fable can be read as an ideological negotiation of the real conditions of nuclearism. Furthermore, as I argue below, recent sociological studies of nuclearist social practice suggest that in the case of nuclearism it may be possible to shift the

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57 Cobley, *Representing War*, p. 15.

58 Cited by Cobley, p. 23. Original source is Fredric Jameson, *The Political Unconscious: Narrative as a Socially Symbolic Act* (London: Routledge, 1989).

critical balance even further towards a materialist critique of the relationship between narrative and nuclear weapons.

Part 2: Nuclearist Subjectivity

If there is a nuclearist subjectivity in the atomic age that has been constructed at the meeting point of productive and coercive orders, of the real and the fictive, what does it look like? Secondly, what allows this subjectivity to be isolated from late-capitalist subjectivity in general? These are the questions that this second section addresses. It is my primary contention in this section that it *is* possible to isolate a subjectivity predicated on nuclearism. This requires some initial comments on my use of the term nuclearism.

The key theorists of nuclearism, Lifton and Falk, use the term to provide an overview of the structural changes in the Western political state since 1945. The central concern for Lifton and Falk is the way in which we have allowed nuclear weapons to become an organizing principle for the modern social order. 'Ever since Hiroshima', they argue, 'a whole set of anti-democratic political arrangements have emerged and become permanent features of the governing process in the name of national security. ... The red scare was the superficial justification, but far more profound was the structural effects of nuclear weaponry and war planning'.[59] The political and psychological landscape of America (in particular) had been disfigured by the imperatives of that coercive adaptation to the atomic age. Nuclear weapons 'have reshaped our political lives ... in ways that have not been generally noticed. The state of readiness required to fight a war of ultimate survival on a few minutes' notice has resulted in a permanent pre-war posture' (p. 140). Even worse, from Lifton's and Falk's psycho-political perspective, in the 1980s it had become impossible to conceive any form of social reality that was not predicated on the relentless build-up of the apparatus of apocalypse. Nuclearism, then, was the 'embrace of [nuclear] weapons as a solution to a wide range of human dilemma, [and] most ironically that of "security"'.[60] In practice, this meant that the forms of atomic activity might be variable and even subject to varying degrees of public debate, but the unavoidable nature of those activities always remains unchallenged at the level of state politics.[61] Thus,

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59 Robert Jay Lifton and Richard Falk, *Indefensible Weapons: The Political and Psychological Case against Nuclearism*, updated edn. (New York: Basic Books, 1991), pp. 139-140.

60 Lifton and Falk, *Indefensible Weapons*, p. 140.

61 It was not until the late 1950s and early 1960s that the term 'nuclearism' was widely used in this context. Thus, 'in the great debate on nuclear disarmament .. the advantages of sober logic and clear thought have usually lain with the anti-unilateralists, sometimes called the nuclearists' (*Times Literary Supplement*, 7 December 1962, p. 948).

> some forms of nuclearism are more reckless than others, and we should support wholeheartedly measures designed to reduce immediate risks and cost associated with particular weapons systems, procurement programs, doctrines of use and militarist leadership. And yet such campaigns for prudent management are mounted, if at all, firmly *within* the boundaries of nuclearism.[62]

The crucial point that emerges from their analysis is that to be nuclearist is not necessarily to be pro-nuclear in a political sense. On the contrary, nuclearism is understood to be beyond politics. It is an apolitical display of pragmatism in the face of unavoidable danger. For instance, the nuclearist commonly subscribes to the notion that nuclear technology cannot be 'un-invented'.[63] From this point of view, it follows that nuclear systems must be rigorously tested, monitored, inspected and supervised. To be nuclearist is to make a virtue of control, of managerialism, and of statistics.

I recognize the force of the political account of nuclearism offered by Lifton and Falk, but it remains too problematic to use without proviso. When they make a distinction between 'the citizenry' and 'entrenched interests' (see above) this is clearly a necessary call to political protest. However, the issue is much more complex than the political binary of this activist rhetoric can allow. Research in this area suggests that there might be only '650 nuclear decision-making positions ... worldwide', but this is the tip of an enabling apparatus of nuclear apocalypse.[64] For instance, at the end of the Cold War there were an estimated 'five hundred thousand highly skilled scientists and engineers devot[ing] their talents to organizing for violence'.[65] Scientists and engineers are of course only a small percentage of any laboratory's staff, so to this figure needs to be added secretarial staff, management functions, construction workers, and other support personnel. Typically a nuclear weapons laboratory or factory will employ thousands of people, and more often than not, the laboratory will be part of a much larger civilian university community.[66] Thus the social effect of the laboratory is not confined to its high-security fence. Often entire communities are economically tied-in to the laboratory. Laboratory scientists sit on school boards; they are local elected officials; they are team coaches; they are members of a wider community in which the dominant view of weapons scientists is necessarily positive. In these situations, a

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62 Lifton and Falk, *Indefensible Weapons*, p. 136.

63 A point I take up at the end of this Chapter.

64 Oxford Research Group study cited by Jeanne Vickers in *Women & War* (London: Zed Books, 1993), pp. 44-45.

65 Gillis, *The Militarization of the Western World*, p. 9.

66 For instance, the Lawrence Livermore Laboratory is managed by the University of California.

political attack on nuclear weapons rapidly becomes a political attack on an entire community. Thus the distinction between citizenry and entrenched interests is considerably blurred in the nuclear context.

In order to take account of this I have also drawn on theories of militarization. This is a recent term developed in the social sciences in order to name the 'complex and tense social process in which civil society organizes itself for the production of violence'.[67] Militarization 'is less a thing than a process, ... an ever changing set of relationships between military and civil society' (pp. 2-3). When used in criticism, this has three important effects. Primarily, the post-World War Two elision of distinctions between soldier and civilian can be opened up to sustained analysis. Secondly, it provides a tool for discussing the new relationships between gender and the military. Finally, militarization recognizes a disciplinary shift towards a social history of the military rather than a political history implied by the older term it replaces, militarism. Unlike militarism, militarization cannot be 'projected onto the "other," as if it did not apply to us' (p. 3). The importance of this point then needs to be mapped onto the use of nuclearism as a critical term. As I have suggested, it may not be possible to make clear sociological distinctions between 'citizenry' and 'entrenched interests' in the nuclear state. Thus, in what follows, my use of the term nuclearism needs to be read as referencing a socially-diffuse process of militarization rather than a political position. It simply may not be possible to attribute nuclearism to a convenient other. 'Sad though it may be for some', writes William Chaloupka, in the context of a nuclear state, 'there is no warrior available to contrast with us more sensitive souls'.[68]

Theorists of militarization have argued specifically that traditional analysis of international politics has been 'slow to come to grips with the "politics" of the civilian bureaucracies, of interest groups, and of supersecret agencies, all those extra-parliamentary and extra-constitutional activities that today often have a greater determinative power than cabinet meetings and congressional votes'.[69] It is in this sense that militarization must be a key term for the analysis of nuclear war, since the removal of conventional structures of military agency is a central feature of the nuclear state. Elaine Scarry, for instance, has argued persuasively that nuclear weaponry is unique in the way it has 'modulate[d] the degree of participation of the combatants'.[70] Conventional structures of military agency have historically moved towards investing

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67 Gillis, *The Militarization of the Western World*, p. 1.

68 William Chaloupka, *Knowing Nukes*, p. 41.

69 Gillis, *The Militarization of the Western World*, p. 4.

70 Elaine Scarry, *The Body in Pain: The Making and Unmaking of the World* (Oxford: Oxford University Press, 1987), p. 151.

the weapon rather than the soldierly body with the injuring power. In this way, for example, the 'introduction of the crossbow eliminated the need for a class of knights' (p. 151). This process is broken by nuclear weapons.

> It should be noticed that although more and more of the injuring "skill" is becoming built into the weapon itself, thereby freeing the human body from the requirements of learning these skills, some level of skill is always needed of the body: the guns do not move onto the field of battle by themselves - each requires a human body to carry it there, aim it there, and fire it there. This minimal requirement, of course, disappears with the introduction of nuclear missiles. ... So completely have the formerly embodied skills of weapon use been appropriated into the interior of the weapon itself that no human *skill* is now required; and because the need for human skills is eliminated, the need for a human presence [on the battlefield] to fire it is also eliminated; and because the human presence is eliminated, the human act of *consent* is eliminated. The *building-in of skill* thus becomes in its most triumphant form, the *building-out of consent*. It is, of course, only at the 'firing' end of the weapon that human presence is eliminated: their bodies' presence at the receiving end is still very much required. (pp. 151-152).

Thus, the concept of militarization also allows a more process-orientated discussion of the nuclear phenomena of the collapse of 'apparently self-evident distinctions like military/civilian, war/peace, militaristic/pacifistic' (p. 4). Nuclearism, therefore, is more than a set of political attitudes. Indeed, as the Nuclear Critics have also pointed out, it has developed its own institutional framework and textual archive. Carol Cohn has characterised the elite amongst nuclearists as defense intellectuals. These are the:

> civilians who move in and out of government, working sometimes as administrative officials or consultants, sometimes at universities or think tanks. They formulate what they call "rational" systems for dealing with the problems created by nuclear weapons: how to manage the arms race; how to deter the use of nuclear weapons; how to fight a nuclear war if deterrence fails. It is their calculations that are used to explain the necessity of having nuclear destructive capability at what George Kennan has called "levels of such grotesque dimensions as to defy rational understanding." At the same time, it is their reasoning that is used to explain why it is not safe to live without nuclear weapons. In short, they create the theory that informs and legitimates American nuclear strategic policy.[71]

It is the very mobility of 'defense intellectuals' through the various structures of the nuclear state that demands an understanding of nuclearism as social process. With this understanding of nuclearism as a social process of militarization in mind, it is possible to begin isolating a subjectivity predicated on nuclearism.

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71 Carol Cohn 'Sex and Death in the Rational World of Defense Intellectuals', *Signs: A Journal of Women in Culture and Society*, 12 (1987), 687-718 (pp. 687-688).

Locating the Nuclearist Subject

Hugh Gusterson begins his ethnography of the Lawrence Livermore Laboratory in California with an arresting tale of nuclear evolution attributed to E.L. Doctorow: 'The bomb was first our weapon. Then it became our diplomacy. Next it became our country. Now it's become our culture'.[72] At one level, this is an attractive account of the way Western culture has increasingly organized itself around the atom. The problem with this account, as I see it, is that it leaves no space for resistance to that narrative. Do we really have such a deterministic relationship with the atom?

Since 1945 we have all been exposed to varying degrees of low-level radiation as a direct result of the world-wide nuclear programme.[73] 'Plutonium', writes the poet Reg Saner, 'is the perfect industrial murder. Two decades from now, if my lungs betray some long-hidden, accelerated derangement, there'll be no clues to that cancer's having begun this afternoon, with a given breath'.[74] We are, therefore, subjects of the atomic age to the extent that we are all *subject to* fallout and nuclear pollution in varying degrees, but as Saner implies this is a subjectivity marked by the statistical probabilities of the weather, genetic susceptibility, and the type of ionizing radiation. My point is that although the existence of the atomic bomb has undoubtedly had profound effects on consciousness, any homogenization of human subjectivity under the universal sign of the atomic bomb should be treated with scepticism. There is strong anecdotal evidence to suggest that the nuclear threat is not experienced universally. It seems to me that Saner's account is very much better than Doctorow's as an allegory for the way we have experienced the nuclear threat. The nuclear threat has also been a question of geography, identity, and historical circumstance.

Living and working in Southampton it occasionally happens that I am in the right place at the right time to hear the siren that signals the end of a particular shift at the Pirelli works. Even seven years after the notional end of the Cold War, this noise can still transfix me with nuclear fear. As soon as I remember once again what I always seem able to forget, that this *is* just a works siren, the moment passes. The interesting thing about this moment is that I experience this fear as anachronism. I can date it

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72 Hugh Gusterson, *Nuclear Rites: A Weapons Laboratory at the End of the Cold War* (Berkeley: University of California Press, 1996), p. 1.

73 Recently documented by Arjun Makhijani, Howard Hu, and Katherine Yih, eds, in *Nuclear Wastelands: A Global Guide to Nuclear Weapons Production and its Health and Environmental Effects* (London: MIT Press, 1995). Previous influential works in the field include the International Physicians for the Prevention of Nuclear War report, *Radioactive Heaven and Earth: The Health and Environmental Effects of Nuclear Weapons Testing in, on, and above the Earth* (London: Zed Books, 1991), and Rosalie Bertell, *No Immediate Danger: Prognosis for a Radioactive Earth* (London: Women's Press, 1985).

74 Reg Saner, 'Technically Sweet', *The Georgia Review*, 42 (1988), 719-750 (pp. 721-722).

precisely to September 1984, when I (belatedly) became aware of the presence of cruise missiles in Britain. For me, the Pirelli siren doesn't signify nuclear apocalypse in any general sense, but very precisely the launch of Cruise from Salisbury Plain, despite the fact that I understand that this can have no basis in the reality of 1997. This brief anecdote suggests that the precise form of nuclear fear has a generational aspect. A few further anecdotes of threat from my colleagues and students can illustrate this very quickly: in 1984, a teenager measures the time it takes to cycle home from school (and is it less than the 3 minutes of the apocryphal warning?) because he lives near the naval base in Gosport; in 1962, a graduate decides to change career because the Cuban missile crisis has not ended in war; in 1980, a mother buys twenty bottles of windowlene (for the nuclear light), and only rediscovers them in 1996; in 1997 a history graduate claims to have been unaffected by the nuclear threat, and to have been politicized not by the bomb, but by the invasion of Hungary.[75] The point is that it is not possible to make generalizations about the nuclear threat. As I suggested earlier, there are good reasons for not being tempted to read the nuclear text as a master narrative of post-war history. This informed the deliberate limitation of my query at the start of this chapter. Thus, I began by asking what would a non-universal subjectivity that saw *adaptation* to the nuclear threat as manageable, unproblematic and even desirable, look like?

Michael J. Carey is one of the few people to have attempted to historicize the nuclear threat.[76] Carey's attempt to put some empirical data into the debate about the cultural impact of the bomb led him to research 'the significance of the bomb to the generation of 1940-1950' (p. 20). This was the generation identified as 'the first generation to grow up in the shadow of nuclear war ' (p. 20), and 'were separated from preceding and following generations, by the profound influence of Hiroshima, the Cold War, the arms race and the rhetoric of annihilation that dominated international politics in the 1950s' (p. 20). He found that nuclear fear coalesced around four themes: 'the mystery of the age', 'a world of victims', 'absurd death', and a 'shared imagery' (pp. 21-23). He identified three 'specific styles of response: the overtly alarmed, the bomb managers, and the unavowedly concerned' (p. 23). In terms of the present study, the most interesting group are the bomb managers, for they are the ones who might be said to have actively adapted to the nuclear age. The bomb managers, writes Carey, are

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75 Drawn, with thanks, from colleagues and students at LSU Southampton involved with the level three module, 'Writing and War in Contemporary Culture'.

76 Michael J. Carey, 'Psychological Fallout: Interviews with Members of the Generation of the 1940s on the Effects of Nuclear Weapons on their Lives', *Bulletin of the Atomic Scientists*, 38 (1982), 20-24.

people who have 'made their own tenuous peace' (p. 23). The key word here is 'tenuous'. These people 'may have had experiences as vivid and memorable as the overtly alarmed, but they attempt to prevent memories or present knowledge from playing more than a transitory role in their lives' (p. 23). One interviewee articulated what was at stake in this self-control: '"I just have to forget about those possibilities, guard against them as much as I can, and where I can't, sort of push them away and continue."' (p. 23). In the space of this article Carey does not attempt to suggest *how* people 'prevent memories', 'forget about possibilities', or 'guard against them'. These are, of course, the pertinent questions that any sociological study of nuclearist subjectivity would have to address. I read the 'bomb managers' of this 1940s generation as proto-nuclearists, in the sense that they have eliminated the possibility of there being no atomic weapons, and their behaviour thus becomes a question of pragmatically 'getting on with it'. They are, therefore, prime candidates for the adaptation to the atomic age with which I began this chapter.

Carey has provided a sketchy outline, but in the late eighties and early nineties several works from anthropology and sociology tried to address this question more precisely. Common to these works was an investigation of the enabling heart of the nuclear state. Thus they carried out research in nuclear weapons laboratories, in nuclear maintenance depots, in reprocessing plants, and in communities dependent on the financial support of the nuclear apparatus. Grace Mojtabai, who carried out her research at the Pantex Final Assembly Plant in Amarillo, Texas, found that her subjects were so thoroughly assimilated to nuclear culture that they claimed not to think about it. One engineer she interviewed told her: 'I've been associated with nuclear weapons thirty years, all my adult life. I guess I haven't given it a great deal of thought'.[77] This kind of inability to be reflexive about the latent violence of what they did every day was very typical, and was generally accompanied by an unflappable certainty in their profession. This man is clearly a 'bomb manager' in Carey's terms, able to prevent 'present knowledge from playing more than a transitory role' in his life.

When the sociologist Debra Rosenthal made a study of workers at America's Sandia National Laboratory (makers of non-nuclear components for nuclear weapons), she immediately noticed the high concentration of people who had 'adapted' to the nuclear age, in the sense that they perceived their work with nuclear weapons to be both valuable and necessary. As Rosenthal puts it, these people are characterized by a belief that 'we can prepare indefinitely for both genocide and suicide without ever giving in to

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77 Grace Mojtabai, *Blessèd Assurance: At Home with the Bomb in Amarillo, Texas* (Albuquerque: Univ. of New Mexico Press, 1986), p. 71.

the temptation to try it'.[78] This is a distinctly self-conscious management of the bomb, in the sense that possibilities are actively pushed away. In fact, a pattern emerges from this research, in interview after interview, that working with nuclear weapons is somehow understood to be more 'peace-full' than opposing their existence. This belief is itself a version of one of the essential paradoxes of nuclearism: that making more and better nuclear weapons is not warlike behaviour, and is no obstacle to peace. In his most recent study Hugh Gusterson has noted that:

> as weapons scientists mature, socially and ideologically, they develop a strong commitment to what we might call the 'central axiom' of laboratory life: the laboratory designs nuclear weapons to ensure, in a world stabilized by nuclear deterrence, that nuclear weapons will never be used.[79]

From an anti-nuclear perspective this is meaningless and dangerous, but that is hardly the point. The interesting point here is that Gusterson is referring to a social process of maturing: the paradox is learnt behaviour. This contrasts with the psychological perspective of Carey which tends to assume a fixed subjectivity acted on by nuclear fear. In his emphasis on strategies of prevention and forgetting, Carey is therefore typical of previous work in the field. This has 'tended to present the processes involved [in becoming a weapons professional] as largely repressive or subtractive: ethical questions are avoided, feelings are denied, fears are repressed' (p. 41). Gusterson admits that there must be an element of

> learning not to attend to particular fears, feelings, and questions [but] it also involves the active learning of discourse, feelings, and practices. To the example of ethics: rather than ignore the ethical dilemmas of their work, weapons scientists learn to resolve these dilemmas in particular socially patterned ways. In other words, becoming a weapons scientist involves much more complex and creative psychological processes than avoidance and repression (pp. 41-42).

Thus, in modern nuclear weapons laboratories one *acquires* the subject positions of nuclearism. Looking back to Joseph Cleary's materialist account of the 'problematic of force', the weapons scientist is perhaps where productive and coercive orders of power meet in the nuclear age. The idea that nuclear weapons are 'peace-full' is only credible if 'nuclear weapons scientists ... [are] convinced in their bones that deterrence will not break down; they must have internalized as part of their feeling and thinking selves the conviction that the weapons really will not be used' (p. 57). Once again, the interesting question from my point of view is, *how* does this internalization take place? How do

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78 Debra Rosenthal, *At the Heart of the Bomb: The Dangerous Allure of Weapons Work* (New York: Addison-Wesley, 1990), p. 230.

79 Hugh Gusterson, *Nuclear Rites*, p. 56.

nuclearists learn to manage the bomb in 'socially patterned ways'? This is the point at which my earlier commentary on a literary nuclear criticism intersects with the sociological account. The narrative representation of these social patterns in the nuclear fable needs to be read as the site of 'the imaginary resolution of a real contradiction' (Jameson). It is my contention that because narrative conventionally represents subjectivity as a process in time and space, an analysis of the nuclear fable might uniquely make visible the enabling internalisation of the paradoxes of nuclearism.

In order to provisionally connect the epistemological strands of literary critique and sociology I want to signal the importance of narrative representation in this process by briefly considering another article of nuclearist faith: the idea that nuclear weapons cannot be 'uninvented'. This issue has been the focus of much recent work by Donald Mackenzie.[80] Mackenzie points out that nuclear weapons are just a technology, and like any other technology can become obsolete. In this post-Cold War decade there are two reasons why nuclear weapons might become obsolete. One is that the delivery of conventional weapons has become so accurate that the wide-area effect of nuclear weapons is fast becoming unnecessary. Thus in a recent summary of his work, Mackenzie argues that since 'the missile that can be guided to enter a particular window of a particular building will shortly be a reality ... few military targets [will still] require the explosive force of a nuclear warhead'.[81] The second reason, the potential 'disconnection from the infrastructure that supports them' (p. 24), is inherent in all technologies. Nuclear weapons are vulnerable to this effect since even 'a simple nuclear warhead can contain up to several thousand parts [and] many of these parts need periodic inspection, maintenance and replacement' (p. 24). Thus, the removal of this infrastructure would create significant problems for a nuclear arsenal.

Mackenzie's key argument is that this infrastructure is particularly precarious at the level of practical knowledge of weapons design and maintenance. Although 'the physics of nuclear fission and fusion is written down in the textbooks for ever, ... there is much more to creating a functioning technology than explicit knowledge of this kind' (p. 25). Also required is a high level of 'tacit knowledge and craft skill' (p. 25). A weapons scientist needs to deal with the fact that 'even the most detailed computer simulation of a warhead is an approximation to reality, not a mirror of it. ... As the design of a weapon becomes more sophisticated, so the 'feel' becomes more important'

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80 For the fullest account, see Donald Mackenzie and G. Spinardi, 'Tacit Knowledge, Weapons Design, and the Uninvention of Nuclear Weapons', *American Journal of Sociology*, 101 (1995), 44-99. Tacit knowledge is becoming widely recognised by institutions outside the nuclear industry, particularly in the business concept of a 'learning organization'.

81 Mackenzie, 'Wasting Assets', p. 24.

(p. 25). Textual knowledge can be passed systematically, but the necessary tacit knowledge of the peculiarities of production processes 'dies with its possessor, unless it is passed on face to face, hand to hand' (p. 25).

For Mackenzie, this opens up the intriguing possibility that if the 'design and production of nuclear weapons were to cease, let us say for a couple of generations, then re-creating them - especially re-creating the sophisticated, miniaturised warheads needed for relatively easy delivery - would be significantly harder than conventional wisdom allows' (p. 25). For me, the way in which tacit knowledge must be passed on from person to person opens up an intriguing potential of the nuclear fable. Tacit knowledge must include the 'active learning of discourse' in Gusterson's terms, and as Bruno Bettelheim has pointed out, fables are 'folk tales handed down from generation to generation'.[82] In what follows I have tried to preserve this sense of the nuclear fable as a didactic narrative passed between nuclearist subjects.

A Nuclear Fable

I argued at the beginning of this chapter that the absence of detailed stories from the Pacific Front in August 1945 pushed the American media towards other sources. Alongside fantasies of atomic destruction of American cities were interviews and statements from the atomic scientists. This group of people who could 'dream' of the bomb, already occupied a peculiar space in the public imagination. According to the news reports they held within them the secret of the atom, and as such they were the first men of a new atomic age, but it was clear they had also witnessed last things. After the explosive-lens specialist George B. Kistiakowsky had watched the first atomic test at Alamogordo, New Mexico, he was 'sure ... that at the end of the world - in the last millisecond of the earth's existence - the last man will see what we have just seen!'[83] It is clear from the many accounts of that period that the scientists understood themselves as the vanguard of a potentially terminal generation. One clear example of this would be the tirelessly-repeated quote from the *Bhagavad Gita* attributed to Robert Oppenheimer, the Manhattan Project technical director, to the effect that he had 'become Death'.[84] Their scientific knowledge appeared to place them in a unique position to understand the mechanics of the atomic age as well as the apocalyptic temper.

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82 Bruno Bettelheim, *The Uses of Enchantment: The Meaning and Importance of Fairy Tales* (London: Thames and Hudson, 1976), p. 42.

83 Quoted by William L. Laurence, official journalist to the Manhattan Project, in his *Dawn Over Zero: The Story of the Atomic Bomb* (New York: Alfred Knopf, 1946), p. 9.

84 Quoted, for instance, in Robert Jungk, *Brighter Than A Thousand Suns: A Personal History of the Atomic Scientists*, trans. by James Cleugh (London: Penguin, 1960), p. 183.

Richard P. Feynman was typical of the small group of young atomic scientists who emerged in late 1945 from the secret world of the Manhattan Project. Feynman and around two hundred others had been the central technical elite of a project that cost two billion U.S. dollars and involved over one hundred thousand people at its peak in fiscal year 1944/5.[85] In his memoirs, Feynman's colleague Freeman Dyson recalls how he gave a lift to Feynman in the summer of 1946. Feynman at this time 'found it amazing that people would go on living calmly in places like New York as if Hiroshima had never happened'. As they drove through the industrial heartland of Cleveland and St. Louis, Feynman 'was measuring in his mind's eye distances from ground zero, ranges of lethal radiation and blast and fire damage'.[86] A world-view this bleak was not unusual in America in 1946, but to be able to articulate that view as a personal geography of threat was quite exceptional. It required a sophisticated understanding of strategic atomic targeting, an appreciation of radiation effects, and kill-ratios. None of these were in the public domain at this time.

The interesting point here is the parallel with the contemporary American fascination with an apocalypse at home. This calculated, statistical, awareness of threat is founded on a curious break with experience. The articulation of this atomic subjectivity requires triangulation points from a fictional geography. Cleveland must be inscribed with the concentric circles of survival-rates that are the consequence of its imagined status of strategic target. Thus, it requires the translation of a fantasy of threat into a personal calculation of survival. As I discuss in later chapters, this is a key trope associated with the nuclearist subject.

Confirming Dyson's impressions of his state of mind in 1946, Feynman himself recalls a moment in New York.

> I looked out at the buildings and I began to think, you know, about how much the radius of the Hiroshima bomb damage was and so forth . . . How far from here was 34th St? . . . All those buildings, all smashed - and so on. And I would go along and I would see people building a bridge, or they'd be making a new road, and I thought, they're *crazy*, they just don't understand, they don't *understand*. Why are they making new things? It's so useless.[87]

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85 For a full financial analysis see Paul Forman, 'Behind Quantum Electronics: National Security as Basis for Physical Research in the United States, 1940-1960', *Historical Studies in the Physical and Biological Sciences*, 18 (1987), 149-229.

86 Freeman Dyson, *Disturbing The Universe* (London: Harper & Row, 1979), p. 60-61. This is one of a plethora of scientific memoirs reflecting on the atomic era. Dyson takes a liberal anti-nuclear perspective, being supportive of the Nuclear Freeze movement, but opposed to unilateral disarmament.

87 'Los Alamos From Below', in *Reminiscences of Los Alamos, 1943-1945*, ed. by Lawrence Badash, Joseph O. Hirschfelder, and Herbert P. Broida, Studies in the History of Modern Science, 5 (Dordrecht, Netherlands: Reidel, 1980), pp. 105-132 (p. 132). In a practical sense Feynman was

Speaking thus at Los Alamos in 1975, the point of Feynman's anecdote was to effect a reconciliation with that sense of an absent future. 'I've been wrong for 30 years', he told his audience, 'about it being useless making bridges and I'm glad that those other people had the sense to go ahead' (p. 132). Feynman's experience provides initial evidence of a particularly strong technological determinism associated with atomic weapons. It suggests that in the post-war period there have been people who have understood themselves to be totally subject to the imperatives of the atomic threat. This is the starting point for my next chapter.

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right to insist that the workers did not understand, since the data from the Hiroshima blast were official secrets.

CHAPTER 2: *THE ACCIDENT*, A REPRESENTATIVE NUCLEAR FABLE

Introduction

This chapter introduces *The Accident*, a widely-read 1955 novel that fictionalizes a little-known death from radiation exposure.[1] *The Accident* is a representative nuclear fable, foregrounding the political and moral compromises of an emergent nuclearist subjectivity in post-war America. The novel articulates the contradictory processes that legitimate nuclearism in ways that are paradigms of narrative strategies in the first wave in general. However, *The Accident* also draws upon an unusual strategic manipulation of realist conventions that produces a rare textual resistance to the tropes of nuclearism. It is this narrative tension that makes *The Accident* especially interesting.

In Part One, 'Strategies for the Control of Atomic Anxiety', I begin by outlining the political engagement of the atomic scientists in the years immediately after Hiroshima. I identify the public fear of radiation, and the rapid marginalization of arguments for unilateral disarmament. I then read *The Accident* as a response to unresolved political debates from the mid- to late-nineteen-forties. I discuss how early nuclearist subjectivity depended upon a discourse of self-control, drawing attention to key tropes and metaphors. Finally, I draw attention to the relationship between *The Accident* and an earlier text, *One World or None*.

In Part Two, 'Science and the Bomb', I read *The Accident* against the dramatic wartime changes in the institutions of atomic physics. I first discuss the centrality of the Manhattan Project to American post-war socio-economic organization. Then I examine the political motivations of the atomic scientists, questioning why so few left the Manhattan Project when it became clear that Nazi Germany did not have a bomb-programme. I discuss the extent to which the main character in *The Accident*, Louis Saxl, might be representative of his generation, and find historical parallels between the suppression of dissent in *The Accident* and post-war nuclearism.

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1 An early review of *The Accident* in *Kirkus* caught the way in which the novel would be taken up by the public: although the reviewer was unsure 'just how it will be received', there was a sense that 'word of mouth enthusiasm should start and keep people reading and talking about it' (*Kirkus*, 1 February 1955). This mixture of critical equivocation and popular reponse is also visible in the *New York Times*. After initial rejection in the book pages ('the over-all effect is ... less than satisfactory' (Don Mankiewicz, 'Death at Los Alamos', 24 April 1955, p. 30)), *The Accident* was soon elevated to the 'Books of the Times' column on 10 May (Orville Prescott, 'Books of the Times', 10 May 1955, p. 27). In general, reviews of the first edition were split between praising the technical accuracy and damning a perceived portentousness of theme (see, for instance, Douglas Hewitt, 'New Fiction', *Manchester Guardian*, 25 October 1955, p. 6). I further explore this conflict in relation to the nuclear fable in Chapter Three.

Part Three, 'The Internalization of the Atomic Secret', is an analysis of the marginalization of an explicit anti-nuclear politics in post-war subjectivity as this process is represented in the novel. I identify the crucial effects of the wartime convergence of the 'civil' and the 'military', and refer to the significance of debates around atomic secrecy. I then argue that constructions of the 'atomic mind' and of the 'atomic body' in the novel characterize the emergent nuclearist subjectivity.

In conclusion, I comment on the importance of form, and its relation to the inconclusive interpretation of the accident offered in the novel.

Part 1: Strategies for the Control of Atomic Anxiety

Atomic Scientists and the Call for International Control

Tapping into the ambiguous public mood at the start of 'The Year Atom Bomb One', *Collier's* magazine carried an agenda-setting article by the high-profile atomic scientist Harold C. Urey.[2] 'I'm A Frightened Man' attempted to mobilize public fear against atomic proliferation. Its tone was apocalyptic: 'We will eat fear, sleep fear, live in fear, and die in fear.... We are at last face to face with the powers, which, philosophically speaking, are supreme in our universe' (p. 51). Urey was trading on the widespread popular notion that the atomic scientists were in possession of unique understanding of the 'potentialities of the atomic bomb' (p. 18). Since the atomic explosions in Japan, 'the popular image of the scientist had been that of the Man Who Knows the Secret of the Bomb'.[3] If the vanguard of scientists were afraid, then it followed that the general public should be too. More precisely, the public should be sharing the fear that gripped the scientists because American politicians and diplomats were already, in January 1946, 'talking about the possible use of the atomic bomb in war'.[4] By the end of 1945 the consensus view among the atomic scientists was that:

1. "Other nations" would soon be able to reproduce atomic bombs.
2. No effective defense was possible.
3. Mere numerical superiority in atomic weaponry offered no security.

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2 Harold Urey, 'I'm a Frightened Man', *Collier's*, January 5, 1946, pp.18,19,50, and 51. During the Manhattan Project Urey was based at Columbia University, where he was responsible for a team of scientists developing methods to separate isotopes of Uranium for use in weapons.

3 David Caute, *The Great Fear: The Anti-Communist Purge under Truman and Eisenhower* (New York: Simon and Schuster, 1978), p. 466.

4 p. 19. As I noted in Chapter One, the reality of Hiroshima and Nagasaki quickly disappeared from the public horizon in the face of an imagined future atomic threat to America (understood as 'the world'). For Urey and his public the Japanese bombs clearly do not represent 'the use of the atomic bomb in war'.

4. A future atomic war would destroy "a large fraction of civilization."
5. Therefore, "International cooperation of an unprecedented kind is necessary for our survival."[5]

For Urey, 'international cooperation of an unprecedented kind' meant the end of pretensions to 'national sovereignty' (p. 19) and the immediate establishment of a world government.[6] Once in place, the primary function of any world government would be to control the apocalyptic danger of the atom by employing atomic scientists to monitor other atomic scientists. Working on the assumption that only highly-skilled atomic specialists were capable of manufacturing weapons, atomic scientists would be deployed defensively to spot the un-sanctioned emergence of atomic weapons by less internationally-minded peers.[7] During the war years of secret work at the various sites of the Manhattan Project the atomic scientists had, to varying degrees, put up with being 'watched and controlled most carefully'.[8] Urey was certain the atomic scientists would 'welcome' restrictions on their freedom in the peacetime world if those restrictions could 'guarantee there will never be another atomic bomb exploded anywhere' (p. 50).

The Federation of Atomic Scientists

Urey's article in the mass-circulation *Collier's* gave expression to the political agenda of a fledgling campaign organization, the Federation of Atomic Scientists (*American* after July 1946; henceforth FAS). 'I'm a Frightened Man' was ghosted by ('as told to') the FAS Washington publicist, Michael Amrine. In November 1945 the FAS was a consolidation of smaller local groups of concerned atomic scientists. Their initial campaign impetus was the perceived need to defeat the May-Johnson Bill, which proposed that all post-war atomic work should continue under military control. The FAS successfully lobbied in Washington, and at campaign meetings across America. It appeared to win a significant political victory when the Atomic Energy Act of 1946

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5 A statement produced in October 1945 by 515 scientists at Harvard and MIT. Cited by Paul Boyer in *By The Bomb's Early Light*, p. 52.

6 Models of world government already existed in the fiction of an author profoundly influential to many of the atomic scientists. In H.G. Wells's *The World Set Free* (1914) an atomic conflict ends after an international committee imposes a world government with a monopoly on atomic weapons.

7 In 1954 the United Nations set up the International Atomic Energy Agency (IAEA) on the back of President Eisenhower's 'Atoms for Peace' programme. Many IAEA personnel are nuclear physicists, thus at least partly substantiating Urey's vision of an international scientific inspectorate.

8 Urey, 'I'm a Frightened Man', p. 50.

acknowledged the concerns of the scientists, establishing a civilian Atomic Energy Commission (AEC). With hindsight this was undoubtedly an hollow victory; the Federal authorities only paid lip-service to this civilian-led vision, ensuring that decisive power within the AEC remained with a Military Liaison Committee.

The core FAS objective was to end weapon construction in the United States as part of an internationally coordinated process. In 1946 the U.S. Federal authorities prepared a report on international control for the first meeting of the United Nations Atomic Energy Commission, due to take place in June of that year. The so-called Acheson-Lilienthal Report[9] distilled the witness statements of many atomic scientists, and agreed in tone and principle with the FAS objectives. International control of atomic power seemed to be a graspable reality in the summer of 1946.[10]

This optimism was undercut by a covering letter attached to every copy of the Report. It was explained that although America was committed in principle to the passing of atomic energy into international authority, America also retained the right to continue research and construction of atomic facilities and weapons during the period of consultation and negotiation.[11] Viewed from the perspective of the Soviet Union this was of course thoroughly hypocritical. An editorial in the *Bulletin of the Atomic Scientists* noted the 'double' objectives of the American policy: 'We work ... for universal disarmament and for secret development of new methods of mass destruction; ... In brief, we try to abolish war and to be in the position to win it'.[12] Many of the American scientists managed to overlook this hypocrisy, and indeed the assumptions of the supplementary letter found a receptive audience in certain sections of the FAS itself. Many of the atomic scientists agreed that America had a duty to build an atomic arsenal in the absence of international consensus. Thus Edward Teller could argue in 1947 without controversy that there was no contradiction between 'work on atomic energy under our present administration and work for a world government which alone can give us freedom and peace'.[13] A political gap opened up between unilateralists, who

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9 *Report on the International Control of Atomic Energy* (Washington, DC: Department of State, March 16, 1946).

10 The optimism of this moment and the subsequent loss of direction are caught by the narrator of Kurt Vonnegut's *Slaughterhouse-5* (1969; London: Paladin, 1989). He recalls that '[w]e were United World Federalists back then [1946/7]. I don't know what we are now' (p. 16).

11 This position set an important historical precedent. Both France and China have argued recently that they will suspend their nuclear test programme only *after* international agreement has been reached.

12 Eugene Rabinowitch, 'Two Years after Hiroshima', *Bulletin of the Atomic Scientists*, 3, 9 (1947), 233-234, p. 234.

13 Edward Teller, 'Atomic Scientists have two Responsibilities', *Bulletin Of The Atomic Scientists*, 3, 12 (1947), 355-356, p. 356.

believed that America should set an example and abandon production, and nuclearists, who believed that the imagined necessities of the situation demanded a pragmatic bomb programme. This split was undoubtedly a factor in the decline of the FAS as an effective organization in the late 1940s. The decline was so steep that '[b]y 1949 the atomic scientists' movement, its goal for an international scientific police having come to nothing, was reduced to a tiny remnant'.[14]

There were additional factors that contributed to the decline of activism amongst atomic scientists. The mobilization of a discourse of fear had unpredictable results with the American public. As Paul Boyer has argued, 'the lesson of the bomb's terrible power had been well learned, the lesson of international control and cooperation as a means of escaping that terror had not, leaving a net effect of "despair and confusion"'.[15] Throughout the late-1940s, the public view of atomic scientists changed from respectful awe to fear, as the public began to blame the scientists for enabling apocalypse. This fear *of* scientists combined readily with a second factor, the political repression of the American left. As David Caute has demonstrated, the scientific community was affected deeply by the anti-communist clampdown on 'fellow-travellers'.[16]

In the face of this loss of political momentum, the atomic scientists who remained in the discipline retreated into less immediately apocalyptic ideologies. Either through fear of being associated with communism, or from a genuine pragmatic faith in nuclear power, almost all of them followed the path of negotiated arms-control, rather than the unilateralist paths of arms reduction or eradication.[17] A strong consensus emerged that making weapons and talking peace were not in fact mutually-exclusive activities.[18] Thus the bulk of atomic scientists adopted the doctrine of nuclearism

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14 Weart, *Nuclear Fear*, p. 126.

15 Boyer, *By the Bomb's Early Light*, p. 93.

16 For an analysis of the impact of anti-communism on science see Caute, *The Great Fear*, especially Chapter 25, 'Science: Sanity or "Security"?', pp. 456-484.

17 Robert Jungk claims that 'Urey, after vainly acting as a front-line champion of international control of atomic armaments, was now induced to call, actually, for a preventive war, so that humanity could enjoy peace and freedom again when it was finally over' (*Brighter than a Thousand Suns: A Personal History of the Atomic Scientists*, trans. by James Cleugh (London: Penguin, 1960), p. 246). I can find no other reference to corroborate this extreme position, but it is suggestive of the increasing marginalization and desperation of unilateralist arguments in the FAS.

18 From the title of a book by the director of the Lawrence Livermore Laboratory, Herbert F. York: *Making Weapons, Talking Peace: A Physicist's Odyssey from Hiroshima to Geneva* (New York: Basic Books, 1987). Established in 1952, the Lawrence Livermore lab was America's second nuclear weapons design centre after Los Alamos. An analysis of the lab's function and cost can be found in Arjun Makhijani, et al., eds., *Nuclear Wastelands*, Chapter 6, 'The United States', pp. 169-284, especially p. 202.

already being practised by their government.

An Atomic Death at Home

In late 1945/early 1946, when world government still seemed possible, Urey's call for international control of atomic energy was well-received. Against the background post-war atmosphere of optimism, weapons work quietly continued at the Los Alamos site of the Manhattan Project. On May 21, 1946 the atomic physicist Louis Slotin was demonstrating an often repeated experiment. This involved a nickel-plated core of plutonium, weighing about thirteen pounds, in the form of two hemispheres. According to Barbara Moon's excellent account from 1961 they were the active parts of one of the three A-bombs due to be shipped to Bikini Atoll for the Operation Crossroads tests of 1946.

> The plutonium rested in a half-shell of beryllium, a metal that can bounce escaping neutrons back into the mass of an active metal so that they are conserved for the fission process. ... The technique of the experiment consisted of lowering [a matching] upper shell until it almost met the lower shell. As the reflectors enclosed the core they would bounce back more and more leaking neutrons. And so at a certain point the total of neutrons available inside the core for fission would slightly exceed the total neutron loss. A slow, controlled chain reaction would start, like a car's motor idling. This could be nudged to higher speeds - but there was a danger point. If the two half-shells came to within an eighth of an inch of each other - thus making a critical surplus of neutrons available simultaneously - a fast, uncontrolled reaction called a 'prompt burst' would ensue. There would be no explosion, for in the heat generated, the components would expand, become less dense and therefore subcritical again. (And for the core to become a bomb, its components would have somehow to be grappled together from outside long enough to explode rather than expand.) But for one millisecond there would be a flare of free neutrons, an excursion of gamma rays and beta particles, and a wave of heat.[19]

This is what happened on May 21. Slotin brought the hemispheres too close to each other, and he and a group of six other scientists were irradiated as the chain reaction briefly went past the danger point. Observers had seen a flash of blue light, but the event was over before anyone could move, or even think about moving. In the moments after the accident it was as if nothing had happened at all, and Slotin was able to record the relative positions of the scientists in the room, and to calmly arrange for his own ambulance. Slotin's proximity to the apparatus meant that his body shielded the others from the worst of the effects. His subsequent death from radiation exposure

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19 'Louis Slotin', in *Greenpeace Book Of The Nuclear Age: The Hidden History, The Hidden Cost*, ed. by John May (London: Gollancz, 1989), pp. 63-73. Moon's article was originally published in October 1961 by *Maclean's* magazine.

was only the second recorded on American soil, coming almost exactly a year after the death of another young atomic scientist at Los Alamos, Harry Daghlian. Daghlian's death had prompted the Los Alamos scientists to set up the Association of Atomic Scientists, one of the groups that coalesced later into the FAS. Whereas Daghlian's death was perhaps a side-effect of night-work in a deserted lab, Slotin's death appeared to be an inexplicable accident.[20]

Slotin's death was referred to only in passing in the media. His obituary in the *Bulletin of the Atomic Scientists* was typical of the low-key coverage: 'Atomic scientists mourn the loss of Dr. Louis B. Slotin who died May 30th from the effects of radiation produced in an accident involving fissionable materials'.[21] In a study by Stephane Groueff the incident is relegated to a footnote.[22] This is typical of many historical accounts of the Manhattan Project. Those accounts which do attach any historical significance to Slotin differ only in the details; whether, for instance, Slotin was using a pencil or a screwdriver to keep the hemispheres apart. The majority of accounts concur with Leona Marshall Libby's version in which she claims that the screwdriver preventing total assembly 'slipped'.[23] Even so, an air of ambiguity still surrounds the accident. One Manhattan Project colleague wondered:

> How did an experienced and cautious physicist like Louis Slotin make such a stupid and fatal mistake? Did he really think a pencil was a safe support for a critical piece of material? Or did something deep down in his mind tempt him to play atomic roulette? We shall never know.[24]

As Otto Frisch's account implies, no-one could quite believe that Slotin would make a basic error of this kind, nor that he would not have used some form of additional safety cut-out. It appeared to all concerned that some darker, unaccountable influence may have been at work.

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20 In Isaac Asimov's *Pebble in the Sky* (London: Sidgwick and Jackson, 1958), a strikingly similar accident at the Chicago 'Institute of Nuclear Research' in 1949 catapults one Joseph Schwartz into 'Galactic Era 827'. In Asimov's allegory of the Manhattan Project's irresponsibilty, the scientists prefer to forget what has happened rather than investigate the full effects of the accident.

21 *Bulletin of the Atomic Scientists*, 1, 12 (1946), 16.

22 See Stephane Groueff, *Manhattan Project: the Untold Story of the Making of the Atomic Bomb* (London: Collins, 1967), pp. 350-351.

23 Leona Marshall Libby, *The Uranium People* (New York: Charles Scribner's Sons, 1979), p. 204.

24 Otto Frisch, *What Little I Remember* (Cambridge: Cambridge University Press, 1979), p. 161.

The Accident and the Contemporary Fear of Radiation

A decade after Slotin's death Dexter Masters's novel *The Accident* returned to Los Alamos to fictionalize the incident. It was first published at the height of the controversy over fallout in the Pacific. The issue of radiation had been foregrounded once again by the atmospheric tests in the late 1940s and early 1950s. The American thermonuclear (i.e. hydrogen bomb) atmospheric test codenamed Bravo was detonated on 1 March 1954. Bravo was a thousand times more powerful than the Hiroshima blast and signalled America's commitment to a strategic policy based on a new hydrogen bomb programme. Indeed the Bravo series of tests are generally regarded as a point of escalation in the arms race. As Rosalie Bertell has argued, Bravo 'marked a definitive commitment in the Western world to "peace" through military strength'; i.e. a commitment to nuclearism at the level of official policy.[25] The test, like more recent ones, was presented to the public with a confident nuclearist gloss. In the aftermath the press were informed that '[i]t should be noted that no test is done without a specific purpose in mind, and at no time was the testing out of control'.[26] These contemporary certainties now seem obfuscatory as it has become clear that this particular weapon caused extensive radiation sickness and lingering reproductive damage among the indigenous population of the Marshall Islands (especially the islands of Rongelap and Utirik).[27]

Public concern at home in the U.S. was agitated more immediately by the psychologically resonant exposure of a Japanese tuna fishing boat downwind from the explosion ground zero (known as the 'Lucky Dragon' incident after the name of the boat).[28] The crew were hospitalized upon return to Japan, and on 23 September one of the crew, Aikichi Kuboyama, died of radiation poisoning.[29] Worldwide condemnation of America followed the hospitalization. A petition demanding a ban to all nuclear

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25 Rosalie Bertell, *No Immediate Danger: Prognosis for a Radioactive Earth* (London: The Women's Press, 1985), p. 77.

26 Remark attributed to Admiral Lewis Strauss, former Director of the Atomic Energy Commission, Washington Press Club, 30 March 1954, by Jane Dibblin in *Day of Two Suns: US Nuclear Testing and the Pacific Islanders* (London: Virago, 1988), p. 58.

27 The Marshallese are still suffering the lingering effects of this exposure. A question hangs over the whole Bravo episode: did America target Rongelap and Utirik to gain experimental data about fallout exposure? There is considerable evidence to support this view. See May, *The Greenpeace Book of the Nuclear Age*, pp. 104-109.

28 For an interesting use of the metaphor of nuclear 'resonance' see Paul Boyer, 'Exotic Resonances: Hiroshima in American Memory', in *Hiroshima in History and Memory*, ed. by Michael J. Hogan (Cambridge: University of Cambridge Press, 1996), pp. 143-167 (p. 143).

29 The boat is now on permanent display in Tokyo. See Seiitsu Tachibana, 'The Quest for a Peace Culture: The A-bomb Survivors' Long Struggle and the New Movement for Redressing Foreign Victims of Japan's War', in *Hiroshima in History and Memory*, pp. 168-199 (p. 175).

weapons begun in May 1954 collected thirty million signatures that year.[30] It was as if America had renewed atomic hostilities against Japan.[31]

One of the few other places where radiation sickness had been discussed seriously was *The Bulletin of Atomic Scientists*. An article in 1946 set two agendas that lingered for the next fifty years: on the one hand it made a plea against the clampdown of official secrecy, and on the other it attempted a summary of the inadequate state of current knowledge.[32] In a polite formulation typical of contemporary scientific frustration with the military control over what was seen as 'scientific' (and therefore, at least in theory, openly available) information Hermann Lisco notes that 'there is one aspect of Atomic Energy that to the knowledge of the writer has not been discussed with the frankness that it requires', and cautiously opines that 'radiation sickness might be a problem of very considerable importance in the future' (p. 26).

It was precisely this second implication, that there might be lingering effects of the bomb, that the U.S. military were unwilling to admit.[33] Both Catherine Caufield and Paul Boyer have documented the immediate post-war suppression of information from Japan on post-blast radiation exposure.[34] This containment combined with another factor: there was very little public understanding of the nature of fallout at this point. John Hersey's *Hiroshima* had given a dramatic account of radiation sickness and consequently raised its profile. In general though, the connection between fallout and delayed death was not unreasonably submerged in the public consciousness by the more obvious effects of blast and heat. As evidence of this lack of public perception Caufield cites the fact that 'in the weeks after Hiroshima, radiation was not mentioned in a single one of more than 200 letters about the atomic bomb published in American newspapers'.[35] The authorities in Washington were able to dismiss reports of mass

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30 John W. Dower, 'The Bombed: Hiroshimas and Nagasakis in Japanese Memory', in *Hiroshima in History and Memory*, pp. 116-142 (p. 137).

31 'Japan is the only country in the world to have suffered a nuclear attack - twice, in most people's reckoning, but three times if we count (as Japan does) the *Lucky Dragon* incident of 1954'. (Ruthven, *Nuclear Criticism*, p. 93).

32 Hermann Lisco, 'Radiation Hazards and Radiation Sickness', *Bulletin of the Atomic Scientists*, 2, 9 (1946), 26-7.

33 General Groves notoriously testified to the U.S. Senate that radiation exposure was a particularly pleasant way to die. See, for instance, Ruth Brandon, *The Burning Question: The Anti-Nuclear Movement since 1945* (London: Heinemann, 1987), p. 55.

34 Catherine Caufield, *Multiple Exposures: Chronicles of the Radiation Age* (London: Secker & Warburg, 1989), pp. 57-64 and pp. 123-134. Boyer, *By The Bomb's Early Light*, pp. 303-318. See also, Monica Braw, *The Atomic Bomb Suppressed: American Censorship in Japan 1945-1949* (Lund, Germany: Liber Forlag, 1986).

35 Caufield, *Multiple Exposures*, p. 63.

radiation sickness in the cities two weeks after the attacks as a hoax, and they were believed.[36] But the awareness that fallout 'might be a problem of very considerable importance in the future' was a lurking demon, resurfacing in various forms during the late-forties and early-fifties, breaking uncontrollably after Bravo.

Thus *The Accident* was first published in the middle of a sustained public debate about fallout. Continued waves of concern with the effects of exposure to radiation have meant that it has been republished regularly. American paperback editions appeared in 1965 and in 1985 and a British edition was published by Faber on the first anniversary of Chernobyl.[37]

The 'Dreadful Sense' of Anti-nuclearism

In a defining scene towards the end of the novel, Louis Saxl lies dying in a Los Alamos military hospital bed. In the room with Saxl is Ed Wisla, a fellow Manhattan Project scientist. Saxl and Wisla are typical of a certain kind of politicized Manhattan Project scientist.[38] Wisla is a scientific exile from Middle Europe, Saxl is a Canadian Jew and veteran of the Spanish Civil War. Wisla has just returned from Washington after a round of meetings with politicians: 'I speak to them of politics and they tell me about the atom. We entertain each other, though possibly not for long' (p. 195). Louis Saxl asks Wisla whether apocryphal stories about Congressional ignorance are true, to which Wisla replies in the affirmative, but argues defensively that '"We have not spent all those months in that awful city for nothing"' (p. 195). Saxl is not convinced. He thinks that the scientists are being duped by the Federal authorities. His strongest evidence is the uncomfortable fact that America has not halted its atomic weapons programme.

> 'No,' Louis said, looking at Wisla speculatively.
> But the success of the scientists' lobby ... was written very clearly in the Congressional defeat of the May-Johnson Bill ...; and in ten thousand speeches, talks, private buttonholings, pamphlets, leaflets, educational campaigns,

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36 Sue Rabbitt Roff, 'Fifty years on and still in denial about the bomb', *The Independent on Sunday*, 16 July 1995, p. 22. For a much fuller discussion, see Sue Rabbitt Roff, *Hotspots: the Legacy of Hiroshima and Nagasaki* (London: Cassell, 1995).

37 Dexter Masters, *The Accident* (New York: Alfred A. Knopf, 1955; London: Cassell, 1955; New York: Alfred A. Knopf, 1965; New York: Penguin, 1985; London: Faber, 1987). All references to *The Accident* in this thesis are to the American 1985 edition which contains a foreword by Dexter Masters. The level of official sensitivity to the issue of fallout is indicated by Masters's anecdotal account of his attempt (with David O. Selznick, maker of *Gone With The Wind*) to turn the novel into a film script. They were refused an export license by the State Department, which effectively killed the finances for the film (pp. vii-viii).

38 Physical descriptions of Wisla (e.g. pp. 107-109) suggest that his historical counterpart is Leo Szilard.

conferences, even classes in physics for Congressmen, and more besides ...

'No,' Louis said again, forgetting that his gaze was still resting on Wisla and not noticing that Wisla was becoming restive under it.

For the scientists who had lighted the atomic fires knew, from all the history of their science, that no man had had the power to hold back the lightning and no man could keep the fires from burning; and what they knew they had intoned over and over like the *Kyrie eleison* - there are no secrets, there is no defence, there can be no monopoly - and then had translated and intoned again, over and over - survival is at stake, the time is short, and the crisis is political. Certainly this had not been for nothing. The words had become as familiar as the daily paper.

'No,' said Louis, for the third time. 'But we're still making bombs.'

'So,' Wisla said, impatiently. 'That is a problem to be worked out in the United Nations. But we go with cleaner hands there than before - at least without Generals to lead us.'

'I just wonder if we're being took.'

'What is "took"?'

'Still making them,' Louis repeated, ignoring Wisla's question, 'and that on top of the way we used them - not once, but twice - no warning - after Japan started peace overtures at that. Oh, very unclean hands! Sam Allison says this was a great tragedy. Senators and Generals say this is the way modern wars are fought, which is what the Germans said when they bombed out Rotterdam. The terror isn't only in what's done but in the speed of our adjustment to it. What we did shortened the war and saved lives, so we say - that's what the Germans said about Rotterdam too. But it did turn out that the invasion of Japan was planned for November and we dropped the bombs in August - not losing lives in August, so the lives we were saving were November lives, and at the very least why didn't we wait with the Nagasaki bomb to see what the effect of Hiroshima might be? Might have saved the lives of six hundred medical students. Modern wars aren't fought that way and when Hutchins and Pope say our use of the bombs lost us our moral prestige they aren't talking to the subject except I read all the time how our possession of the bomb is a sacred trust. *Somewhere along the line we had a choice*' (p. 196-7; emphasis added).

This passage is typical of Masters's fictional technique. His characters often summarize contemporary political positions, and sometimes their speech is constructed from more or less transparent references to other texts. Words that had become 'as familiar as the daily paper' reappear throughout *The Accident*. For instance, as Saxl had watched Wisla across the courtyard just a few minutes before this conversation, he had mused as to whether or not Wisla was 'a frightened man' like Harold Urey had claimed to be.[39] The passage quoted above displays the complexity of debate amongst the FAS scientists. Saxl believes that the defeat of the May-Johnson Bill is to be celebrated. He can see the force of the technological determinist perspective ('no man had had the power to hold back the lightning'). He recognizes too that the scientists's movement has made an impact with the public by insisting that there is no such thing as an atomic

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39 "'Are you a frightened man, Ed?" he said to himself. "Urey says he's a frightened man, and I know some who don't say it but they are too"' (*The Accident*, p. 190-1).

secret ('there are no secrets, there is no defence, there can be no monopoly'). He only departs from the consensus in that he *also* believes that continued weapon-building in this atmosphere is irresponsible. Saxl's conclusion is that 'somewhere along the line we had a choice'. The scientists are responsible for what they have built, and are continuing to build.

It is this last point that separates him from Wisla. As far as Wisla is concerned the issue of an American weapons-programme is 'a problem to be worked out in the United Nations', not the day-to-day concern of atomic scientists. This readiness to pass responsibility to diplomats and bureaucrats was a wartime feature of many atomic scientists. It was only after Hiroshima and Nagasaki that the scientists decided to engage with politics, and then with some reluctance. Oppenheimer, for instance, when asked in late 1945 about his reasons for becoming involved with the Manhattan Project, lists concern about enemy plans to build an atomic bomb, basic curiosity, a sense of adventure, and a set of political arguments. However, he concluded that:

> when you come right down to it the reason that we did this is because it was an organic necessity. If you are a scientist you cannot stop such a thing. If you are a scientist you believe that it is good to find out how the world works; that it is good to find out what the realities are; that it is good to turn over to mankind at large the greatest possible power to control the world and to deal with it according to its lights and values. ... It is not possible to be a scientist unless you believe that the knowledge of the world, and the power which this gives, is a thing which is of intrinsic value to humanity.[40]

This notional separation of the scientific activity from societal consequences is a familiar trope of public debate since World War Two, and has obvious antecedents in fictional characters such as Dr. Frankenstein. In the specific context of the Manhattan Project Laura Fermi recalled the following wartime exchange from Los Alamos. After the first test of an atomic bomb at Alamogordo in New Mexico, Leo Szilard had prepared a petition requesting the President not to use the bomb as a military device.

> Szilard asked Teller to circulate the petition in Los Alamos. Teller consulted Oppy [J. R. Oppenheimer], and told him [...] that he thought it "improper for a scientist to use his prestige as a platform for political pronouncements." Oppy felt that the decision was in the hands of the best, the most conscientious and wise men in the nation and the scientists did not need to worry. The petition was not circulated.[41]

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40 Speech, 2 November 1945, *Robert Oppenheimer: Letters and Recollections*, ed. by Alice Kimball Smith and Charles Weiner, (London: Harvard University Press, 1980), p. 317.

41 Laura Fermi, 'The Fermis' Path to Los Alamos', in *Reminiscences of Los Alamos, 1943-1945*, ed. by Lawrence Badash, Joseph O. Hirschfelder, and Herbert P. Broida, Studies in the History of Modern Science, 5 (Dordrecht, Netherlands: Reidel, 1980), pp. 89-104 (p. 99).

Thus Wisla's post-war acceptance of the United Nations as ultimate arbiter echoes the political effects of an earlier ideology of the separateness of scientific activity; the gap between scientism and nuclearism never seemed smaller.

If Oppenheimer's argument was that science should be regarded as a category of activity that legitimates itself, then Saxl's challenge is to suggest an alternative to the legitimating circle. By insisting that the scientists 'somewhere along the line ... had a choice' he implies that the scientific activity is itself part of what Oppenheimer terms 'realities'. The introduction of choice breaks the self-legitimating circle and places scientific investigation into and part of the social world. Despite the deterministic allure of what Oppenheimer called the 'technical sweetness' of the bomb development, they *could* have done something else with their training and expertise; it *wasn't* inevitable that the bomb should be used.

Thus in this hospital ward the social world intrudes uncomfortably into the scientific community. Saxl's ramblings include a series of unanswered, perhaps unanswerable questions. What were the implications of the United States authorities talking peace and control at the same time as they were building more bombs? Why had no-one satisfactorily explained the need to drop a second bomb on Nagasaki? If the invasion of Japan was already planned for November of 1946, and Russia was about to open up a new front, why were the bombs rushed to be dropped in August 1945? Why were there uncomfortable resonances between official U.S. justifications for dropping the bomb and Nazi justifications for the bombing of cities? From a scientific point of view, why was the open, internationalist premise of pre-war atomic science fast becoming a post-war national secret; what was 'secret' about the atom anyway? Finally, why was no-one noticing that the amoral irrationality of using atomic weapons had now been inverted into an ultra-rational policy?[42]

Wisla's reaction to this situation signals something more than a simple clash between social and empirical epistemologies of science. Wisla becomes increasingly anxious at the apparently unstoppable, delirious nature of these political questions. He was initially 'restive' under Saxl's gaze as his confidence in diplomacy was questioned, then he is silenced in a moment of 'helplessness' (p. 197), and finally gives expression to his exasperation: '"Louis!" (p. 198). Eventually, his irritation forces him out of the room, where in the corridor, 'looking anxiously this way and that', he meets a colleague, Dr. Charley Pederson. Wisla is concerned to make sure Pederson understands the problem: Saxl '"talks on and on ... [and h]e is not himself ... [b]ut he is not in the least incoherent. He is most coherent. His words make a sense."'

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42 Masters, *The Accident*, pp. 196-199.

Something about this coherence is '"dreadful"' (p. 198). Saxl does not notice that Wisla has left, and upon his return with Pederson, Wisla suggests to Saxl that he '"should not talk so much when [...] sick"' (p. 199). Pederson's cure for Saxl's rhetorical malaise is to arrange 'some nice body-building glucose', and this crude remedy eventually silences this dreadful coherence (p. 199). The glucose solution strengthens and silences an atomic body that is producing, emitting even, a dangerously unilateralist discourse that needs to be carefully managed. Saxl is the visible object of medical intervention, but Pederson's efforts to restore order seem to have more effect on Wisla. After arranging the drip, Pederson 'finally caught Wisla's eye and gave him a reassuring nod'. After this gesture, 'Wisla had paced back and forth a little longer, but no more was said, and then he had left'. Pederson's ministrations to the radioactive body of Louis Saxl certainly offer physical relief to Saxl (at the expense of his critical faculty), but they also seem to work psychologically on Wisla. In other words, Wisla's nuclearist self-control is restored at the expense of the unilateralist other's self-control.[43]

Chain Reactions

This process has a parallel in the technology of nuclear power. Pederson and Wisla manage this dangerous atomic body in the same way as they might manage a nuclear chain reaction.[44] Saxl's subjectivity echoes the structure of the early 'piles', literally experimental reactors made from piles of fissionable material. In a pile, a chain reaction is sustainable when each fission event produces exactly one more, and this is known as the critical point. Two processes control the reaction. The fissionable material is surrounded by ('moderated' by) material (such as carbon) that will slow neutrons to the most effective energy for further fission. In between the pieces of moderated fissionable material are movable pieces of material (such as cadmium) that will absorb neutrons; these are known as 'control rods'. To control a nuclear chain reaction at this scale the balance of slow-neutron production and absorption needs to be carefully

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43 The metaphors attached to radiation sickness in the novel are those of TB. Saxl's decline proceeds as a series of contrasts, of pallor and flush, of lucidity and delirium. See Katherine Ott, *Fevered Lives: Tuberculosis in American Culture since 1870* (London: Harvard University Press, 1996) for a detailed analysis of the metaphorical use of TB symptoms. Radiation sickness, like TB is 'rich in visible symptoms' (Susan Sontag, *Illness as Metaphor* (London: Allen Lane, 1979), p. 13. See pp. 11-17 especially). More significantly, the discourse of self control is a feature of the discourses surrounding TB. For instance, Sontag cites Katherine Mansfield's *Journal* entry to the effect that 'I *must heal my Self* before I will be well ... My mind is not *controlled*" (p. 47). Sontag comments that 'Mansfield not only thinks it was the "Self" which made her sick but thinks that she has a chance of being cured ... if she could heal that "Self" (p. 47).

44 This trope is repeated in other nuclear fables. See Chapter 3.

managed by judicious use of the control rods. When Saxl's discourse shows signs of increasing delirium, Pederson's glucose has the same effect as a cadmium control rod would have on a runaway reactor. In a reactor core, fission continues but at a safe level as the surplus of neutrons is diverted from further fission. For Louis Saxl, his anti-nuclearist critique continues beyond the glucose, but 'the voices singing in the night' (his delirious critique) 'abruptly ended' (p. 200). His personal chain reaction is brought under control by administering glucose. A little later, Saxl dreams that someone has asked him to 'leave the night to sleep for once so I can get up in the morning and make a bomb' (p. 200). He is left with the understanding that his delirious presence is not conducive to the nuclearist reality that Wisla and Pederson exist in: bomb-makers need to sleep at night undisturbed. Minds in the atomic age cannot be allowed to make free associations which lead inexorably towards an abolitionist politics. This key metaphor reveals a central trope of nuclearism: the mapping of technological procedures of control onto social relations. It is my contention that in the early post-war years this process is most visible in the first wave of nuclear fables, for which *The Accident* is a representative text.

Control of the Atomic Self

The association, in this key metaphor, of reactor meltdown with anti-nuclear discourse merits further attention. How can anti-nuclear protest be as dangerous as the situation it is motivated to prevent? I have argued that Saxl's atomic body threatens Wisla's nuclearist subjectivity. He becomes anxious in its presence, he is silenced by its demands for a certain kind of social engagement. I have argued further that Wisla's return to self-control is effected through three procedures. Firstly, nuclearist self-control is a simple function of distance from the atomic body; Wisla finds moving to the corridor necessary. Secondly, the atomic body must be excluded from rational discourse; Saxl is understood to be other to himself and is therefore a legitimate reified object of study for Wisla and Pederson. Thirdly, there is an implied discourse of bodily strength; strong bodies are less affected by the bomb, and weak bodies are liable to doubt, or unilateralism at worst.

The exchanges between the three men demonstrate the effects of the atomic bomb on an early nuclearist sense of self and some primitive strategies deployed to deal with those effects. The 'useful lessons' (see Chapter One) of the 'nuclear fable' are sketched out here. Wisla inhabits a world in which the continued building of atomic weapons can co-exist with political measures to seek their abolition. In order for this world-view to function the paradox at its heart must be managed. The nuclearist subject must begin to adopt strategies of self-preservation: maintaining distance from radiation

and unilateralism, ensuring exclusion of the anti-nuclear other from discourse, and inventing procedures of physical suppression. The ultimate goal of the nuclearist subject (as outlined in Chapter One) is to place 'choice', and its specific form 'unilateralism' beyond the margins of discourse. My contention is that nuclearist subjectivity emerges out of such raw procedures, but the association of protest with nuclear catastrophe outlined in the previous section is more rhetorically sophisticated.

The procedures outlined above can be found throughout the atomic age. For example, Debra Rosenthal's study of workers at America's Sandia Lab offers considerable evidence for the existence of this nuclearist subjectivity in the late 1980s. Sandia Lab is, like most nuclear installations, heavily fortified, rarely discussed in the local or national media, and physically hidden from view (in Sandia's case built into a mountain).[45] Thus it is surrounded by sophisticated repressive structures; Rosenthal carefully records how workers keep their distance from protestors and how the security procedures maintain secrecy among the workforce. The way in which the workers express their nuclearism offers an explanation of Wisla's 'nuclear' fear of unilateralist discourse. One nuclearist interviewed by Rosenthal claimed: '"The thing that really disturbs me about the so-called peace movement is that they're really anti-peace and they don't know it"'.[46] The exclusion of unilateralist discourse here is a latter-day, more sophisticated version of Wisla's medicalization of Saxl's questioning. In its ignorance, the 'peace movement' displays the sign of a species of mental disturbance. By contrast, work with nuclear weapons seems to guarantee the speaker a global understanding of nuclear issues. From this nuclearist point of view, nuclear weapons are for deterring wars rather than fighting them. Critiques of atomic weapons can then appear as destabilising attacks on the epistemological basis of modern technocratic society. The rejection of nuclear weapons is understood to imply the rejection of a model of 'progress' itself undisturbed by the events of the Second World War. In this context, the threat of anti-nuclear discourse (as rejection of technological progress) can appear equal to the threat of reactor meltdown (failure of the technological process).

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45 A recent article on Sandia's post-Cold War existence made much of Sandia's peaceful role as 'steward of the future', maintaining the safety of existing weapons stock alongside a wider mission to 'help spark a badly needed industrial renaissance in the U.S'. (Richard Rapaport, 'The Playground of Big Science',*Wired*, October 1995, 70-77,180-111 (p. 111)).

46 Debra Rosenthal, *At the Heart of the Bomb*, p. 141.

A Slip of the Heart

From the nuclearist perspective Saxl is dangerous because he represents a failure to adequately control oneself in the face of atomic power. Accounts of Louis Slotin's accident corroborate *The Accident*'s foregrounding of self-control as the most important factor for dealing with the atomic bomb. Otto Frisch (see p. 42) wondered whether 'something deep down in his mind' tempted Slotin to 'play atomic roulette'. Robert Jungk, who casts Slotin as a 'daring young scientist' records (as fact) that 'he did not lose his self-control for a moment' in the aftermath.[47] Stewart Alsop, writing in the *Saturday Evening Post*, views Slotin as an adventurer-hero akin to those who cope with the adversity of earthquakes, fire, flood and other familiar orders of disaster. According to Alsop, once the screwdriver slipped:

> Slotin knew instantly what had happened, and his reaction was instantaneous. When he lunged forward and pulled the chunks of metal apart, he "disassembled the critical mass." If he had not done so, if he had instantly ducked away from the table, he might conceivably have saved himself. It is far more probable that he would have condemned others in the room to death.[48]

The army were content with this 'heroic' angle. Alsop, for instance, cites a letter written to Slotin by General Groves detailing Groves's 'admiration for your heroic actions.... Your quick reactions and disregard for the danger to yourself undoubtedly prevented a much more serious accident' (p. 17).

Dexter Masters takes great care to counter this interpretation of the incident. In an exchange between the physicist David Thiel (a characterization of Philip Morrison) and the military commander Neil Hough, Thiel is furious when Hough casually remarks that it 'was an heroic thing Louis did' (p. 28). Thiel points out that Saxl's reaction was instinctive not heroic: '"What do you do if someone hands you a hot

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47 Robert Jungk, *Brighter Than A Thousand Suns*, pp. 177-178. Jungk claims that 'the daring young scientist thoroughly enjoyed risking his life in this way. He called it 'twisting the dragon's tail'. Ruth Brandon's 1995 novel *Tickling the Dragon* makes use of a variant of the term.

48 Stewart Alsop and Ralph E. Lapp, 'The Strange Death of Louis Slotin', in *Man Against Nature: Tales of Adventure and Exploration*, ed. by Charles Neider (London: Weidenfeld and Nicolson, 1955), pp. 8-18 (p. 14). Originally published in the *Saturday Evening Post*, 6 March 1954. Alsop contributed a number of articles on atomic issues to the *Post* spanning several decades. See for instance 'Your Flesh Should Creep' (with Joseph Alsop), 13 July 1946, pp. 9, 49, 50, or 'Neither Will I Again Smite Every Living Thing', 17 June 1967, p. 16. A notable feature of Alsop's account is the failure to mention Slotin's political work for the anti-Franco forces in the Spanish Civil War. Jungk makes an oblique reference to Slotin being 'born in Canada of Russian parents who had fled there from the pogroms' (p. 176), before claiming that Slotin 'had volunteered for service in the Spanish civil war, more for the sake of the thrill of it than on political grounds' (p. 177). *The Accident* makes this political edge a central motif.

brick? You drop it. Is this heroic? It's a reflex. ... The damage was done in microseconds. It was done, and that was that"' (pp. 28-9). This debate echoes through the novel. Thiel admits that Saxl 'would have been a hero if he'd had time' (p. 293), but heroism is a human category that has been outmoded by the atomic bomb.[49] The necessary self-control is not the same thing as heroism.

The debate has another level to it, in the sense that it reflects the gap between scientific knowledge and the public understanding of science that was a key problem addressed by the FAS campaigners. The drastically shortened timescales for reaction and total devastation implied by atomic fission are simply not understood outside of the atomic scientists. Hough asks if the radiation damage can be contained; could the exposure be confined to 'the part that made it' (p. 28), i.e. Saxl's hands. Thiel's reply reads as a metaphor for the naivety of a military strategy that believes in the possibility of a limited nuclear engagement. No, he says, the error cannot be confined, 'not with *this*' (p. 28, my emphasis). The effects of radiation exposure, the effects of the bomb, represent something qualitatively and quantitatively new. For David Thiel, mixing nuclear weapons with a discourse of heroism could be fatal. He reminds Hough that the military are "'paid to defend us, but ... not paid to make it necessary to defend us, which is what your thinking leads to"' (p. 30).

A soldier on guard outside the lab in *The Accident* is desperate to understand what the blue glow that briefly emanated from the building might mean. The scientist leaving the lab is baffled:

> 'Why, I can't tell you, I don't know, except he lost control.'
> The man looks at the soldier with some surprise.
> 'I don't know' (p. 21).

This loss of personal control in the face of atomic power is a central trope in the novel. In some passages it functions as a metaphor for the dangers inherent in an arms race. Thus David Thiel explicitly notes that:

> as you built bombs you increased the intensity of an arms race, since other countries would have to make bombs too, or would think they had to. Similarly, with this experiment, as you increased the fissionable material you increased the intensity of the nuclear disintegration. In both cases you finally reached a stage just below critical (p. 290).

Thus Saxl's accident becomes a metaphor for the imagined nuclear slip that precedes apocalypse. From this perspective, Saxl is understood as a kind of atomic Everyman whose death is a metaphor for the brinkmanship an arms race brings with it: "'if it

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[49] This a familiar refrain in the period. See Norman Cousins, *Modern Man is Obsolete* (London: Forum Books, 1946), or more explicitly, 'Of Bureaucratic Man', *TLS*, 7 May 1954, p. 296 (a review of C.P. Snow's *The New Men* (1954)).

could happen to Saxl it could happen to anyone"'.[50]

The Marginal Voice of Unilateralism

Returning to Saxl's exchange with Wisla, it is important to note that these questions of conscience are voiced in a moment of otherness. As I have argued, this marginalization from rational discourse makes them both literally and politically unanswerable. Wisla does not need to answer them because Saxl is 'ill'. This argument can be extended, because Wisla's own discourse *depends* upon their absence. It is only if questions like these are *not* on the table at the United Nations that a security-through-control agenda can proceed. These questions take the form of a variety of discourse which Michel Foucault has termed subjugated knowledge.[51] In Foucault's terms, these questions certainly appear to constitute a discourse that is perceived to be 'insufficiently elaborated' (p. 82). They are understood to be 'inadequate to their task' (p. 82). The possibility of unilateral disarmament has always been available to nuclear nation states but this possibility has been thoroughly 'disguised' within the scientific orthodoxy ('the functionalist coherence' (p. 82)) of nuclearism. Following Foucault's analysis, Saxl's rambling questions may make 'a sense' to Wisla, but it is a sense that is naive and out of place. Thus Wisla dismisses Saxl's challenge to an American bomb programme as a 'problem for the United Nations'. The excavation of subjugated knowledges (it is 'through the re-appearance of this knowledge, of these local popular knowledges, these disqualified knowledges, that criticism performs its work' (p. 82)), is clearly a necessary task for critics working with the culture of the atomic era. This approach can have a powerful effect. The exposure of subjugated knowledges is the productive force behind Thomas Powers's recent *Heisenberg's War*. Powers noted that on the subject of

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50 p. 48. See also my discussion of Saxl's status as universal victim in Part Three.

51 'By subjugated knowledge I mean two things: on the one hand I am referring to the historical contents that have been buried and disguised in a functionalist coherence or formal systematization. Concretely, it is not a semiology of the life of the asylum, it is not even a sociology of delinquency, that has made it possible to produce an effective criticism of the asylum and likewise of the prison, but rather the immediate emergence of historical contents. And this is simply because only the historical contents allow us to rediscover the ruptural effects of conflict and struggle that the order imposed by functionalist or systematizing thought is designed to mask. Subjugated knowledges are thus those blocs of historical knowledge which were present but disguised within the body of functionalist and systematizing theory and criticism - which obviously draws upon scholarship - has been able to reveal. On the other hand, I believe that by subjugated knowledges one should understand something else, something which is in a sense altogether different, namely a whole set of discourses that have been disqualified as inadequate to their task or insufficiently elaborated: naive knowledges, located low down on the hierarchy, beneath the required level of cognition or scientificity. I also believe that it is through the re-emergence of these low-ranking knowledges .... that criticism performs its work'. Michel Foucault, 'Two Lectures', in *Power/Knowledge: Selected Interviews and other Writings 1972-1977*, ed. by Colin Gordon (London: Harvester Wheatsheaf, 1980), pp. 78-92.

the failed German atomic bomb project the atomic physicists were certain about one thing: 'no moral compunction on [Werner] Heisenberg's part, however tenuous, played a role' in that failure.[52] The re-appearance of the apparently marginal question of Heisenberg's personal morality disturbs the dominant 'functionalist' view (the Manhattan Project was a necessary *response* to Nazi bomb development), because it opens the morality of those who built the bomb for Roosevelt to renewed question.

Viewing the questions Saxl raises as evidence of subjugated knowledges goes some way to explaining why almost all of them remain unanswered and possibly unanswerable. Their exclusion from discourse is a function of their perceived naivety. The re-publication of *The Accident* at moments of heightened nuclear tension perhaps bears witness to the continued critical power of this kind of excavation. There is an important caveat attached to this approach. Any reading of *The Accident* that foregrounded the 're-appearance' of unilateralist knowledge would still leave the novel in Roger Luckhurst's category of 'pious admonition' (see Chapter One). Reading it this way, the novel is not so different from any other novel which seeks to persuade its readership of the folly of nuclear weapons.

The Legacy of *One World or None*

The Accident is more than pious admonition because it is a direct response to the inadequacies of another text, the popular and influential *One World Or None* report of 1946.[53] Masters edited this collection of essays on the new atomic reality with the physicist Katherine Way. Paul Boyer accords *One World or None* the status of 'representative text' for his seminal study of early bomb culture. It 'immediately became a national bestseller' documenting the 'political activism of the atomic scientists, the post-Hiroshima interest in world government and international control of atomic energy, the manipulation of fear'.[54] During the war Masters had been a staff member at the Massachusetts Institute of Technology (M.I.T.) Radiation Laboratory, working on radar with exiled physicists including Hans Bethe and I.I. Rabi. Masters would have certainly met most of the physicists in the U.S. at the time. Oppenheimer himself made regular recruiting trips to the M.I.T. Radiation Laboratory. Additionally, Masters was a founder member of the Consumers Union, which the House

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52 Thomas Powers, *Heisenberg's War: The Secret History of the German Bomb* (London: Penguin, 1994), p. x.

53 *One World Or None: A Report to the Public on the Full Meaning of the Atomic Bomb*, ed. by Dexter Masters and Katherine Way (New York: Federation of American Scientists, 1946). All references are to the English edition, *One World or None* (London: Latimer House, 1947).

54 Boyer, *By The Bomb's Early Light*, p. 76.

Unamerican Activities Committee (H.U.A.C.) later claimed had been a Communist Party front organization as far back as 1944; he was therefore a 'fellow-traveller' like many of the atomic scientists.[55] Masters shared many of the experiences and concerns of the scientific left who had organized themselves around the FAS. *One World or None* promised to not only describe the new reality but offer some solutions to what might be done.

It opened with a determinist contribution from the Nobel Prize-winner Arthur Compton: it was 'inevitable', Compton stated, that 'mankind should have atomic fire' (p.xi). Philip Morrison, one of Oppenheimer's students and one of the first Americans into Hiroshima, then graphically detailed exactly what would happen to New York if a 'device detonated half a mile in the air, just above the corner of Third Avenue and East 20th Street' (p. 17). Atomic scientists such as Harold Urey, Hans Bethe, Oppenheimer, Edward Condon, and Eugene Wigner all made contributions to the first section.[56] The second section opened with an editorial note:

> The problem of how to avert atomic disaster is still very new. We can hardly expect that more than tentative solutions can be brought forth at this time, or that even these will be detailed and concrete. In the following chapters some general approaches to the problem are presented. They will be found to differ with each other and on some points to be diametrically opposed (p. 123).

After contributions by Leo Szilard, Walter Lippmann, and Albert Einstein,[57] the collection left readers with a bleak conclusion from the FAS that the atomic age would be very brief 'if we do not adapt ourselves to it' (p. 157). Ten years further on, and from the perspective of a stable Cold War stand-off, *The Accident* is more than a pious admonition because it represents the process and cost of adapting personally to nuclearism.

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55 See David Caute, *The Fellow-Travellers: Intellectual Friends of Communism*, rev. edn. (London: Yale University Press, 1988), p. 292.

56 Eugene P. Wigner, 'The Roots of the Atomic Age', pp. 31-40; J.R. Oppenheimer, 'The New Weapon: The Turn of the Screw', pp. 53-60; E.U. Condon, 'The New Techniques of Private War', pp. 86-91; Frederick Seitz and Hans Bethe, 'How Close is the Danger?', pp. 92-101; Harold C. Urey, 'How Does it all Add Up?', pp. 113-124.

57 Leo Szilard, 'Can We Avert an Arms Race by an Inspection System?', pp. 125-132; Walter Lippmann, 'International Control of Atomic Energy', pp. 133-151; Albert Einstein, 'The Way Out', pp. 152-155.

Part 2: Science and the Bomb

> World War II was in many ways a watershed for American science and scientists. It changed the nature of what it means to do science and radically altered the relationship between science and government ... the military ... and industry.[58]

The Significance of the Manhattan Project

The name "Manhattan Project" refers to "The Manhattan Engineering District, U.S. Army Corps of Engineers", a codename with no connection to the island of the same name. The Project lasted three years from 1942 to 1945 (although officially wound up in 1946), cost 2 billion U.S. dollars, employed over 100,000 people, and was comparable in size to the contemporary U.S. automobile industry. It was located at specially-constructed facilities across America, notably Hanford on the Columbia River in Washington State, Oak Ridge in Tennessee, and Los Alamos in New Mexico. The essential technical core of atomic scientists were primarily based at the high-security Los Alamos site.

The Los Alamos facility was constructed on a high mesa on the site of a Ranch School. John Newhouse notes that 'some called it a "Nobel Prize Winners' Concentration Camp"'. It resembled nothing so much as a frontier town surrounded by armed guards and barbed wire fences. The streets were unpaved, and housing was a jumble of prefabs, trailers and apartment units'.[59] Richard Rhodes records that the 'Europeans at Los Alamos complained of the barbed wire. With the exception, apparently, only of Edward Condon, who found the security so oppressive he quit the project within weeks of his arrival and went back to Westinghouse, the Americans accepted the fences around their work and their lives as a necessity of war'.[60]

The Manhattan Project prompted a thoroughly new conjunction between major civilian engineering firms (such as DuPont and Westinghouse), the U.S. military (in the form of the army), and international scientists. Before the Second World War, the majority of American military science was done in laboratories owned and operated by the branch of the military concerned; thus the Manhattan Project was a proving ground

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58 J.R. Zacharias, 1984, cited by Paul Forman in 'Behind Quantum Electronics: National Security as Basis for Physical Research in the United States, 1940-1960', *Historical Studies in the Physical and Biological Sciences*, 18 (1987), 149-229, p. 152.

59 John Newhouse, *The Nuclear Age: From Hiroshima to Star Wars* (London: Michael Joseph, 1989), caption to plate following p. 112.

60 Rhodes, *The Making of the Atomic Bomb*, p. 464.

for a newly integrated military-scientific-corporate relationship.[61] Historian Paul Forman notes that:

> The atomic bomb did not generate but mightily confirmed and reinforced a conviction ... that 'our national security rests upon superior science', and that governmental support of academic science would make 'possible progressive development in military matters without maintenance of a large-scale military research establishment'.[62]

The Manhattan Project was a crucial component of the 'vast wartime growth in the influence of large corporations and high-technology companies in the U.S. economy'.[63] In this new militaro-economic model site security and pump-priming funds were supplied by the military whilst the actual research and development was carried out in secure laboratories constructed by private corporations. The products were then bought by the public purse, producing a self-sustaining economic circle in which the production facility was contracted out on licence to corporations for private profit.[64] This relationship between corporations, expenditure on what would soon be termed 'national security', and the overall economy became so close during the war that 'the distinction between 'civil' and 'military', already eroded, became simply irrelevant'.[65]

Despite the evidence for this historical shift some nuclearists view the

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61 'Between 1940 and 1945 the convergence of science with engineering that characterizes our contemporary world was effectively launched in its primarily military direction with the mobilization of U.S. scientists, most especially physicists, by the Manhattan Project and by the OSRD, the Office of Scientific Research and Development. In FY [Fiscal Year] '38 the total U.S. budget for military research and development was $23 million and represented only 30% of all Federal R&D; in fiscal 1945 the OSRD alone spent more than $100 million, the Army and Navy together more than $700 million, and the Manhattan Project more than $800 million - an increase in current dollars over seven years by a factor of more then seventy, or more than fifty in constant dollars. In the immediate postwar years total military expenditure slumped to a mere seven times its pre-war constant-dollar level, while constant-dollar military R&D expenditure held at a full 30 times its prewar level, and comprised about 90% of all federal R&D. In the early 1950s total military expenditure soared again, reaching 20 times its prewar constant-dollar level, while military R&D reattained, and before the end of the decade much surpassed, its World War II high .... These numbers reflect a radical change in attitude toward science, toward national security, and toward the relationship between them on the part of both the military and the civilian leadership of the United States'. (Paul Forman, 'Behind Quantum Electronics', p. 152.)

62 Forman, 'Behind Quantum Electronics', p. 156.

63 Melvyn P. Leffler, *A Preponderance of Power: National Security, the Truman Adminstration, and the Cold War* (Stanford, CA: Stanford University Press, 1992), p. 14.

64 These are the necessary features of a permanent arms economy. President Dwight Eisenhower's famous (and politically unexpected) invocation of the 'military-industrial complex' in his 1961 farewell speech demonstrated the level of public awareness of the economic shifts prompted by the vast military expenditure in the 1950s.

65 Maurice Pearton, *The Knowledgeable State: Diplomacy, War and Technology since 1830* (London: Burnett Books, 1982), p. 242.

Manhattan Project as an unfulfilled experiment. For Edward Teller, writing in 1982, it is not so much that the institutional form of the Manhattan Project represented a threat to democracy, rather that democracy is threatened by its contemporary failure to fully absorb the organizational lessons of the Project. Thus:

> Today, national security and technology have become inseparable. Yet the gulf between the military establishment and the scientific community is as great as ever. General Groves was one of the pioneers who, with difficulty but ultimate success, managed to throw a bridge across the abyss. I do not see much hope for the survival of our democratic form of government if we cannot rebuild that bridge made by General Groves and J. Robert Oppenheimer. We must find ways to encourage mutual understanding and significant collaboration between those who defend their nation with their lives and those who can contribute the ideas to make that defense successful. Only by such cooperation can we hope that freedom will survive, that peace will be preserved.[66]

Paul Forman's historical evidence of the close links between the American military and science indicates that Teller's analysis needs to be read in the context of the nascent Star Wars programme. However biased, his analysis draws upon a widespread understanding since the 1940s that the Manhattan Project shifted American society as a whole.[67] For example, Paul Boyer cites the prescient Alsop brothers on the 'radical changes in the character of our national life' signalled by the atomic bomb. These changes would include federal planning for mass resettlement, drastic internal security, and the establishment of a non-elected emergency power structure.[68] Thus there is a strong political consensus on the centrality of the Manhattan Project model for American post-war social organization.

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66 Edward Teller, 'Introduction', in General Leslie M. Groves, *Now it Can be Told*, pp. iii-ix (p. ix). Note that the Groves account was first published in 1962 following the publishing pattern associated with nuclear fables. There are echoes here of Paul Forman's assertion that 'especially in the role assigned physical research, America in the eighties is reminiscent of America in the fifties' (Forman, 'Behind Quantum Electronics', p. 150).

67 Joseph Schwartz has argued that 'the social relations of the Manhattan Project were the social relations of the postwar world writ small. The subordination of the Los Alamos physicists to the U.S. military and government, their lack of confidence to use the power they did have, and their lack of unity that could have permitted them to use their power more effectively is the same subordination, the same lack of confidence, and the same lack of unity that we all have in relation to these powerful institutions. The Manhattan Project prefigured the environmentally destructive society in which we all participate. ... The history of the Manhattan project is the history of how we have lost democratic control over the most powerful institutions in modern life'. See *The Creative Moment: How Science Made Itself Alien to Modern Culture* (London: Cape, 1992), pp. 88-89.

68 Boyer, *By The Bomb's Early Light*, pp. 148-149.

'A Necessary Evil'

The atomic scientists of the Manhattan Project were not unaware of the militarization of their research, but they saw it as a temporary, necessary evil. I.I. Rabi, for instance, was persuaded by Oppenheimer to act as consultant to the work at Los Alamos, but he was a rare exception in refusing to work full-time on an atomic weapon; his argument was that 'three centuries of physics' should not lead to this millenarian conclusion.[69] The philosophical nature of Rabi's dispute also indicates that the scientists' discomfort with the military presence was not exactly political. Their objections to military methods centred around two closely-related factors: firstly, they felt confined by the obsessive secrecy and compartmentalization of work which obstructed the free flow of information between themselves and other scientists; and secondly, there existed a disciplinary snobbery towards the 'technical', engineered nature of the work at Los Alamos. U.S. Army General Leslie M. Groves, overall head of the Manhattan Project, neatly defused a rebellion over the first issue by agreeing to free discussion of any scientific issue within the so-called 'Tech Area' at the heart of Los Alamos, thus creating an apparently necessary illusion of scientific integrity.[70] On the second point Rhodes notes how the scientists 'thought they were assembled to engineer a "*practical military weapon*"' and science 'would have to wait until the war was won'.[71] It is typical of Dexter Masters's close documentation of contemporary scientific viewpoints that Louis Saxl makes similar connections between this loss of scientific purity and the corporate future. For him, and for many others, 'the science ended at Chicago, in 1942 ... There's been no science to speak of out here, we

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69 See Oppenheimer's letter to I.I. Rabi, Feb 26 1943, in *Robert Oppenheimer: Letters and Recollections*, ed. by Alice Kimball Smith and Charles Weiner (London: Harvard University Press, 1980), p. 250. The relevant passage is as follows: 'I think if I believed with you that this project was "the culmination of three centuries of physics", I should take a different stand. To me it is primarily the development in time of war of a military weapon of some consequence'. This was not a view Oppenheimer took after Hiroshima.

70 The importance of this notional scientific open-ness is visible in a comment by John Manley: 'In one area, that of technical discussions between scientists, the normal security procedure of limiting topics to a 'need to know' was not followed. Oppenheimer adamantly refused to permit any compartmentalization. Each scientist could discuss his work with his peers. Groves acceded to this policy, for he found Oppenheimer strongly supported by Conant, Rabi, Bacher, and all the rest of us. A feature of Los Alamos routine included regular formal colloquia and many informal meetings. These discussions brought forth ideas and were excellent morale boosters. I'm sure the work went faster and more effectively as a result'. ('A New Laboratory is Born', in *Reminiscences of Los Alamos, 1943-1945*, ed. by Lawrence Badash, Joseph O. Hirschfelder, and Herbert P. Broida, Studies in the History of Modern Science, 5 (Dordrecht, Netherlands: Reidel, 1980), pp. 21-41, (p. 35).) Interestingly, Debra Rosenthal's *At The Heart of the Bomb* is dedicated to Manley for his help with her interviews at Sandia Lab.

71 Rhodes, *The Making of the Atomic Bomb*, p. 464.

manufacture a product here'.[72]

Unwittingly perhaps, the atomic scientists nevertheless changed the character of their discipline for ever by working on the Manhattan Project. As Paul Forman has meticulously documented, from 1940 to 1960, 'American physics, accelerating its historic quantitative growth, underwent a qualitative change in its purposes and character, an enlistment and integration of the bulk of its practitioners and its practice in the nation's pursuit of security through ever more advanced military technologies'.[73] This didn't go unnoticed within the discipline. For instance, the August 1947 issue of the *Bulletin of the Atomic Scientists* carried an extended debate on the merits and demerits of military funds being used for scientific research.[74] If it was true that before the Second World War atomic research could justifiably claim its purity from military objectives, then the key political lesson for physical scientists was that during 'the production of the atomic bomb, war reached irreversibly into the last remaining 'civil' domain - pure research'.[75]

Louis Saxl: A Typical Atomic Scientist?

In order to convey 'a composite portrait of the American scientist' of Saxl's generation, Richard Rhodes cites a 'psychometric' study published in 1952 (one of many such studies carried out in the 1950s and 1960s):

> He is likely to have been a sickly child or to have lost a parent at an early age. He has a very high I.Q. and in boyhood began to do a great deal of reading. He tended to feel lonely and 'different' and to be shy and aloof from his classmates. He had only a moderate interest in girls and did not

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72 Masters, *The Accident*, p. 15. The 'Chicago' reference is to the first sustainable nuclear chain reaction achieved by Enrico Fermi's team at the University of Chicago. See Rhodes, *The Making of the Atomic Bomb*, pp. 433-442 for an account of the experiment.

73 Forman, 'Behind Quantum Electronics', p. 150. See especially figures on p. 168, p. 195, and p. 199 for evidence of this shift. This point was clearly lost on some atomic scientists, who preferred to look on the bright side: 'Since the earliest days of the Manhattan Project, the dream of inexhaustible and cheap energy has captured the minds of workers in atomic energy. We were much influenced by H.G. Wells and later by Sir Charles Darwin who pointed out what now seems obvious: that whether or not man increases his numbers very much, a substitute for fossil fuel is necessary' (Alvin M. Weinberg, *Reflections On The Mount Carmel Declaration On Technology And Moral Responsibility*, 1976 Wunsch Lecture (Haifa, Israel: Technion-Israel Institute of Technology, 1976), p. 8). Weinberg was director of the Institute for Energy Analysis at Oak Ridge.

74 See Louis N. Ridenour, 'Military Support of American Scientists, a Danger?', *Bulletin of the Atomic Scientists*, 3, 8 (1947), 221-223, and 'Replies to Prof. Ridenour', ibid., 223-230. Diverse responses came from the likes of Albert Einstein, Philip Morrison, Aldous Huxley, Vannevar Bush, and the Office of Naval Research.

75 Pearton, *The Knowledgeable State*, p. 242. Recognizing this sea-change, many of the politically-aware scientists (a prime example being Leo Szilard) moved into the new fields of medical and biological physics after the war.

> begin dating them until college. He married late ... has two children and finds security in family life; his marriage is more stable than the average. Not until his junior or senior year in college did he decide on his vocation as a scientist. What decided him (almost invariably) was a college project in which he had occasion to do some independent research - to find out things for himself. Once he discovered the pleasures of this kind of work, he never turned back. He is completely satisfied with his chosen vocation .... He works hard and devotedly in his laboratory, often seven days a week. He says his work is his life, and he has few recreations ... The movies bore him. He avoids social affairs and political activity, and religion plays no part in his life or thinking. Better than any other interest or activity, scientific research seems to meet the inner need of his nature.[76]

Further evidence for the single-minded nature of the contemporary American physicist is provided by Luis Alvarez's recollection of Berkeley in the 1930s. At this centre of physical research 'people who did not work eighty hours a week were considered to be not very interested in physics'.[77] Measured against these benchmarks Louis Saxl's background is remarkably typical. He is male, from a non-observant Jewish household, in a steady heterosexual relationship not begun until college, has clear intentions to marry, experienced childhood as an outsider to his peer group, spent much of his adolescence with his grandfather, and stumbled on physics by vocation.

Saxl and his street-friends were 'heirs to the age of wonders, ... automobiles, airplanes, radios, construction kits of innumerable parts and pieces',[78] but Louis surprised himself by quickly becoming bored with these 'wonders' that involved putting someone else's pieces together. The things that continued to interest him were his grandfather's extensive library and a neighbour's junk barn full of 'things that could be designed to his own pattern' (p. 67). A combination of his grandfather's illness and his Jewish background make Louis's non-standard childhood interests seem acceptable to his peer group: 'because he was a Jew he was allowed and even required to show differences' (p. 67). In a copy of Thomas Huxley's scientific notes Louis Saxl finds a statement of personal mission. Science, for Huxley the 'physical philosopher', occupies a space outside craft and commerce. Even if scientific discoveries found practical applications, this was missing the point of the original activity:

> even while the cries of jubilation resound and this flotsam and jetsam of the tide of investigation is being turned into the wages of workmen and

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76 Rhodes, *The Making of the Atomic Bomb*, p. 142. Rhodes suggests that 'this is close to Robert Oppenheimer', and notes that 'the group studied, like the American physics community then [i.e. 1952, the date of the survey], was predominantly Protestant in origin with a disproportionate minority of Jews and no Catholics'.

77 Cited by Joseph Schwartz in *The Creative Moment* (London: Cape, 1992), p. 218.

78 Masters, *The Accident*, p. 66.

> the wealth of capitalists, the crest of the wave of scientific investigation is far away on its course over the illimitable ocean of the unknown (p. 68).

Saxl, like many of his contemporaries, and like the scientists of the Cold War psychometric studies cited by Rhodes, was seduced by this transcendental interpretation of the scientific investigation.

Negotiating Social Responsibility

Dexter Masters interviewed many of the Los Alamos scientists and their families during research for *The Accident*. Laura Fermi recalls being asked directly by Masters whether there was ever any talk 'about the social implications of the bomb'.[79] With some minor exceptions, Fermi records that:

> [a]s a whole ... the Los Alamos scientists had not given much thought to the social implications of the atomic bomb. This explains the outburst of words, feelings, emotions and expressions of a sense of guilt in Los Alamos right after Hiroshima (p. 99-100).

This soul-searching angst that in part motivated the FAS is given a particularly ironic edge in Masters's fiction.

Saxl's childhood reminiscences of Huxley form part of one of a series of analeptic interludes which structure the narrative of *The Accident*. Meditating on the transcendent nature of pre-Hiroshima physical science Saxl is suddenly immobilized by an all-too-physical manifestation of the Huxleyan 'wave of the unknown':

> Far away on the illimitable ocean of the unknown, he whispered, and saw visions of beacon lights in churning waves, the lights turning slowly, cutting sharp paths along the jagged line of the waves, swinging closer and closer suddenly to bathe him there on a wave's crest in their brilliance.
> Oh, no! *Oh, no!*
> 'Did you nap any?' Betsy was saying. ...
> In the pit of his stomach he could feel the waves tightening and mounting for the break (p. 69).

Thus the ocean of transcendent science makes a banal return to Saxl in his hospital bed in the form of uncontrollable nausea, a side effect of the radiation poisoning.

This juxtaposition of the grandness of the wave of scientific investigation with the trivial wave of nausea signals several layers of irony. Firstly, ignorance about the nature of radiation sickness is almost total: it is 'truly comprehensible to no one' (p. 71). Yet Saxl is close to being an 'authority' (p. 47) having monitored the decline of 'Nolan' (i.e. Harry Daghlian, see earlier). Saxl is therefore his own object of study, a

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[79] Fermi, 'The Fermis' Path to Los Alamos', p. 99.

self-destructive parody of Huxley's self-justifying investigator.[80] It is not simply that he has brought his own death upon himself. In the atomic era there is no longer a safe critical distance between investigator and object of study. Atomic science implicates the investigator in the experiment because of the global nature of the atomic threat.[81] In this formulation the destruction of atomic power is always *self*-destruction.

When Masters brings the reader out of analepsis with the anguish of Saxl's internal cry, 'Oh, no! *Oh, no*!' (p. 69), this is clearly intended to have a resonance beyond the immediate nausea, signalling the wider theme of Saxl's developing guilt about his engagement with the bomb. The seduction of travelling the 'illimitable ocean of the unknown' was such that the social consequences had appeared trivial to this earlier self. In Saxl's own terms, part of his anguish is located in the recognition that the scientific 'choice' he later demands of Wisla and his colleagues was not something he himself took up when it mattered.

"If not now, when?"

Each edition of *The Accident* was prefaced with Hillel's famous aphorism: "If I am not for myself, who will be? But if I am for myself alone, what do I amount to?".[82] It is to these questions that Saxl turns after August 1945 in a letter to Theresa Savidge, his fiancée:

> "I get to pondering those two questions of Hillel's ... It is hard to figure out sometimes which you are being. I am afraid a most terrible thing has been done. Maybe not really meant, maybe just not thought about all the way through - perhaps a kind of accident, not a real design. But one is as bad as the other, now even our accidents take on the quality of design."[83]

Theresa confronts him with the issue he himself puts to Wisla: "'So why don't you leave that place?'" she writes (p. 279), and reminds him of Hillel's third question, 'If not now, when?'. Saxl feels trapped by the new military-scientific collaboration represented by the Manhattan Project. He and David Thiel have placed applications with the 'one research programme nobody can see a single military use for', but his choices

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80 The motif of the scientist who is destroyed by his own creation is obviously not original (cf. *Frankenstein*), but Masters makes no direct reference to precedents.

81 This is also of course a truism of relativity theory; the actions of the investigator inevitably influence the nature of the results. The sense is otherwise here.

82 Dexter Masters's own explanation for the continued popularity of *The Accident* focuses on this aphorism. His argument is that by individualizing atomic death *The Accident* speaks to the 'collective fate' made exponentially more urgent by the activities of the atomic scientists (see 1985 edition, pp. ix-x).

83 Masters, *The Accident*, p. 279.

are limited because 'the universities, most of them, are running on military funds now'.[84]

There is a second implied reason that Saxl remains at Los Alamos: anti-semitism in the American physics community. The fact that the Manhattan Project was highly dependent upon both European and American Jewish scientists should be seen as an historical blip of wartime necessity. Oppenheimer is a useful example here. He was allowed to study at physics in spite of his Jewishness, as his references made clear.[85] After the war he found himself wondering if anti-semitism was preventing his own recommendation of I.I. Rabi to Caltech: 'I proposed twice getting Rabi to the institute. ... Has this fallen through? If so, is it lack of money, [or] is it reluctance to add another Jew to the faculty ...?'.[86] University physics faculties operated an unofficial, unchallengeable quota system, and Saxl had fallen foul of 'stupid universities and stupid prejudices' as Theresa called them.[87] Saxl had received the double hurt of a letter from a friend which managed to combine 'contempt of the university's quota system' (p. 184) with the necessary rejection. Thus Saxl's choice is restricted by anti-semitism in his chosen discipline; to keep a wage he must stay at Los Alamos.[88]

The surge in social responsibility after the war might conceivably have come earlier. There was certainly at least one moment in the war when the issue of conscience became available to the scientists at Los Alamos. The physicist and anti-nuclear campaigner Joseph Rotblat revisited this moment in a *Bulletin of the Atomic Scientists* article on the fortieth anniversary of Hiroshima. 'When it became evident, toward the end of 1944, that the Germans had abandoned their bomb project,' why did the atomic

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84 p. 279. This episode also provides anecdotal corroboration for Forman's account of American physics.

85 See Schwartz, *The Creative Moment*, p. 107: 'When Oppenheimer asked his adviser at Harvard, Nobelist Percy Bridgeman, for a reference to Cambridge, Bridgeman wrote to Rutherford that he need no be overly concerned by Oppenheimer's Jewishness: "As appears from his name, Oppenheimer is a Jew , but entirely without the usual qualifications of his race. He is a tall, well set-up young man, with a rather engaging diffidence of manner ..."'.

86 Letter to Charles C. Lauritsen, 27 August 1945, *Robert Oppenheimer: Letters and Recollections*, p. 298.

87 Masters, *The Accident*, p. 184.

88 The novel uses this moment to make a link to the European Holocaust. Saxl's 'emotional chute' for such hurt had 'grown rusty with disuse' in the war years, the implication being that this left him more susceptible to a loss of control than before. Indeed, Saxl's reddening erythema of the abdomen (a delayed stigmata-like sign of the exposure) is later explicitly linked with a 'reddening' of anger and embarrassment Saxl recalls from childhood when he discovers that the teacher he idolizes is anti-semitic (see *The Accident*, p. 98-99). The implication is that in a certain sense physics killed Louis Saxl as surely as it killed hundreds of thousands of Japanese, and millions of European Jews.

scientists not quit en masse, he asks?[89] For many of them, the perceived German bomb threat was 'the main motivation' for working on the Manhattan project. In these circumstances, what factors stopped them exercising Saxl's 'choice'?

Rotblat suggests that there were five major reasons. Firstly, the allure of Saxl's and Huxley's 'illimitable ocean of the unknown'. In other words, 'the strong urge to find out whether the theoretical calculations and predictions would come true' (p. 18). This relates closely to Oppenheimer's sense of scientific investigation as an 'organic necessity'. Secondly, there was a strong, if debatable, argument that 'many American lives would be saved if the bomb brought a rapid end to the war with Japan'.[90] Thirdly, there was the institutional inertia for people afraid to make an individual stand that might harm their career. Fourthly, it was actually quite rare to be concerned. Most 'were not bothered by moral scruples; they were quite content to leave it to others to decide how their work should be used' (p. 18). Finally, there was a hidden anti-Soviet agenda in the Manhattan Project. Rotblat heard Groves tell Chadwick (the leader of the British Mission to Los Alamos) that 'of course, the real purpose in making the bomb was to subdue the Soviets' (p. 18). Although Rotblat 'had no illusions about the Stalin regime' he records that 'until then I had thought our work was to prevent a Nazi victory, and now I was told that the weapon we were preparing was intended for use against the people who were making extreme sacrifices for that very aim' (p. 18).

In the face of this new reality, Rotblat made a political decision and 'asked for permission to leave and return to Britain'.[91] He seems to have been almost alone. Joseph Schwartz, who is unique among commentators in devoting time to the issue, notes that of 'five thousand workers at Los Alamos, Rotblat and Volney C. Wilson were the only ones who resigned once it was clear that the Nazis would not get the

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89 Joseph 'Leaving the Bomb Project', *Bulletin of the Atomic Scientists*, August (1985), 16-19 (p. 18). Rotblat is most famous for founding the Pugwash Conference on Science and World Affairs which provided a venue for unofficial strategic discussions and certain kinds of nuclear technology exchange between the superpowers during the Cold War.

90 p. 18. This is still a contentious issue. See for instance Paul Fussell, 'Thank God for the Atom Bomb', in *Killing in Verse and Prose, and Other Essays* (London: Bellew Publishing, 1988), pp. 13-37. Fussell argues that experience of combat grants the cultural commentator moral authority in discussions on the use of the atomic bomb.

91 p. 18. This article prompted heated correspondence in the *Bulletin of the Atomic Scientists*. Rotblat's account implies firstly that the atomic scientists *were* morally culpable (which most of them seek to deny) and secondly that America started the Cold War. When Rotblat repeated the Groves story at a European nuclear think-tank in 1986 he was physically threatened by Richard Perle, a Bush administration strategic theorist (see Joseph Schwartz, *The Creative Moment*, p. 86).

bomb'.[92] Thus Louis Saxl's inability to cope with the demands of the new corporate-military relationship on his beloved science seem quite exceptional. The norm was an acceptance of nuclearism.

Part 3: The Internalization of the Atomic Secret

Consent is in nuclear war a structural impossibility.[93]

An Unlikely Accident

Those on the scene at Saxl's accident are convinced that he 'lost control' (p. 23), but they are at a loss to explain why this loss of control might have occurred. This was always an unlikely accident: it was the 'sixty-fourth' (p. 31) time the experiment had been run. Confronted by the absence of any physical explanation then, the accident is interpreted as an internal failure of personal self-control. The accident resulted from a 'slip' certainly, but 'not of the hands'. A slip instead of 'the mind or the heart' (p. 32). In this concluding part I investigate further *The Accident*'s representation of emergent nuclearism, and point to two key tropes of the nuclear fable: the distracted mind and the unreliable body.

David Thiel believes that there was a certain inevitability about the accident. He argues that 'peace lacks the built-in control of wartime's single-mindedness' (p. 290). In wartime the single-mindedness of the scientist is more than a match for the 'single-mindedness of the setup' (p. 290). But after the focus is removed, the scientist becomes open to 'thoughts of a different kind, to everything his life is made of, every irrationality, every odd notion, what hurts, what he loves' (p. 290). This new situation is newly dangerous because there is 'not enough margin for just one moment's movement of the mind' when dealing with fissionable material. Following this argument, the arrival of peace had a detrimental effect on Saxl's ability to concentrate, and he therefore made the fatal slip. The only answer to this danger is the provision of 'controls' (p. 291). An encounter with fissionable material could always be managed safely if the experimenter was 'listening very intently, using his eyes ingeniously, and

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92 Schwartz, *The Creative Moment*, p. 80. Other historical accounts of the Manhattan Project do not discuss actual resignations over this issue. Volney Wilson is the model for Harvey in Martin Cruz Smith's novel *Stallion Gate* (New York: Ballantine Books, 1986), discussed in Chapter Five. See especially pp. 105-108: "'Nobody remembers. We started this project only because Hitler had his project, so he couldn't blackmail us with his bomb. Now it looks like he never made one. Now we say we're going to use it on Japan, which doesn't have any project'" (p. 106).

93 Scarry, *The Body in Pain*, p. 154.

had all his wits about him' (p. 289). Peace-time, with its attendant distractions, is dangerous precisely because the 'human control called for was really too much for a man except at his most vigilant' (p. 289). Thus, to continue building atomic weapons a new *kind* of self-control is demanded: the 'built-in' controls of wartime must be replicated in peacetime.

International Control as Self-Control

At one level Saxl's delicate experiment is a metaphor for a potential strategic imbalance in the looming arms race: two nuclear forces held precariously apart by diplomacy and mutual threat. An accident in this situation would almost certainly be terminal. At a second level, the experiment is a metaphor for the personal mental balance required to accommodate the nuclearist paradox. As I argued in Part 1 of this Chapter, the twin nuclearist agendas of 'making weapons' and 'talking peace' can be very productive if held apart at just the right separation. But when someone like Louis Saxl rejects the nuclearist logic that separates them and allows them to meet, then they can become dangerously self-destructive for the nuclearist. If the challenge for the peacetime nuclear state was to develop the necessary procedures of vigilance to prevent nuclear extinction, then *The Accident* reveals the primacy of personal vigilance in this challenge.

Summarizing the situation for nuclearism, Colonel Hough realizes that 'the proper fear of this force was not whether men would lose control of it, but whether they would lose control of themselves in handling it' (p. 290). The prevention of a global incident is therefore understood as a matter of self-control. Continuing to build nuclear weapons is not the problem, since men have demonstrated the possibility of control over atomic forces in Japan. However, as these weapons proliferate, nuclearist success will be measured in terms of control of personal anxiety, and in the judicious selection of those individuals who might manage themselves better than others.

This emphasis on the personal and on personnel is visible in the nuclear industry after the war.[94] New personal radiation monitoring procedures, and the wartime development of unprecedented personnel security checks were two key features of the Manhattan Project that passed easily into wider post-war society. As Spencer Weart has noted, in the immediate post-war years:

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94 There was always an ambiguity at the heart of Urey's call for scientific control: international control of atomic power could either mean control *by* atomic scientists, or it could mean control *over* these scientists. See 'Security Through Control By Scientists?' and 'Security Through Control Over Scientist?', in Weart, *Nuclear Fear*, pp. 111-127. As the FAS was manoeuvred out of the equation, control quickly came to mean simply control *by* the government *over* the atomic scientists.

> Americans came to accept something so undemocratic that they would have found it unthinkable a decade earlier: an elaborate peacetime system of guards and fences, locked safes, visitors making detailed inquiries about the personal lives of friends, and plain spying. This system was strongest in the Atomic Energy Commission; by the end of the 1950s the government had investigated in detail some 150,000 people in connection with AEC employment. The system spread into many sections of government, industry, and even the universities.[95]

Harold Urey was therefore right to anticipate scientific compliance with restrictive measures. In general the scientists *were* willing to submit to the demands of 'security', presumably for similar reasons that they did not leave the Manhattan Project. For example, workers at the Hanford site in Washington were 'forbidden to talk about specific projects to their families or to workers lacking proper clearance', and they continued this self-censorship without complaint.[96] With hindsight, many of them were sure that 'the restrictions had created a public eternally frightened about basically unexceptional technical processes'.[97] At the time though, workers at the Atomic City (as it was known locally), had 'accepted readily the rules of silence' (p. 33). Hanford was not untypical. At Los Alamos male scientists had either told their family lies about their work, or nothing. In summary, when it came to atomic knowledge, there were more secrets within the home than between different nations.

Locating the "Atomic Secret"

General Groves had taken the approach that if the scientists were under lock and key then so was the knowledge of how to build an atomic bomb. This had worked with the wartime collaboration of the scientists themselves, but despite widespread compliance with security procedures, the problem of the peace would be more difficult. Many of the scientists were looking forward to the return of an international exchange of knowledge that had characterized their discipline before the war. The efforts of the FAS to impress upon the public that 'there is no secret' only had a limited effect. It was overwhelmed by a public readiness to regard American atomic scientists with an awe that rapidly turned to suspicion. When Groves instituted a purge immediately after the war he knew that it would meet with public acceptance.[98] Thus Spencer Weart has

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95 Weart, *Nuclear Fear*, pp. 121-122.

96 Paul Loeb, *Nuclear Culture: Living and Working in the World's Largest Atomic Complex* (New York: Coward, McCann & Geoghegan, 1982), p. 33.

97 p. 33. This corroborates Paul Boyer's 'fear' thesis (see Part 1).

98 See also Brandon, *The Burning Question*, p. 12: '... it seemed natural to the military - and especially to General Groves - that the convenient policy of military control and secrecy which had surrounded the atomic research for the past five years, should be continued. This might have

argued:

> When Groves told the public that the Soviet Union could not come up with the atomic bomb for many years, most people thought that was because only Americans knew the secret of building such bombs. Actually, the only important secret was the fact that atomic bombs were feasible, a secret lost forever at Hiroshima, but Groves never admitted that. His intense personal desire to control what he called "vital secrets" found echoes around the world.[99]

Groves's obsession was widely satirized in the early nuclear fables. In one example, B.F. Halverson, a fictional Manhattan Project scientist, is incredulous when he arrives at Los Alamos to find a doctored periodic table: 'oddly enough, at the bottom of the chart was the notation "Restricted -OFFICIAL MANHATTAN DISTRICT CODE 47". It was a fantasy beyond the dream of opium. What in peace-time could be secret about the elements of Nature?'.[100] Nothing, of course, but this was not the point. The point was the ability of the military to control scientists and scientific information in general. Resistance to 'atomic secrecy' had been half-hearted during the war. In the peace, resistance suggested anti-American politics.

It is revealing that the AEC loyalty tribunals (and indeed later, the House Unamerican Activities Committee) kept returning to this problem: could the person concerned contain the atomic secret within themselves, and how could the investigator *know* for certain? What sort of person would not 'lose control of themselves' in the nuclear industry? This emphasis is revealed in the nature of the charges against defendants.[101] One example referred to in *The Accident* was the description of Americans who had volunteered for the anti-Franco forces during the Spanish Civil

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worried the public, had the public been in any position to know what was happening. But of course it was not. The public was almost entirely unaware of what was going on: and without an informed public there can be no real debate'.

99 Weart, *Nuclear Fear*, p. 120. Weart is overstating the case slightly. His source is Groves's autobiography *Now It Can Be Told*, but the context Groves uses 'vital secrets' in is pre-Hiroshima, when Groves had an arguable case for total security. For instance, the British Mission scientist Klaus Fuchs was exposed after the war as having been in contact with Soviet agents.

100 Amrine, *Secret: A Novel*, p. 55. Groves is satirized in *The Accident* as "General Meacham". Meacham agrees with a paranoid Congressman that Saxl's hospital room should be guarded to 'prevent the possible disclosure of nuclear secrets to possibly uncleared visitors in possible moments of delirium. The Congressman had heard about an incident at Oak Ridge during the war when a whole private hospital wing had been constructed to house a man there who had had a nervous breakdown' (p. 308).

101 The *Bulletin of the Atomic Scientists* reacted to the AEC purge of October 1947 with a series of articles. See, for instance, Byron S. Miller and Harrison S. Brown, 'Loyalty Procedures of the A.E.C. - a Report and Recommendations', *Bulletin of the Atomic Scientists*, 4:2 (1948), 45-48, or T.H. Davies, '"Security Risk" Cases - a Vexed Question', *Bulletin of the Atomic Scientists*, 4:7 (1948), 193-194.

War: 'premature anti-fascists'.[102] Volunteering therefore reveals inappropriate behaviour rather than inappropriate politics. The defendant was right to hold anti-fascist views, but acted on them at the wrong time. This reading of a political gesture as a lack of restraint turns the whole issue of 'loyalty' into a question of self-control. The unpractised nature of this management of dissent is apparent in the frustration of a loyalty tribunal lawyer in interview with the *Bulletin of the Atomic Scientists*: '"We do not consider ourselves prosecutors", he said, "we are not trying to convict anybody. We are trying to judge these men by their words and their bearing. It's really a job for a psychoanalyst, not a lawyer'.[103] Thus this unprecedented mobilization of security resources to preserve the 'atomic secret' was directed towards detecting past deficiencies of heart and mind, and minimising future 'slips of the mind or the heart'.

The Distracted Atomic Mind

Characters in *The Accident* certainly have a problem with controlling their feelings and emotions. They are often visited by what David Thiel called potentially dangerous 'thoughts of a different kind', by slips of the mind. Charley Pederson is a good example. Saxl's in-house doctor becomes deeply troubled by how he feels after a solitary mountain climb. He had been 'agitated with feelings, even with thoughts, too personal to be communicated, too remote from the small body of his convictions ... to be tamed and tethered by any one of them'.[104] This was quite exceptional, since he 'had always been able to handle such feelings in the past, or, better yet, had not been especially conscious of them' (p. 7). He has become truly 'Modern' in Norman Cousins's sense.[105] Cousins had written in a seminal editorial for *Saturday Review* after Hiroshima that 'the fear of irrational death ... has burst out of the subconscious and into the conscious, *filling the mind* with primordial apprehensions' (p. 1 - emphasis added). Charley Pederson is swamped by such feelings.

In an echo of Cousins, and taking on the style of the Romantic figure of the

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[102] See *The Accident*, pp. 140-141. E.g. '"Do you know they nearly would not have me, because some stupid secret police had listed me as a 'premature anti-Fascist'?"', Michael Amrine, *Secret: A Novel* (New York: Heinemann, 1950), p. 22.

[103] Stephen White, 'Report on Oak Ridge Hearings', *Bulletin of the Atomic Scientists*, 4:7 (1948), 194-196 (p. 196).

[104] Masters, *The Accident*, p. 7.

[105] Emphasis added. Norman Cousins, *Modern Man is Obsolete* (London: Forum Books, 1946), p. 1. Originally published in the *Saturday Review*, 18 August 1945, p. 1.

Last Man, his isolation at the windswept peak lends itself to prophecy.[106] He first recalls a conversation with Louis Saxl in which he had been shocked by a story about the Alamogordo nuclear test. Another scientist had apparently suggested that there was 'one chance in a hundred that it will ignite the atmosphere'.[107] Then, surveying the Los Alamos mesa far below, it occurs to him that "'they've got their fingers on the controls of eternity down there"' (p. 12). The magnitude and the pretension of his thought stay with him, 'making him feel ... something other than the practical person he was' (p. 12).

In circumstances that were not nuclear, this prophetic and terminal vision at the peak would be a call to leadership and action. Pederson is 'struck by the notion that he ... really should be calling down to the plains below to tell people there what was going on in the canyons and on the mesa' (p. 12). But he does not. This seems to be one of these atomic-age feelings that must always remain unexpressed because of the ontological abyss that lies behind it. As Pederson expresses it to himself, '[w]hat meaning did life have if its obliteration could be contemplated as one possibility in anything?' (p. 16). It is precisely this epistemological break that successful nuclearism must obscure.[108] Firstly the nuclearist must reconcile personally the central paradox of nuclearism: that nuclearist subjectivity contains the possibility of an end to all subjectivity. Secondly, the nuclearist must accept a subject position within the ideology of nuclearism. Pederson tries hard to do this. He is not an atomic physicist, so he must be educated into the ideology of nuclearism. His silence after he comes down from the mountain with his new understanding is evidence of the first reconciliation. The fact that he does not immediately resign can be read as evidence of a second.

I have argued that this management of feeling is characteristic of nuclearist subjectivity, and Charley Pederson displays some capacity to regulate the rush of

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106 Robert Lifton has pointed to the prophetic tone of some commentators on the bomb. Reading William Laurence's semi-official account of the Trinity test (see also Chapter 1), '[w]e sense [him] to be a man who has experienced nothing less than a "conversion in the desert"' (Robert Jay Lifton and Richard Falk, *Indefensible Weapons*, p. 90).

107 p. 12. This is a reference to Enrico Fermi's notorious 'bet' on the eve of the Trinity test. Fermi's point was that no-one could say for certain what might happen, but it is unclear whether he really thought the world might be destroyed. See Rhodes, *The Making of the Atomic Bomb*, pp. 664-665. Ironically, it had been Saxl who had met Pederson's outrage at this apparent lack of responsibility with the idea that the scientist was just paying 'a kind of tribute to possibility' (p. 14). This moment has been widely read as a general 'failure to imagine' among the atomic scientists; see, for example, Reg Saner, 'Technically Sweet', pp. 724-725.

108 See my discussion of Richard Feynman's two recorded reactions to the atomic bombs in Chapter One. Feynman's acceptance of an apparently inexorable nuclear reality and his return from an alienated nuclear overload is comparable to the process Lifton names 'psychic numbing'. See Lifton and Falk, *Indefensible Weapons*, Chapter 10, 'On Numbing and Feeling'.

'primordial apprehensions'. He is determined not to verbalize his anxiety, but still he cannot keep it from his mind. This internal tension reveals itself as uncontrollable absent-mindedness: '[h]e was so abstracted that some of his friends noticed it, one or two of his patients even, and of course, Betsy Pilcher [the nurse]' (p. 17). After Pederson leaves a room they have been sharing, Betsy Pilcher is filled with a 'sudden gloom' (p. 8). She attributes this either to a 'spell' exerted by the mountains, or 'possibly Charley Pederson had left some of his worries floating by the window'. These feelings appear to be infectious. It is as if the agitation filling his mind has overflowed. This emotional infection illustrates that in the world of the nuclearist even the smallest loss of self-control can be dangerous. Atomic feelings are transferable between bodies even without speech, and can be 'left floating' by a moment's absent-mindedness. Consequently, the peculiar properties of these feelings need to be managed. It is not enough to ignore these feelings, indeed one must be conscious of them at all times.

Controlling Atomic Feelings

If feelings are in the air, are invisible, and can be left by poorly-controlled bodies, then they have strikingly similar properties to radiation. They are akin to Louis Saxl's ramblings in their capacity to affect those who encounter them. Radiation and feelings even appear to be species of the same phenomenon.[109] According to David Thiel, 'the almost eternal nervousness of uranium sometimes ... seemed to mesmerize people and throw them off the main point' (p. 290). In a dangerous spiral the nervousness of fission products can induce an anxious absent-mindedness in a human, and human absent-mindedness can produce terminal 'slips' when dealing with fissionable material. Louis Saxl's fiancée, Theresa Savidge had noticed the danger on a visit to Los Alamos: she found a 'nervousness' on the mesa, 'not anything moving people's minds, but something, maybe in themselves, moving against them' (p. 181). Here the strong consensus among characters in the novel that control of the atom is a question of personal awareness and self-control is made explicit once more.

Pederson, however, is not a very good nuclearist. His techniques of self-control are embarrassingly undeveloped. At a party in Louis Saxl's office just before the fatal accident, and a few days after his disturbing vision, Pederson's apprehensions had leaked out. The photographic film manufacturer, Eastman Kodak, had just published (in May 1946) a report explaining why a number of their products had inexplicably fogged. The report revealed that fallout from the Trinity test of 16 July

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[109] See also Chapter 3 for a more extensive discussion of 'atomic feelings'.

1945 had contaminated the mid-western strawboard the company used to pack its films.[110] Pederson had been brewing over this for days, and had 'been rather quiet all evening' at the party (p. 154). He then disturbs the song-making with an impassioned outburst questioning the value of civil atomic power. He argues that if a civilian power programme takes off, then the companies will be 'building piles all over'. He cites the Eastman report as evidence of the danger of fallout: '"If one bomb test can do all that, who's to say -?"'. The room-full of atomic scientists reacts spontaneously, and '[h]alf the men at the party were up at once to call out that Pederson was all mixed up'. We can assume that in the 'hubbub of clarification' Pederson is informed of the technical differences between piles and bombs, of the imagined 'cheap' source of power the atom will provide, and of the substantial differences between bomb fallout and a radiation leak from a pile.[111] Pederson's error is not to be in possession of the whole nuclearist picture, but he is apparently willing to be corrected, and the scientists clearly have an urge to educate.

Pederson's aspirant nuclearism is signalled by the reaction to Theresa Savidge's subsequent comment. She reminds the party of one of Einstein's aphorisms: '"I read that Einstein says it's dangerous to do anything - maybe after what you've all done you should try not doing anything for a while"' (p. 147). This anti-nuclearism is simply ignored, and David Thiel covers up a potential social gaffe with a request for more entertainment. Once again, the only possible path is that of the nuclearist. *Management* of atomic power is the only discourse within rationality.

One of the few characters to put these issues into larger framework is Doctor Beale, a pathologist called in to assist with Saxl's post-mortem. Pederson meets an already drunk Beale in a Santa Fe hotel. Beale has an obnoxious personality, and the conversation turns to their feelings about Saxl. Beale argues that the 'curse of modern man' is that he cannot 'feel'. It is not that he has no feelings exactly, more that in the face of this swamp of emotion he does not know *what* to feel. Beale suggests that '[i]f he can't any longer feel, he's doomed to the jungle .... But if he can't keep his problems in range of his feelings, he's doomed too, to jungles of decisions that don't decide anything, while his doom is decided for him'.[112] These issues come to a head 'in a project like this one' (i.e. the Manhattan Project), because 'there come times when

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110 Masters, *The Accident*, p. 147. For further details of the Eastman Kodak research see John May, *The Greenpeace Book of the Nuclear Age*, p. 62.

111 For an analysis of contemporary utopian fantasies surrounding civil atomic power see Boyer, *By the Bomb's Early Light*, especially Chapter 10, 'Atomic Cars, Artificial Suns, Cancer-Curing Isotopes: The Search for a Silver Lining', pp. 109-121.

112 Masters, *The Accident*, p. 166.

feelings have to be put aside, [or] they'd make a hand tremble - divert the mind' (p. 166). In this situation the physicist can go two ways: either he simply does not feel *anything*, at any time, or 'say you know how to feel and what to feel, why, then, what a terrible discipline is required at those particular times'. In summary, Beale notes that feelings are 'bad things in a physicist, most particularly a physicist making bombs' (p. 166).

Beale's point is that in order to understand 'what makes a trained hand slip, what makes the mind fail to guide the hand for a moment, what acts on the mind' (p. 167), it is necessary to know what happened in the accident. Beale's suggestion that it may be a 'fear', or a 'refusal' implies that the slip was deliberate, maybe even a personal refusal to carry on building bombs.

Reading the Atomic Body, Reading the Atomic Text

'Tu n'as rien vu à Hiroshima, rien'[113]

Beale surely speaks for most readers of *The Accident* with his plea to understand 'what acts on the mind' to procure this fatal error. The irony of the title is that multiple interpretations of the incident are offered, and this is supported by the ways in which the narrative is self-reflexive about this lack of closure. At the level of content there are numerous reasons put forward for the slip: it may have been due to the 'irrationality' of Saxl's unilateralist politics; it may have been the effect of 'nervousness' in fissile material; alternatively, Saxl may have been infected with 'gloomy' feelings from his colleagues; he may be a victim of anti-semitic science policies; he may even have committed suicide, if Beale's questions are extrapolated. I have argued that the way in which the characters react to Saxl's illness is a measure of their engagement with the emerging nuclearist social structures. To this end I have read the novel in order to foreground its aesthetic critique of contemporary social organization. In this last section, I wish to briefly address the issue of form as a transition to the next Chapter's analysis of more nuclear fables from the first wave.

The attention paid to historical detail in Dexter Masters' text is typical of the early nuclear fables. It is, like many others, a documentary novel, marketing itself on a certain historical verisimilitude. In particular, as I suggested earlier, *The Accident* makes use of the phrases and soundbites of contemporary media. The documentary content is accompanied by relentlessly realist narrative strategies, with clear distinctions

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[113] The Japanese architect to the French actress in Marguerite Duras, *Hiroshima mon amour* (Paris: Gallimard, 1960), p. 25.

being made between the various narrative voices.[114] This anti-modernism is shared with the remainder of the first wave of nuclear fables.[115] How then does the central ambiguity of Saxl's slip function in such an avowedly realist novel?

The Atomic Body as Atomic Text

The key to understanding the effect of the text lies in an analysis of the atomic body. Saxl has a peculiar status as first and last man of radiation physics.[116] He is probably the most qualified person on site since he was responsible for managing Harry Daghlian's decline the previous year. Saxl's own exposure is also the best source of data for subsequent studies. Thus he is both victim and object of study, a fact which makes his colleagues deeply uncomfortable with their science. Saxl's decline is monitored with some embarrassment by photography; his white cell count a measure of his proximity to infection and death, and a taboo subject in his presence.[117] Saxl is fully aware of his peculiar status, which he treats with a detached irony:

> Everybody will be reading something, mostly about mice and dogs because there isn't very much about us humans, he thought; and the usefulness of all the reports on the casualties and survivors in Japan is not much since there were so many variables in estimating the radiation ....[118]

In this ambiguously fortuitous experiment, theoretical calculations of Saxl's exposure to radiation are set against the 'observed biological response' (p. 118). His body becomes a clinical text for the 'many considerations and reconsiderations' of the received dose that will eventually become part of the standard literature of exposure risk within the atomic industry.

Saxl's body is thus the focus of intense interpretative activity. His body is a contentious as well as informative text. Contentious because the tension between the 'disinterested' epistemological order of science and other more engaged orders is close to breaking point in the atomic age:

> The important thing about reading a chart is to read no more than is there. The important thing about reading how six hundred out of eight

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114 I include Saxl's 'delirious' monologues in this since they still obey the conventions of realist narration.

115 Many of the writers were aware of modernist imperatives, but the subject matter seems to have demanded the realist mode in the first-wave. I discuss this further in Chapter 3.

116 This trope of the first and last man reappears in varying forms throughout the nuclear fable genre. See my analyses in subsequent Chapters.

117 Masters, *The Accident*, p. 116, p. 302 (photography), p. 299, p. 301 (white cell count).

118 Masters, *The Accident*, p. 118. See also my earlier comments about the use of Hiroshima/Nagasaki data.

> hundred and fifty medical students were killed in a city of secondary importance bombed without warning is to read more than is there.[119]

The Accident positions itself between these two modes. At the level of a documentary fiction, it certainly has the qualities of a 'chart' meticulously recording the state of the Manhattan Project in May 1946. At the level of imaginative fiction, the demands placed on the reader by the central ambiguity actively invite discussion of 'more than is there'.

This narrative strategy is central to Saxl's post-accident anti-nuclearism as well. Masters utilises a widely-circulated story about the Trinity test to allow Saxl to express the necessity of reading beyond charts to Ed Wisla on one of his earlier hospital visits:

> Edward, he said to the retreating figure, all but lost in the dark, do you remember that blind girl in Albuquerque, who noticed a brightening in her room after the flash of the bomb at Alamogordo, more than a hundred miles away from her? "What was that?" she asked. Ed, God damn it, Ed, don't go away! What *was* that? (p. 192).

Awkward questions like this one probe the limits of the nuclearist consensus. The suspicion that some aspect of the bomb is out of range of rational control has the same destabilizing effect as Saxl's questioning of the need to drop a second bomb, for instance. This foregrounding of a nuclear supplement that is left unanswered by nuclearists is the central trope in *The Accident*'s anti-nuclearist aesthetic. I have already suggested that *The Accident* offers more than a pious admonition to its readers, and it is certainly more than a nuclearist sop; but as a 'nuclear fable' what is the 'useful truth' that it narrates? If we are not to be nuclearists, what are we to do? Masters's answer is the cultivation of a kind of instructive ambiguity. Thus the lack of narrative closure around the titular accident. More importantly, access to this 'useful truth' is understood as a question of a mode of rhetorical analysis.[120]

I am aware that this lack of narrative closure is only provisional. Louis Saxl dies at the end of the novel, leaving the uncomfortable impression that anti-nuclearist viewpoints are only fully expressible on the delirious death-bed.[121] The importance of the ambiguity is not the lack of resolution itself, rather its significance lies in its disturbing presence alongside a dominant nuclearist discourse of abdicated responsibility and increasing social control. From the nuclearist point-of-view, ambiguity is precisely the element that needs to be removed from the encounter with the bomb. The nuclearist tension between making bombs and talking peace must remain

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119 Masters, *The Accident*, p. 119. A reference to the destruction of the medical school in Hiroshima.

120 Thus Masters predates the 1980s Nuclear Critics in their attention to 'nuclear discourse'.

121 *The Accident* clearly draws upon an older trope of freedom only in death or madness in the tradition of the realist novel.

paradoxical, not ambiguous. Ambiguity, speculative questioning, brings the two poles close enough for dialogue, with all its attendant problems for the nuclearist. In this sense ambiguity is the antithesis of personal control. In leaving the central issue unresolved Masters leaves in his text the productive social ambiguity of Hillel's epigram; of being 'for oneself' *and* 'for others also'. By implication, a reader might also be expected to make a nuclear choice; and if not now, when?[122]

[122] See Chapter Five for a discussion of the persistence of this question.

CHAPTER THREE: EARLY REPRESENTATIONS OF NUCLEARIST SUBJECTIVITY

Introduction

The emergent nuclearist subjectivity visible in *The Accident* is anxious and uncertain of itself. This third chapter traces historical shifts within the first wave of nuclear fables towards the representation of a self-confident nuclearism. *The Accident* pursued an anti-nuclear aesthetic by referencing historical detail with a productive ambiguity, and I have argued that it draws much of its power by *exploiting* the boundary between documentary and fiction. Thus, I begin this third chapter with further analysis of the form of the early nuclear fable. Whereas *The Accident* generated a critique of nuclearism from a realist narrative, this narrative form is more often complicit with the tropes of nuclearism. In general, authors close to the Manhattan Project responded to a moral pressure to document the complex political issues with a dry realist style in order to be mimetically "responsible". By contrast, authors with little or no connection to the Project simply saw the bomb as a powerful narrative device. The interesting common ground between the two approaches is the figure of an atomic scientist "adapting" to the bomb. This figure is mobilised to postulate the existence of a new nuclearist subjectivity that *can* contain the paradoxes of nuclearism.

As I described in Chapter One, this study of representations of nuclearist subjectivity would always have two objectives. Firstly, it would seek to locate "adaptation" to nuclearism. Secondly, it would investigate how this adaptation might be assimilated or resisted. The notion that certain narrative representations are complicit with nuclearism needs further examination. In what sense, for instance, can it be argued that nuclearism is assimilated into a wider subjectivity? In order to address this question, I return to my comments in Chapter One on the need to read nuclearism as a process of militarization. I argue that it is important to see the emergence of the nuclearist subject as a particular *reorganization* of existing structures of power. With this in mind, I conclude with a reading of C.P. Snow's 1954 novel, *The New Men*, to illustrate the way in which the first wave of nuclear fables increasingly uses the figure of the atomic scientist to conflate the nuclear threat with a revision of the codes of power.

Part 1: *Nothing So Strange* as a *Secret*?

Michael Amrine, the publicist responsible for Harold Urey's agenda-setting 1946 *Collier's* article, published his own nuclear fable in 1950. This novel, *Secret*, follows the career of an atomic scientist, B.F. Halverson, through the Manhattan Project years, and into the beginnings of the Cold War. Halverson works first at the Oak Ridge site in Tennessee, goes on to witness the test shot at Alamogordo, and is part of the team sent to Japan to investigate the damage after Hiroshima and Nagasaki. The character is clearly a composite of several real Manhattan Project physicists, with particularly strong connections to Philip Morrison and Robert Oppenheimer.[1]

An unusual feature of *Secret* is that certain words and phrases have been excised from the text. The majority of the excisions appear to cover technical terms from atomic science, and the following exchange between Halverson and a colleague regarding his forthcoming trip to Japan is typical:

> Walking to Georg's rooms on St. Paul Street, the little Politzky regained his exuberance.
>
> "My boy," he said, "it is all right. It is very exciting. You will see the [redacted], and study the [redacted] Doesn't that come into the work you are doing?"
>
> "Yes," said Halverson. "I believe that when we [redacted] we will find [redacted]."[2]

It is possible that these are authorial devices to increase the narrative tension. The apparent presence of a censor's hand can only seductively increase a nuclear text's claim to historical authenticity. I discussed the possibilities with the Twentieth-Century Librarian at the British Library in May, 1994, and it was his opinion that this form of censorship of twentieth-century books is so rare that it might point initially to an authorial device. On the other hand, the problem with this view is that the marks appear to be made by printers blocks, which would indicate the presence of text in the proofs that has since been obliterated. Thus, it is also possible that these are examples of real censorship. It is certainly not unreasonable to suspect the latter, given the contemporary context. As I have argued earlier, secrecy and censorship of Manhattan Project science was an unresolved issue in the post-war years. The *Bulletin of the Atomic Scientists* carried regular updates of Manhattan Project documents as they were declassified, but the boundary between what was public and what was secret information in the first

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1 Halverson's visit to Japan and his liberal politics are closely paralleled by Morrison's, and as Paul Brians points out, 'the security problems of [the novel's] protagonist ... mirror those of Robert Oppenheimer' (Brians, *Nuclear Holocausts*, p. 114.)

2 Amrine, *Secret*, p. 86. There are other interesting examples on pages 60 and 208.

post-war decade was policed effectively by General Groves through the agency of the Smyth Report.[3] Henry Smyth's official report was an exercise in information management, offering an officially sanitised version of events, rather than a fully-open account as demanded by the scientists. The report's press release stated unequivocally that 'nothing in this report discloses military secrets as to the manufacture or production of the weapon'.[4] As Richard Rhodes has pointed out, 'Groves' intention in releasing it' was never to inform but to forestall 'information leaks' from the scientists.[5] Thus, by appearing to make concessions to scientific openness he was able to retain control over the Los Alamos archive.

The limited nature of the Smyth Report meant that there was a de facto block on telling the full Manhattan Project history until the late 1950s. The first major shift in security policy came in May 1959, enabling both Groves and Amrine to publish detailed documentary accounts of the Manhattan Project.[6] In the 1960s more documentation was steadily released, and this produced new titles such as Stephane Groueff's *Manhattan Project: The Untold Story of the Making of the Atomic Bomb* (1967). Even so, enough material was still classified in the 1980s to make Richard Rhodes in *The Making of the Atomic Bomb* feel the need for some small disclaimers in his epilogue.[7] The speed with which Amrine's *The Great Decision* was published suggests that it was in preparation long before the change in policy. It covered much the same ground as *Secret* had done a decade earlier, but as overt documentary rather than as a documentary fiction. Echoing Louis Saxl in *The Accident*, *The Great Decision* was quite explicit about the questions that still needed a response fourteen years after the atomic explosions: 'Did the bombs win the war or did they merely "close" the war?' (p. 227); 'Was Hiroshima a military target?' (p. 228); 'When was the Franck Report actually delivered to the office of the Secretary of War?' (p. 229)[8]; 'Did Stalin [at

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3 See, for example, 'A List of Manhattan Project Declassified Documents', in *Bulletin of the Atomic Scientists*, 2 (1946), 15-17. Full details of the Smyth Report: Henry DeWolfe Smyth, *General Account of the Development of Methods of Using Atomic Energy for Military Purposes under the Auspices of the United States Government, 1940 - 1945* (London: HMSO, 1945).

4 Cited by Groves in *Now It Can Be Told*, p. 351.

5 Rhodes, *The Making of the Atomic Bomb*, p. 750.

6 Groves, *Now It Can Be Told*; Amrine, *The Great Decision:The Secret History of the Atomic Bomb* (London: Heinemann, 1960).

7 See, for instance, p. 774, on the hydrogen-bomb: 'That, to the extent that continued secrecy allows its reconstruction, is probably what [Stanislav] Ulam first conceived and [Edward] Teller made practical'.

8 The Franck Report argued for a safe, public demonstration of power of the atomic bomb in order to possibly prevent military use.

Potsdam] understand what Truman meant to tell him about the bomb ... [since] Truman did not use the word "atom"?' (p. 231); 'Were the first atomic bombs really "aimed" at Russia, not Japan?' (p. 232); 'How significant was the information given by the spies to Russia? Was it crucial to Russia's own atomic effort?' (p. 235); 'Did we make the Potsdam declaration clear enough and did we allow the Japanese enough time to think it over?' (p. 238); 'Was the Nagasaki bomb necessary or important to ending the war?' (p. 239). Whereas *The Great Decision* was able to use new evidence to go some way towards answering these questions, both *Secret* and *The Accident* had been published in an atmosphere where these questions were technically unanswerable due to the lack of public information. Thus the gaps in Amrine's 1950 narrative, be they authorial or state-sponsored epistemic violence, need to read in the context of a politicised tension between historical documentary and fictional narration that is present in all the first wave nuclear fables.

'A Curiously Static Quality'

The foregrounding of the tension between secrecy and fiction at the level of form in *Secret* is uniquely self-reflexive. In the face of the security clampdown, novelistic strategies usually led to simple name changes in key participants, or the development of composite characters like Halverson and Wisla (from *The Accident*). For example, in Pearl S. Buck's nuclear fable, *Command the Morning*, Enrico Fermi appears as himself, whereas Leo Szilard is 'Szigny'. There seems to have been no clear rationale for these changes. Another early text to adopt this strategy was Mitchell Wilson's *Live With Lightning*, and in a similar vein, Haakon Chevalier chooses to call the atomic bomb 'the Bolt' in *The Man Who Would Be God*.[9]

The important point to note about all these texts is that there was little or no attempt to experiment with the conventions of their realist narratives. This aesthetic conservatism was an active choice on the part of many authors, and especially so for Michael Amrine. For instance, contact with the victims of the bomb in Hiroshima changes Halverson's world-view in terms of an aesthetic reorientation. Thus, 'Halverson at that time, that pre-Hiroshima childhood time, [had been a] great lover of irony'.[10] For Amrine, then, the politics of the atomic world seem to demand a rejection of irony and a close attention to the literal. Amrine's resultant earnest and occasionally stilted fictional style was typical of other "responsible" fictions in the way in which it

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9 Pearl S. Buck, *Command the Morning* (London: Methuen, 1959); Mitchell Wilson, *Live with Lightning* (Boston: Little, Brown, 1949); Haakon Chevalier, *The Man Who Would Be God* (New York: G.P. Putnam's Sons, 1959)

10 Amrine, *Secret*, p. 18.

split the critics. Merle Miller's *New York Times* review commented on the tension as follows:

> In taking his protagonist from a quiet college campus to Oak Ridge, Los Alamos, Washington and Hiroshima, Michael Amrine has chosen the most dramatic material available in the world today. Yet 'Secret' has a curiously static quality. Instead of populating his book with people he has sprinkled it with ideas, good ideas, admirable ideas. Yet the present reader couldn't help wishing he had written a factual account of what went on in the Manhattan Engineering District and the Federation of Atomic Scientists.[11]

This, of course, was precisely what Amrine *could not* have done seriously at this historical moment. F.X. Duggan, reviewing *Secret* for *Commonweal*, concluded bluntly that 'fiction does not seem to be Mr. Amrine's medium'.[12] Mitchell Wilson, on the other hand, wrote that 'Amrine's first novel ... is a bitter, provocative book that should be read by everyone who is looking for a key to the international confusion of the post-war years'.[13] J.H. Jackson called *Secret* a 'startling and in many ways a shocking novel .... [Amrine] lays out ... some of the questions that have come out of the relationship between the successful splitting of the atom and world politics and war'.[14]

These conflicting reviews of Amrine's text illustrate the omnipresence of the tension between politics and poetics in the early nuclear fable. On the one hand, the politically liberal desire to document the bomb project and address its unresolved moral and political issues with historical accuracy could only be expressed under the guise of a fiction because of state secrecy. On the other hand, the same liberal politics that generated the fiction also demanded a moral sensitivity to its subject matter. This "responsible" attitude was then figured as aesthetic conservatism, as fiction predicated on the mimetic representation of historical reality. The responsible writer was therefore caught in an epistemological trap. On the one hand, any claim to historical authenticity was always already partially undermined by the fact that they had to resort to a fictionalisation in the first place. On the other hand, the only way to counteract this was to scrupulously remove non-mimetic orders of literariness.

This tension makes itself visible in certain key textual codifications of atomic history. For example, almost every fiction of the Manhattan Project manoeuvres its (male) protagonist such that he is in a position to see the spy Klaus Fuchs, or a Klaus

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11 *New York Times*, 6 Aug 1950, p. 16.

12 *Commonweal*, 15 September 1950, p. 564.

13 *New York Herald Tribune Book Review*, 6 August 1950, p. 5. For Mitchell Wilson, see earlier.

14 *San Francisco Chronicle*, 11 August 1950, p. 18.

Fuchs surrogate character, make the infamous exchange of atomic plans on a bridge in Albuquerque. B.F. Halverson's trajectory from obscurity to Hiroshima via Los Alamos is, in an important sense, a geographical template for early nuclearist subjectivity. In order to represent this atomic trajectory the author has to impose a certain kind of realist narrative structure. The "responsible" author is so concerned to tell an accurate linear historical account that even literary tropes such as analepsis are avoided where possible. This produces a reality effect reminiscent of the classic nineteenth-century novel. As Catherine Belsey persuasively argued almost two decades ago, the reader of this kind of narrative 'is invited to perceive and judge the 'truth' of the text, the coherent, non-contradictory interpretation of the world as it is perceived by an author whose autonomy is the source and evidence of the truth of the interpretation'.[15] The reader is encouraged by the illusion of reality, tightly-figured narrative closure and a 'hierarchy of discourses' (p. 70), to see certain subject positions as natural and obvious. In *The Accident* the unresolved ambiguity surrounding Saxl's 'slip' foregrounded the illusory nature of historical narrative, worked against closure, and undermined any sense of a definitive account. Thus, I have argued, the responsibility for the production of meaning was passed to the reader through Hillel's aphorism. A reader looking for subject positions to identify with is caught between the contradictory possibilities offered by Theresa Savidge and Ed Wisla: 'stop building bombs now', or 'build and negotiate', unilateralist versus nuclearist. By contrast, *Secret*'s overwhelming concern with fictionalising the historical record leads it into proposing a much less ambiguous and contradictory set of subject positions than *The Accident*. The linear representation of Halverson's atomic path is, I shall argue, complicit with nuclearism. In the critical terms set out by Evelyn Cobley (see Chapter One), 'formal choices are never ideologically innocent'. Despite Amrine's FAS politics, nuclearist self-control makes an unexpected appearance as a formal control over irony and the non-literal orders of narrative. I shall return to this point in the next section.

As the negative reviews suggested, the relatively unsophisticated narrative technique of *Secret* and the other early nuclear fables didn't find much favour with literary journals, but this dismissal elides one important aspect of the early nuclear fable. They were *uniquely* documenting a transformative period of Western history in fiction. This historical importance is underlined by the fact that other cultural forms were silent on the bomb's historical resonances. In the cinema, for instance, 'almost without exception, movies that dealt openly with atomic weapons from 1952 through 1958 were Cold War propaganda tracts, such as *The Atomic City* (1952), *Invasion*

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15 Catherine Belsey, *Critical Practice* (London: Methuen, 1980), pp. 68-69.

USA (1952), *Hell and High Water* (1954), *Strategic Air Command* (1955), and *Bombers B-52* (1957)'.[16] The apparatus of apocalypse could not be opened up to critique in this kind of film. The American literary establishment also, for a variety of reasons, had chosen not to deal with the mechanics of the bomb. Writers who had the technical skills and literary background to engage in non-realist modes of representation had very little to say about the bomb. Paul Boyer draws on his research into early reactions to the bomb to argue that:

> only in allusive and tentative ways does the atomic bomb make its appearance in post-1945 American literature. In Carson McCullers's *Member of the Wedding* (1946), for example, a newspaper account of Hiroshima helps illuminate the situation and personality of [Frankie and Berenice]. ... But even such passing references are infrequent.[17]

Gertrude Stein, for instance, gave a famous death-bed non-reaction to the news of the bomb, arguing that 'the atomic [bomb] is not at all interesting, not any more interesting than any other machine. ... Sure, it will destroy a lot and kill a lot, but it's the living that are interesting not the way of killing them'.[18] As I have argued in Chapter Two, this lack of alarm at the bomb was one of the key issues agitating the atomic scientists. However, there were other reasons for a lack of literary coverage of the bomb, apart from what the scientists would have seen as wilful ignorance. Boyer points to the poet John Berryman's sense of a widespread cultural malaise, visible in a 1948 *Partisan Review* article on contemporary American literature. As Boyer puts it, 'the knowledge that decisions of the utmost moral significance could be made in one's name without one's participation or even knowledge' produced a state of mind that Berryman, for one, did not find 'favorable to writing'.[19] By contrast, it was precisely the prospect of *more* of these unaccountable decisions being made in the future that drove Amrine into print.

As I have suggested, Amrine was in no sense an experimental writer. For him aesthetic effect exists to be mobilized to serve historical veracity in an often explicit didacticism. Writing at the same time, however, a third group of writers saw the bomb as excellent historical background material for novels designed primarily to entertain rather than educate. The phenomenon was most widespread in science-fiction, where Theodore Sturgeon noticed a tendency to use the bomb as a 'limitless source of power

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16 Franklin, *War Stars*, p. 182.

17 Boyer, *By The Bomb's Early Light*, p. 247.

18 'Reflections on the Atomic Bomb', *Yale Poetry Review*, 7 (1947), pp. 3-4 (p. 3), also cited by Boyer, *By The Bomb's Early Light*, p. 250.

19 Boyer, *By The Bomb's Early Light*, p. 252.

for background to a limitless source of story materials'.[20] It is worth noting here that this adds an important gloss to my discussion in Chapter One of the prevalence of a *future* nuclear referent in nuclear texts. These writers, says Sturgeon,

> were quite aware of the terrible potentialities of nuclear energy. Practically all of them were scared silly of the whole idea. They were afraid for humanity, but they themselves were not really afraid, except in a delicious drawing room sort of way, because they couldn't conceive of this Buck Rogers event happening to anything but posterity. (Sturgeon, cited by Berger, p. 143).

Thus the overwhelming elision of the apparatus of apocalypse has its roots in the earliest of these texts.

James Hilton's *Nothing So Strange* is a nuclear fable written from this third, commercially-orientated perspective. Hilton, remembered primarily for *Goodbye Mr. Chips* (1933), published a string of novels in the early nineteen-thirties before moving to America in 1937, where he wrote *Nothing So Strange* and moved into screen-writing. In *Nothing So Strange* Hilton uses the Manhattan Project and the incomplete German bomb-work as a 'source of power for background' to a love-story between a British atomic scientist, Mark Bradley, and a sophisticated American journalist, Jane Waring. The narrative is driven by a series of complicated connections between Jane Waring's father, a businessman acting as an international power-broker in the pre-war period, and Nazi-sympathizing Professor Otto Framm, head of the German atomic research laboratory. Waring senior arranges a post with Framm for Bradley, Framm steals Bradley's work by publishing Bradley's results in his own name, and Bradley goes on to extract a scientist's revenge by deliberately miscalculating a key equation so that Framm loses interest in developing atomic power. In a sub-plot, Bradley's German laboratory assistant wife, Pauli, attempts to murder Framm, and she eventually dies in prison, legitimizing Jane Waring's interest in Bradley.

Mark Bradley is typical of many atomic scientists of the period, fictional and non-fictional. Before the war he believes in 'the idea of pure science as something above and beyond ordinary affairs', but he rapidly loses this faith as the war progresses.[21] As I pointed out in Chapter Two, this is a historically observable pattern. Bradley moves to America after Pearl Harbour and is swiftly recruited to the Manhattan Project. The Americans view him with some suspicion, suspecting Nazi affiliations. When he becomes bored with routine work and begins his own experiments, the

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[20] Science fiction writer and critic Theodore Sturgeon, cited by Albert I. Berger in 'The Triumph of Prophecy', *Science-Fiction Studies*, 18 (1981), 143-150 (p. 143). Original source is Sturgeon, 'Memorial', *Astounding Science Fiction*, April 1946.

[21] Hilton, *Nothing So Strange*, p. 99.

Americans quietly remove him from the laboratory and manufacture a cover-story such that he can be held in a sanatorium for the remainder of the war. Interestingly, this plot device is repeated in Ruth Brandon's *Tickling The Dragon* (London: Jonathan Cape, 1995). Brandon adds a plot twist since her scientist claims that he *left* the Project on the grounds of conscience rather than necessity, enabling him to become an active anti-nuclear campaigner. In *Nothing So Strange*, the love-interest is revived when Jane Waring is asked by the security services to be Bradley's companion and spy. The eventual announcement of Hiroshima is the signal for Mark Bradley to integrate himself into American society since the knowledge he carries is no longer a threat.

Representing the Atomic Scientist

Despite their different aesthetic imperatives, these texts can both be read as nuclear fables because of their representation of the atomic scientist. As in *The Accident* these texts locate the 'useful lessons' of the bomb in and on the body of the atomic scientist. The central concern once again is maintenance of self-control in the face of atomic power. Mark Bradley and B.F. Halverson are both men trying to manage an atomic distraction, trying to avoid an absent-mindedness that they (and their peers) perceive to be dangerous. Halverson, for instance, is physically marked by his contact with the atom. He compares the stress of working with the atomic bomb to that of wartime fighter pilots whose faces carried the marks of age well beyond their years, and a noticeable absence from the world. To this extent, his face 'had begun already to wear the young-old look of the war-time physicists'.[22] However, the bodies of the scientists also seem to carry an atomic stigmata. After the test of the first bomb at Alamogordo, which had been made possible by a frantic increase in work, *after* the Germans had surrendered, Halverson had noticed that marks similar to radiation burns were appearing amongst the scientists. Radiation burns that had been found on cattle in the vicinity of the test site were easily explicable, but the apparent burns on the human community were not. They could not have been caused by radiation.

> The "queer marks" obsessed him, and he noticed another thing. Many of the men who bore great responsibility in the atomic project grew quite grey ... not before Alamogordo ... but after. The strains of making the bomb possible proved to be as nothing to the strain of the world in which the bomb was fact. This was no possible trick of radiation, for it occurred in men who never approached radiation. He knew that (p. 100).

Furthermore, Halverson's contact with atomic bomb casualties in Hiroshima had affected his concentration:

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22 Amrine, *Secret*, p. 18.

> Weeks after he returned home ... he would come to himself with a start, and realize that he had been day-dreaming. ... He realized that he was nervous and had been working too hard, and one day he admitted to himself, I am afraid, not of what contagion I may have picked up from the hundreds of sick and dying . . . I am afraid that something else has marked me. . . . I lost something there . . . and I do not know what it is . . . perhaps I do not want to know.[23]

This un-faceable fear of some inexplicable force that had 'marked' him is comparable to the 'primordial apprehensions' that Charley Pederson found so disturbing and inexpressible in *The Accident*. In both cases it results in an absent-mindedness and a distraction whose physical manifestation is an ambiguous burn-like rash.

Mark Bradley, by contrast, is even less able to deal with these anxieties. He sees himself as a 'a nervous wreck'.[24] He is full of dark humour: 'They're going to spill their own beans soon ... human beans. ... That must be a joke' (p. 187). He cannot concentrate long enough to read (p. 188). His anxiety is triggered by 'certain things that made his face cloud over, as if some hidden nerve had been touched'.[25] He is given to moments of apparent delirium, muttering the following example to Jane Waring:

> "Of course it all sounds incredible. I sometimes dream it's still just algebra - with a flaw in it somewhere. A big dud. That's what I hope - that's what they knew I hoped. So they watched me afterwards, maybe in case I suddenly wrote the truth in the sky. The mysterious way in which God moves, specially prepared for those over two-thirty-five, and when you read God backwards it spells Dog. In another moment I will give you my prediction for the end of the world, but first, a message from your announcer ...."[26]

Jane Waring's reaction is akin to Wisla's reaction to Louis Saxl's voicing of the anti-nuclear option in *The Accident*; she demands that he stop rambling, 'whatever it means' (p. 267). In fact, Bradley's treatment in America is a caricature of the nuclearist procedures I outlined in Chapter Two. Firstly, he is physically removed from the Project on the grounds of security. Secondly, he understands himself to be outside rational discourse (e.g. 'perhaps I *am* out of my mind' (p. 267)). Thirdly, Waring engages him a fitness regime, involving walks and mountain climbing, in order to build up his body strength. As *The Accident* made clear, in the nuclearist world-view strong

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23 Amrine, *Secret*, p. 100. Spaced ellipses in original text. It is tempting to read these ellipse as further formal evidence of a radiation-related absence, but it is surely more likely that they are evidence of a lack of narrative sophistication in a first novel.

24 Hilton, *Nothing So Strange*, p. 212.

25 p. 188. cf. 'And the cloud again, the hidden nerve touched. It was so obvious...', p. 207.

26 p. 267. 'Over two-thirty-five' refers to the atomic weight of the relevant isotopes of Uranium.

bodies are less affected by the bomb, and weak bodies are liable to doubt, or unilateralism at worst.

The important point is that Jane Waring's mental and physical fitness regime actually works, and Mark Bradley is gradually reintegrated into society. Despite the visible anxiety of the lead characters, a key feature of these two early nuclear fables is the idea that control of the atomic disturbance is actually a realistic possibility. Halverson controls it with a rigorous scientific literal-ness, and the suppression of other orders of experience. It is true that he is afraid of the 'inexplicable force', but, and this is crucial, he survives the encounter. He does not make the 'fatal slip' that atomic forces seem to have generated in Louis Saxl in *The Accident*. The novel *Secret* concludes with a vision of Halverson's *successful* nuclearist future, as he is about to begin work on a new superweapon, on a research project headed by an ex-Nazi. Halverson, then, despite his liberal fears about the bomb, and the profound effects of his visit to Hiroshima, turns out to be a model of the 'making weapons, talking peace' nuclearist subject who is able to effectively manage the central paradox of nuclearism. In adopting a literal style Amrine, of course, is producing the same subject through the more circuitous route of representation. In this sense, *Secret* is a model nuclearist narrative, balancing itself between the literal and the literary, the real and the fictive.

These two nuclear fables are examples of 'the imaginary resolution of a real contradiction'. Both *Secret* and *Nothing So Strange* deploy narrative closure and a hierarchy of discourses to illustrate the nuclearist proposal that making weapons and talking peace at the same time is sensible and safe. *Secret* does this actively, in the sense that its protagonist is seen to decide for himself, in debate with his colleagues and his family, that nuclearism is the most moral position to adopt. *Nothing So Strange* does it more passively, by representing the visible presence of atomic weapons in the world as a psychological healing agent for Mark Bradley's anxiety. Bradley only avoids people until the news is out, and it is, of course, only after Hiroshima, that Jane and Mark can begin their narrative as a stable couple. In both cases the ideological effect is similar: atomic weapons, it is to be understood, present no obstacle to the future. It is not that building more atomic weapons is presented as the only option. Both novels subject atomic weapons to debate, and this is a key part of the ideological effect. They articulate a set of different ways of imagining one's relationship to the 'real conditions of existence' (see Chapter One), only to hierarchise these possibilities, such that there is only one 'obvious' subject position from which atomic weapons look safe and necessary, that of the nuclearist. If *The Accident* offered a resistance to nuclearism, *Secret* and *Nothing So Strange* offer assimilation. These are nuclear fables then in Bruno Bettelheim's bleakest sense of the form. The nuclearist ideological effect is

perhaps strongest in the nuclear fable purged of irony, when the fable 'explicitly states a moral truth [and] there is no hidden meaning, nothing is left to our imagination'.[27]

Part 2: *The New Men*: Masculinity as Successful Nuclearism

> While there is a considerable literature on men at war, the historical study of masculinity and its relationship to militarization is in its very beginning stages.[28]

Introduction

In the previous part of this chapter, I made a passing reference to Richard Rhodes's awareness that his 'standard' history of the Manhattan Project might still be marked by the narrative gaps of official secrecy. I also suggested that these narrative gaps are not unproductive. Like the erased text in *Secret*, they serve to legitimate the wider claim to historical accuracy. Readers are inevitably seduced into accepting these signposts to the 'other' of the text, and must assume that everything that is not 'secret' is in fact included. However, there are other less well-signposted silences in these narratives. Cynthia Enloe's recent work on militarization, for instance, proceeds from the feminist insight that every reorganization of military strategy is also a reorganization of gender relations.[29] What reorganization of gender relations accompanied the atomic reorganization of military strategy in the Manhattan Project?

In her recent analysis of the Gulf War Cynthia Enloe has highlighted the way that 'after every war, governments - on the losing as well as the winning side - take stock of how gender either served or undermined their war efforts.'[30] There are parallels, she has argued, between the American 'women in combat' media controversies of the Gulf War period, and paradigmatic reorganizations such as the British reaction to the Crimean War. The nineteenth-century British military command,

> like military strategists today, ... devoted their post war energies to pinpointing what ensured that male soldiers had high morale and physical well-being. And, like their counterparts today in Washington, London, Riyadh, and Baghdad, they paid special attention to masculinity - and to the ways that different groups of women might be

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27 Bruno Bettelheim, *The Uses of Enchantment*, p. 43.

28 Gillis, *The Militarization of the Western World*, p. 4.

29 See *Does Khaki Become You? The Militarization of Women's Lives* (Boston: South End Press, 1984), *Bananas, Beaches and Bases: Making Feminist Sense of International Politics* (London: Pandora, 1990), and *The Morning After: Sexual Politics at the End of the Cold War* (Berkeley: University of California Press, 1993).

30 Enloe, *The Morning After*, p. 177.

> controlled so that they would not jeopardize the sort of manliness deemed best suited for waging the government's military campaigns. In practice, this meant that British officials launched two fierce debates: first, should the rank and file be allowed to marry? (Were women as wives a drag on a military, as long supposed, or were they potential protection against venereal disease and debt?) Second, was the rampaging venereal disease among male soldiers controllable? (Was it more effective and honorable to impose police restrictions on women in garrison towns than to humiliate military men by making them undergo compulsory genital examinations?) (pp. 177-178).

Thus, 'Britain's first national women's campaign - the Anti-Contagious Diseases Act Campaign - was prompted by the nineteenth-century postwar lessons drawn by worried military planners' (p. 178). In the post-Gulf context Enloe points to a Pentagon reassessment of welfare policies for military families. A previous policy of encouraging 'dual-military families' (p. 178 - i.e. both parents on active service) produced media images of the 'apparent abandonment of families' as parents went to the Gulf in 1991, and a subsequent reorganisation of women's relationship to the military.

Enloe's analysis is particularly useful in the context of the nuclear fable because at the dawn of the Cold War the 'sort of manliness best suited' to the new atomic 'military campaigns' was unresolved. How would gender serve or undermine the new war effort? This is also not the sort of question that has interested historians of the atomic age. Thus,

> Richard Rhodes's new history of the making of the U.S. atomic bomb has been glowingly described as exhaustive and comprehensive, But when it comes to the gendered dynamics of this militarized scientific enterprise and the peculiar community it fostered in the New Mexican desert, Rhodes's curiosity suddenly wanes. Not only are the roles of women outside his realm of historical curiosity, but so too are the male actors' notions about themselves as men interacting with women and with other men (p. 97).

The most important point not available from a reading of Rhodes alone, Enloe argues, is that it 'may be that militarized masculinity takes one form when men are socialized into the world of nuclear warfare planning and quite a different form when men are socialized into the world of what is euphemistically called conventional warfare' (pp. 97-98). As I suggested in Chapter One, any critique of nuclearism that does not pay attention to different historical and geographical forms might be blind to the reorganisation of social life that has been a key feature of the nuclear state. In order to address the 'socially patterned' articulation and assimilation of nuclearism it may be necessary to resist the seduction of the totalizing historical narrative. The historical narrative is not able to record the ideological 'internaliz[ation] as part of their feeling and thinking selves' that Gusterson has identified in nuclearists, and this is in part due

to that narrative's elision of the subject-in-process. The notions of masculinity that have circulated amongst the male scientists of the nuclear apparatus 'have been no less essential for militarizing American society than those of jet bomber pilots or M-16-wielding "grunts"', but they have certainly been much less visible (pp. 96-97).

The gender politics of early nuclearism are certainly never foregrounded in the existing historical material, but it does make interesting appearances on the margins. One example of this is a moment described by Laura Fermi in her account of living at Los Alamos. She recounts how Hiroshima guaranteed her husband's masculinity in the eyes of her son: 'Until [Hiroshima], Fermi was not an important man to Giulio. At least, not as important as George's father who was a Captain in the Army, as Giulio once said'.[31] Laura Fermi clearly understands that the intersection between the military and masculinity is profoundly important for the family dynamic, but it is represented here as an amusing anecdote rather than an organizing principle. Additionally, there is little sense that the process might operate in reverse such that the encoding of masculinity within the family might produce different kinds of military structures. Enloe regards the exploration of this gendered dynamic of militarization as an essential area for contemporary research. 'We scarcely know yet', Enloe suggests, 'how to describe the marriage politics that help to sustain the military-industrial complex of the United States, much less those of Italy, South Africa, or Brazil' (pp. 99-100). As she points out, there is a political point to this kind of research, in the sense that 'looking closely at the varieties of ways in which masculinity can be militarized may shed light on tensions and contradictions within those military systems, exposing them as less impermeable, more fragile'.[32] Thus, even the apparent omnipresence of nuclearism may then be opened to critique.

It is my contention that the early gender politics of the weapons laboratories are clearly visible in the nuclear fable. An episode from Michael Amrine's *Secret* can illustrate the way that a specific militarized masculinity for scientists is articulated precisely as might be anticipated from Enloe's analysis. B.F. Halverson is trying to find a way to tell his wife, Beth, that he has been asked to go to Hiroshima:

> Beth laughed gently. "... . . . I'll always be glad, anyway, that they didn't get you in the Army. . . ."
> "It would have been much simpler to have been a soldier," Halverson said.
> "Oh, my dear, no," Beth said. "Don't ever . . . Oh, Benno . . . to think that it is all over. . . ."
> They kissed. (pp. 77-78)

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31 Fermi, 'The Fermis' Path to Los Alamos', p. 95.

32 Enloe, *The Morning After*, p. 99.

The significant feature of this exchange is the way in which the militarized role of the atomic scientist at one remove from the conventional battlefield is legitimized by female desire. Anything, we are given to understand, is better than the clear threat of death accompanying the foot-soldier's masculinity. *Secret* therefore assumes Enloe's speculation to be self-evidently true: there *is* a difference between the masculinity of weapons scientists and the masculinity of 'the soldier', and this difference is policed precisely by 'marriage politics'. In Los Alamos, as much as anywhere else, 'militarization relies on distinct notions about masculinity, notions that have staying power only if they are legitimized by women as well as men'.[33] The representation of this nuclearist gender politics is the subject of my next section.

The New Men?

The New Men is the fifth of eight novels in C.P. Snow's *Strangers and Brothers* series. The series is organised around a bureaucrat, Lewis Eliot, and *The New Men* covers the war years between 1939 and 1946. The central plot device is Lewis Eliot's involvement (from Whitehall) with a fictionalised British atomic bomb project.[34] The sub-plot is his conflict with his younger, atomic scientist brother, Martin. Martin is a protean 'defense intellectual' (in Carol Cohn's terms). He is not brilliant as a scientist, but he is an outstanding manager, and the novel follows his emergence as a key figure in the atomic project. Towards the end of the novel, he is offered the top job in the atomic establishment, but turns it down on the grounds of conscience. Snow clearly intends Martin to be a metaphor for atomic man: should he completely reject atomic weapons, or should he accept them as the gesture of a realist? The issue is summarised by Walter Luke, the chief scientist on the British Project, as follows:

> Either you retired and helped to leave your country defenceless. Or you made a weapon which might burn men, women, and children in tens of thousands. What was a man to do?[35]

As I suggested in the previous part of this Chapter, these apparently debatable options are often turned into hierarchised discourses by the realist narrative strategies of the

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33 Enloe, *The Morning After*, p. 3.

34 As I stated at the beginning of the present work, my overall aim is to analyse the ways in which nuclearist subjectivity has been articulated, assimilated and resisted since 1945. I am therefore, like Evelyn Cobley, much less interested in collecting 'thematic and propositional intentions' than I am in analysing the various 'narrative renderings' of a contested subjectivity (*Representing War*, p. 17). My use of an English text in the next section is based on this theoretical move.

35 Snow, *The New Men*, p. 166.

early nuclear fable.[36] In this instance the respected narrative voice of the liberal scientist Francis Getliffe announces that he doesn't "'think we've got any option ... we've got to make the infernal thing"'.[37] Thus the ideological possibilities are closed down through the nuclearist discourse of pragmatism. However, the important point about this passage is that this hierarchising of atomic questions of conscience is explicitly predicated on questions of gender and the family.

Thus the British atomic bomb research appears initially as an inconsequential frame around Snow's family drama. Lewis Eliot, the narrator of this text and of Snow's other novels in the *Strangers and Brothers* series, recounts how he:

> heard the first rumour in the middle of an argument with my brother, when I was trying to persuade him not to marry, but it did not seem much more than a distraction (p. 7).

This 'distraction' proves to be overwhelming, and at the end of the text Lewis and his brother, Martin, cannot 'expect that [their] intimacy could be complete again' (p. 235). Most critics of Snow have indeed read the British atomic project as background material for a familial drama in the vein of *Nothing So Strange* (see earlier section). Jerome Thale comments typically that *The New Men* is about 'possessive love' within a family structure. Thus *The New Men* 'carries one of the large *motifs* of the series. In the first novel, *Strangers and Brothers*, we saw strangers who were made brothers; in *The New Men* we see brothers who become strangers before they can become brothers again on a new basis'.[38] I want to use Enloe's insights as a way of restoring the centrality of the 'atomic' to a reading of this text and to argue that Lewis and Martin are less capable of 'intimacy' at the end of the novel precisely because of an atomic pollution of the codes of masculinity.

Arguments like the one that opens the novel are actually rare occurrences for Lewis and Martin Eliot. There was usually 'a bond of trust' between them that relied on intuitive understanding: 'much of our communication was unspoken'.[39] Thus the

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36 The apparently open-ended nature of this question is belied by Snow own view that within ten years of 1961 a nuclear device would explode by accident or design. See Hook, Sidney, H. Stuart Hughes, Hans J. Morgenthau, and C.P. Snow, 'Western Values and Total War', *Commentary*, 32 (1961), 277-304 (p. 291). Reference cited by Merritt Abrash, 'Through Logic to Apocalypse: Science-Fiction Scenarios of Nuclear Deterrence Breakdown', *Science Fiction Studies*, 13 (1986), 129-138 (p. 129).

37 Snow, *The New Men*, p. 166.

38 Jerome Thale, *C.P. Snow* (Edinburgh: Oliver and Boyd, 1964), p. 45. See also, for instance, Frederic R. Karl, *C.P. Snow: The Politics Of Conscience* (Carbondale: University of Illinois Press, 1963), or John De La Mothe, *C.P. Snow and the Struggle for Modernity* (Austin: University of Texas Press, 1992).

39 Snow, *The New Men*, p. 11.

raised voices of the argument are indicative of a moment of crisis, as the brothers's intimate relationship is threatened by a third term. As an aside, it is worth noting that this reluctant "atomic" entry into language at the start of *The New Men* prefigures William Chaloupka's characterisation of the strategic silence of later nuclear managers, 'whose discourse is so precarious, despite its importance and their evident confidence in it, that it cannot tolerate discussion'.[40] However, at this early stage in the novel the presence of the gendered other is much more disturbing than the presence of the atomic secret. In the pages that follow it soon becomes clear that the argument is as much about the changing relationship between Martin and Lewis as it is about Martin's fiancee. Lewis claims that Martin's reluctance to explain his choice of a wife is 'in part a protection against me' (p. 12). So for Martin at least, the intimacy of the homo-social bond between the brothers harbours a threat as well as security and trust. Martin is the 'new man' of the novel who seeks a reformulation of the homosocial bond. He has to learn to manage threat and security in new ways. He is, therefore, in need of techniques of self-management akin to those required to manage the threat *and* security paradoxes of nuclearism. In the rest of this chapter I illustrate the ways in which 'useful lessons' for the nuclearist are articulated as a post-atomic revision of the homo-social bond. This bond operates in the family (between brothers), but also between men in the world of power. My analysis concentrates on the reorganization of male power demanded by the atomic pollution of the codes of masculinity.

Before the Bomb: the lives of 'basically decent people'[41]

Although it is not self-reflexive, in the sense that it sees no requirement to speak about itself, the masculinity on display here is quite complex. For instance, Martin tells Lewis that he is so sure that the atomic project led by Walter Luke will succeed that he has taken a demotion to '[get] in on the ground floor' (p. 41). This prompts Lewis to muse on Martin's optimism, and to measure his own performance of the codes of his masculinity:

> I passed as a realistic man. In some senses it was true. But down at the springs of my life I hoped too easily and too much. As an official I could control it; but not always as I imagined my future, even though by now I knew what had happened to me, I knew where I was weak. (p. 42).

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40 Chaloupka, *Knowing Nukes*, p. 12.

41 A term used by Frederic Karl to describe the characters in Snow's novels (*C.P Snow: The Politics of Conscience*, p. 5).

Lewis 'knew what had happened', he could pinpoint his weak spots, and rearrange imaginary defences to 'control' those weak spots. Thus, he is self-cognisant in a very mechanical and literal fashion; not through self-reflexive thought but through experiencing attacks on an *already understood* body. In this sense, Lewis is very much the humanist subject, conceiving himself to have a unique, personal consciousness which can transcend socio-cultural factors. The essence of his individuality is located 'down at the springs of my life', absolutely within the boundaries of the physical body ('I passed as a realistic man' to others). This is a self that knows where it is 'weak', so it is constantly monitoring itself, checking that it is functioning within certain norms, mapping its boundaries, and scanning for perceived threats.

Snow's spatial metaphors in this passage are remarkably contiguous with the geographic metaphors by which the self was increasingly understood in the 1950s. Steve Pile, for instance, has recently pointed to an early post-war fascination with:

> the undiscovered *terrae incognitae* of the internal world of desire, fear, fascination, illusion, error, greed, prejudice, partiality, intuition and imagination. ... [Thus,] the most fascinating *terrae incognitae* of all are those that lie within the minds and hearts of men (p. 10).[42]

This self-cognisant masculinity imagines the agency of self-control to be 'strong minds' that can perhaps colonise this interior space: 'Though Hector Rose had left me in suspense about his intention, I did not worry much. Despite our mutual dislike I trusted his mind, and for a strong mind there was only one way open'.[43] Pile's research would suggest that Lewis Eliot is here expressing the values of contemporary pseudo-scientific research into 'spatial abilities', and the widely-held notion that 'strong-minded men are better at telling which way is up than women, neurotics, and children'.[44] When the British atomic project suffers a setback, it is precisely this strong-minded facility that allows Hector Rose, Lewis's direct superior, to compute a solution to the dilemma. Rose declares that he 'must think this one out' (p. 97). As the text makes clear, this is less a question of content than a case of the performance of certain codes of behaviour, since 'for a strong mind there was only one way open'. Also, Lewis knows intuitively what Rose will decide because it is what he, Lewis, would decide too. It is true that he wonders whether, in Rose's place, he 'should have been so fair' (p. 151), but this simply reminds Lewis of his novitiate status to Rose's master. The important point is not that the decision is made, but *where* it is made, and *by whom*.

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42 Steve Pile, *The Body and the City: Psychoanalysis, Space and Subjectivity* (London: Routledge, 1996), p. 10.

43 Snow, *The New Men*, p. 98.

44 Pile, *The Body and the City*, p. 11.

Additionally, there can be no question of this being a joint decision, because a degree of separation of the selves must be maintained.

The relationship between Rose and Eliot, of course, mirrors that of Eliot and his brother in its insistence on both intimacy (a silent consensus) *and* hierarchical distance. This is a key 'textual codification' of nuclearist subjectivity: strong minds always exist in 'solid bodies'. Although Lewis is anxious for his younger brother, 'one's concern is, in the long run, prosaic and crude. [One is] anxious about their making a living; one longs for their success, but one wants it to be success as the world knows it, reputation among solid men' (p. 151). The careful maps of homosocial conduct require 'solid' men, men who keep their essence well within the confines of their bodies. Trust in this situation comes to mean the bond between men who can keep their distance *and* contain themselves within a solid form. As I have argued, it is this enabling distance that produces and reproduces the hierarchies of power between men. It is coded, for example, as a repetition of how much Lewis and Rose 'dislike' each other. Thus, 'although we had come to dislike each other, he gave me a full hearing' (p. 45). It is the dislike that allows Rose and Lewis to avoid dealing with the homosocial crisis confronting Lewis and Martin, whose 'bond of trust' is under threat from a third term.

Importantly, the use of trust as a method of negotiating the pre-atomic homo-social bond is a feature of other first wave nuclear fables. In *Nothing So Strange* it was Otto Framm's *trust* which allowed Mark Bradley to doctor the equation figures without suspicion so that a bomb seemed unlikely.[45] Elsewhere, Sebastian Bloch, the Oppenheimer figure in Haakon Chevalier's *The Man Who Would Be God* spends much of the novel fighting a rearguard action against a perceived devaluation in the currency of trust: '"We live in a time of suspicion, unfortunately. ... I think it is a sign of sickness, this lack of trust in people, and it leads to the denial of freedom, to the suppression of ideas, to arbitrary government, and regimentation. ... this is why we must trust one another"'.[46] As Bloch makes clear, this is true even if the bond is between men who have 'very little in common' (p. 30). For Cynthia Enloe, the mobilisation of a discourse of trust can be a key indicator of changes in the structures of a militarized society. Commenting on the end of the Cold War, she notes that:

> the configuration of ideas and behavior on which we bestowed the shorthand label 'the Cold War' existed because many people far from the public spotlight were willing to see, or were pressed into seeing, the world - and their neighbors - in a particular way. Thus, to end that Cold War is to make myriad transformations in the ways people live their

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45 Hilton, *Nothing So Strange*, p. 240.

46 Chevalier, *The Man Who Would Be God*), p. 30.

> ordinary lives. Whom can I trust? What are my loyalties? Are there alternatives to the government's expectations of me?[47]

The important point here is the way that a moment of military transformation can be examined at the level of individual subjectivity. From Enloe's perspective, the militarized subject is historically constituted by desire, by physical repression, and by public life. In other words, the militarized subject is the meeting point of the 'productive and coercive orders' of power outlined by Joseph Cleary. In the reorganization of global political certainties at the end of the Cold War, the modern American subject is clearly required to reorganize the subject-positions that generated a sense of personal identity and security. These reorganizations are especially urgent for nuclearists and those with whom they interact. For instance, explaining (in Carol Cohn's terms) 'why it is not safe to live without nuclear weapons' in the absence of a Soviet targeting policy requires a recalculation of trust, as much between individual scientists and their government, as between individual scientists and their family or community. My analysis of the pre-atomic masculinity on display in *The New Men* would suggest that the first wave of nuclear fables intersects with an earlier recalculation of trust. In *The New Men* it may not be possible to be male without balancing the poles of threat and security, and as I shall argue in the following sections, the arrival of the atomic threat requires a realignment of the scales.

'An Uncommonly Honest Recorder': The Significance of Form

I have already suggested that a certain literal-realist form may be complicit with nuclearism, and Snow's novels attracted the same critical split as the other first wave texts. The following comment is typical:

> [Mr. Snow's] style ... blandly ignores half a century of experimental writing. ... Mr. Snow is not imperceptive of the revolution in the novel's technique ...: he ignores them deliberately in pursuit of an aesthetic which has never been openly formulated, but is perhaps his own version of realism .... The style is that of a lucid and uncommonly honest recorder, rather than that of an artist. ... Mr. Snow may well be regarded as the most faithful recorder of ... bureaucratic man.[48]

This deliberate avoidance of 'experimental writing' produces a particular kind of reading position in Snow's novel. The reader is manoeuvred into an identification with Lewis Eliot, and this has important effects. When Lewis declared that he 'knew what had happened to me' he was drawing on the humanist sense of a stable self. Thus, his character proceeds through the *Strangers and Brothers* series appearing to change

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47 Enloe, *The Morning After*, p. 3.

48 'Of Bureaucratic Man', *TLS*, 7 May 1954, p. 296.

outwardly, but keeping the essence of its individuality throughout. In *The New Men* this is figured as the elision of biological reproduction. Lewis is, for instance, 'as a father' to his nine-year junior brother Martin, but not a real father to anyone. This position is carefully constructed. His wife is mentally ill and cared for at a home at which Lewis is never seen. Thus he is able to be 'as a father' precisely because he will not have children from his unstable wife, and precisely because he has a wife he will not have children with other women (he is a respectable man after all). Thus masculine cultural reproduction is secured through the schematics of a father/child relationship transferred to the adult world without biology or women. As my earlier analysis suggests, successful relationships that reproduce themselves correctly are always between discrete objects that will remain somehow intact after contact (i.e. Hector Rose and Lewis).

In *The New Men*, the care that is required to maintain the ontological fiction of non-biological reproduction is most visible in Lewis's physical relations with Martin's wife, Irene. He is reluctant in the extreme to embrace her even within the conventions of politeness. She only becomes a safe object for contact for Lewis when she announces her pregnancy: 'for the first time since their marriage, I felt nothing but warmth towards her, as I went to her chair and kissed her' (p. 48). Safe female desire is therefore figured as a mimetic identification with male desire in the sense that Irene's female subjectivity has become less threatening as she reproduces to secure masculinity. Indeed, Irene's function in the text is always to guarantee the male self by allowing the self-cognisant male self to define itself in its other.

This figuration is possible because the conventions of a realist narrative allow Lewis to be the absolute authority on Irene. Apparently she 'had the manner of a mischievous daughter, her laughter high-pitched, disrespectful, sharp with a kind of constrained glee - and underneath just enough ultimate deference to please' (p. 8). For someone who constructs himself 'as a father' this is what a 'daughter' might look like. The resolutely realist narrative makes it plain that this is absolutely so, taking no account that Irene (and other women in similar situations) may have learnt this subject position for the 'father'. Her manner *defines* Lewis: 'mischievous daughter' and forgiving patriarch are binary poles of a familiar (and familial) drama, in which the 'father's' pleasure is the calculated receipt of the 'daughter's' deference and respect. Real fathers may not behave like this, but as I have pointed out earlier the text goes out of its way to avoid talking about real fathers.

Lewis then tells us that Irene 'looked older than her age' (p. 8), which is to say that a view of Irene as wayward daughter is no obstacle to viewing her as an object of desire, old enough to be her 'father's' lover. Indeed noticing this allows Lewis to give

his first sexualized description of Irene: 'she was a tall woman, full-breasted, with a stoop that made one feel that she was self-conscious about her figure' (p. 8). Or rather, of course, it allows Lewis to be conscious of her figure: acting like 'a little girl' , with a self-conscious stoop, she makes a spectacle of herself such that Lewis can construct himself from his gaze. From what I have already suggested about object relations for this kind of man it would be reasonable to expect that this sexualisation has to be carefully controlled. There must be no tangible involvement with the object. Indeed Lewis then reports that 'her features were not pretty'. Thus Lewis records that it is an effort to sustain the gaze of detachment on an unworthy object, but the knee-jerk quality of the comment is also a pointer that this "effort" covers a fear of excessively intimate involvement with the object. Someone who stoops, and whose 'cheeks looked already worn' (p. 8) is worryingly un-solid. The reader is carefully manoeuvred into equating Lewis's narrative view with the objective truth, into conspiring with Lewis's objectifying gaze. It is this manoeuvre that enables the hierarchisation of discourses within the novel. Lewis's opinion on femininity and Lewis's opinion on 'what a man should do' on the atomic question form the basis of the novel's ideological effect.

This emphasis on narrative form is methodologically important because the rhetorical removal of female agency has been identified previously as a key feature of an atomic masculinity. Evelyn Fox Keller summarized this view in a well-known 1987 conference paper, 'From Secrets of Life to Secrets of Death': the 'Manhattan Project was a project in which the most privileged secret belonged not to the women, but to the men. ... The metaphor of [male] birth was used ... as a mode of description that was fully embraced by the physicists at Los Alamos, by the government, and ultimately by the public at large'.[49] As Fox Keller points out, this reproductive discourse has been noted in a small critical field: in Brian Easlea's argument that nuclear weapons are a sophisticated expression of womb-envy; in Carol Cohn's report on her visits to the U.S. Defense Department; and in Mary Jacobus's analysis of Watson and Crick's discovery of DNA.[50] In Brian Easlea's powerful account of masculinity and the arms race the notion of womb envy is mobilised to explain the masculine metaphors associated with atomic weapons. Thus, for instance, Easlea makes much of the naming of the first atomic bomb as 'Little Boy' and the scientists' use of the language of

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49 Evelyn Fox Keller, 'From Secrets of Life to Secrets of Death', in *Body/Politics: Women and the Discourses of Science*, ed. by Mary Jacobus, Evelyn Fox Keller, and Sally Shuttleworth (London: Routledge, 1990), pp. 177-191 (p. 181).

50 Brian Easlea, *Fathering the Unthinkable: Masculinity, Scientists and the Arms Race* (London: Pluto, 1983); Carol Cohn, 'Sex and Death in the Rational World of Defense Intellectuals', *Signs*, 12 (1987), 687-718; Mary Jacobus, 'Is There a Woman in this Text?', in *Reading Woman: Essays in Feminist Criticism* (New York: Columbia University Press, 1986), pp. 83-109).

reproduction as a code to signal the 'birth' of the atomic age.[51] My problem with accounts that extrapolate from language to masculinity in this way is their recourse to an essentialist account of gender. Easlea's argument suggests that the scientists were bound to use the language they did *because* they were men. This model is powerful, but it is limited because it cannot account for a *change* in the representational coding of masculinity. Thus, I have followed Enloe in looking for the 'tensions and contradictions' in the masculinity of the nuclearist subject as a way of making that subjectivity seem 'less impermeable [and] more fragile'.

For instance, Easlea also reads Laura Fermi's account of her son's reaction to Hiroshima, but he sees it as 'the saddest of stories' (p. 114). From Easlea's point of view, the 'sad' part of this story is clearly that any son could see atomic weapons design as important and socially productive, but it seems to me that this reading misses the point. From my point of view, this is a story about the tensions and contradictions *between* militarized masculinities. Whereas Easlea is interested in the seamless ontology and teleology of a coherent nuclear masculinity, I am more interested in the changes, tensions and contradictions of that masculinity as a way of insisting on its social fabrication. In Fermi's story, Hiroshima prompts a post-atomic *reorganization* of ideas of manliness that Easlea's account cannot recognise, and my reading of the removal of female reproductive agency in *The New Men* follows this methodological distinction. My analysis of Lewis in *The New Men* is intended to demonstrate that this kind of male self is not founded on an essence of manliness as such, but on the fiction of an essence of manliness narrated as a careful positioning of the self within a social order.

The Anxiety That Comes With Atoms

"Control what you can"[52]

The New Men is also of interest because of its representation of a pre-atomic ruling class reinventing itself as "responsible" nuclear bureaucrats. The novel has, on the one hand, been lauded for its representation of 'responsible twentieth century man'[53], and on the other, dismissed as 'the maunderings of a superseded power elite that has lost confidence in itself'.[54] A reading of Snow's text as a nuclear fable can

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51 See Easlea, *Fathering the Unthinkable*, especially pp. 110-113.

52 Unnamed respondent, cited by Michael J. Carey in 'Psychological Fallout', p. 23.

53 Karl, *C.P. Snow: The Politics Of Conscience*, p. 4.

54 Alan Sinfield, *Literature, Politics, and Culture In Post-War Britain* (Brighton: Harvester, 1989), p. 98.

close the critical gap between these divergent responses, and can foreground the emergence of the nuclearist subject as a particular *reorganisation* of existing structures of power. On the one hand, as I have suggested, this power is a question of masculinity. On the other hand, it is also a question of state power.

When Hector Rose asks Lewis for his advice and opinion on what government policy towards the bomb should be, Eliot has to admit that he is 'not entirely impartial' (p. 96/7) because of his hope for Martin's career. This exchange however is an excuse for Rose to praise Lewis for his 'admirable detachment'. If Lewis is "partial", (i.e. if he is 'in parts', un-solid), and displays allegiance to a particular self outside his own then Rose would be within his rights to 'have despised' him for his inability to 'eliminate a personal consideration' (p. 97). These calculations of allegiance, what Enloe might call 'loyalties', are the foundations of government in *The New Men*. The main representative of this power is Sir Thomas Bevill, who was 'one of the most trusted of men', and had 'the unusual gift of being both familiar and discreet' (p. 15). In other words, he has a natural flair for working the balance between threat and security. Earlier in the novel Sir Thomas Bevill took Lewis on as his protegee because he was sure that Lewis was 'suitable raw material to learn discretion' (p. 15), and he was not disappointed. Lewis tells us that Bevill's outspoken support of the British bomb project in the corridors of power, which is likely to be the final fling of his career, is motivated at core by 'a vein of narrow, rigid aristocratic patriotism'. This move is framed as public self-sacrifice. The public face, the veneer, is malleable to political winds, but the private, secret, inner core of the man is rigid, solid - 'the deeper you dug into him the tougher and more impervious he became' (p. 56). Bevill retreats with Lewis for shared pleasure in success to Pratt's Club, 'a landowner's idea of his own gamekeeper's quarters' (p. 55). This is where Bevill, an outmoded Tory, takes refuge against the democratic mass 'as society evens itself out' (p. 55). In Pratt's, Bevill could be 'sure of meeting no one but his aristocratic friends' (p. 55).

Sir Thomas Bevill retreats into his 'cave-of-the-past' (p. 56) as a new world order takes shape at the end of the second world war. Edgar Hankins, the literary journalist and Irene's sometime lover, is prone to waxing lyrical about how 'the party is over for our kind of people, for dear old western man' (p. 144). It has been 'a good party but the host's getting impatient and it's nearly time to go. And there are lots of people waiting for our blood in the square outside' (p. 144). Thus, Alan Sinfield is certainly right to point out that this is a class of men who have lost confidence in

themselves[55], but this loss of confidence is not simply a realignment of the international centres of power. What has happened, I would argue, is that the atomic has gone from being 'not much more than a distraction' to being a defining principle of male subjectivity. The ideological bunker of Pratt's club may afford some protection for the identity of the ruling class, but the nature of atomic disturbance is more difficult to build defences against because it is able to penetrate to the solid core, the impervious vein we have understood these men to depend upon. When Walter Luke is exposed to radiation in a reactor accident, the worst possible aspect of radiation sickness is the fear that 'some of this stuff [may] settle in the bone' (p. 116). A real enough fear, but also a metaphorical threat to the impervious veins of the solid male self.

The older, pre-atomic borderlines of the self are disrupted by Hiroshima. As the news is circulated by the media, Lewis 'drifted' into a pub in Leicester Square. It is difficult to imagine a pre-atomic Lewis drifting anywhere. 'For a while', Lewis narrates, 'I lost myself among [the crowd], without a name, among many who had no name, a unit among the numbers' (p. 145). Thus, the atomic collapses the threat and security balance of intimacy and distance, destroying the hierarchies that Lewis and his class have depended on for their power. Remaining apart from the crowd, which is perhaps a signal that all is not lost, Lewis hears in the pub conversation a 'common denominator of fear, sheer simple fear, which whatever else we thought, was present in us all' (p. 145). Significantly, Lewis finds himself in contact with 'homosexuals'. Since the calculation of the homo-social bond has scrupulously avoided all mention of the homoerotic up to this point, this must be read as a signal of the radical effects of the atom on Lewis's masculinity.[56] The appearance of the atomic is, however, equated with unexpected male homosexual desire in other nuclear texts. For instance, in Paul Bowles's 'Pages from Cold Point' (1959) the survivalist society collapses because the scientist leader is unable to talk about his son's homosexual advances to other islanders.[57] Thus, it has a wider significance in terms of foregrounding the relationship between the atomic and masculinity, and implies that the homoerotic can only be kept from the homosocial if the homosocial is reorganized.

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55 Hankins also proposes the end-of-enlightenment thesis: 'the chief virtue of this promising new age, and perhaps the only one so far as I can tell, is that from here on we needn't pretend to be any better than anyone else' (pp. 143-144).

56 As Lynne Segal has pointed out, the 1950s was a decade marked by the 'intense persecution of homosexual desire' ('Look Back in Anger', in *Male Order: Unwrapping Masculinity*, ed by Rowena Chapman, and Jonathan Rutherford, (London: Lawrence and Wishart, 1988), pp. 68-96 (p. 85)).

57 Boyer identifies Bowles's short story as 'one of the first literary works in which a post-Hiroshima sensibility seeps into the fabric of the story, influencing in fundamental ways its tone, structure, and emotional resonance' (*By the Bomb's Early Light*, p. 256).

Thus, the central feature of atomic drift is the temporary mingling of previously separate subjectivities. In *Secret*, for instance, Halverson returns to his home to be met by everyone in his street and a party atmosphere. The most disturbing aspect of this was the way that traditional 'Baltimorean reserve [had] broken down' (pp. 72-73), in a post-Hiroshima social mingling. In the face of this, Lewis wonders whether 'there [is] a chance to make ourselves safe again?' (p. 145) It is surely necessary to take this question at face value. The Americans, Britain's allies, are the only people who have this weapon in 1945 and from whom there is currently no threat to be perceived. Thus this fear is a fear for the self. It is not the English populace in general that is un-safe (at least not at this stage), but the pre-atomic male subjectivity we have been watching.

There were intimations of atomic drift before Hiroshima. For instance, consideration of the American atomic test explosion is the only subject over which Hector Rose's 'strong mind' falters.

> "There are times, it seems to me", he said, "when events get too big for men."
> He said it awkwardly, almost stuttering, in nothing like his usual brisk tone; if I had taken the cue, we might have spoken off guard for once (p. 128).

Thus the atomic threatens the hierarchies of power in ways that nothing else can. In front of Lewis, Rose stutters, speaks awkwardly, voicing 'one of his rare moments of self-doubt ... [and] neither then nor later did I know whether that morning he had any sense of the future' (p. 128). Lewis's account of Martin's career reflected a fear that the future is always dangerously fluid material for the solid self, so a future that is out of control might seem especially worrying. Interestingly, when Lewis had left Hector Rose to make his one true decision (see earlier) the narrative turned to leaks. As Rose performs his masculine codes of power, a new rumour, 'my first intimation of a different kind of secret' (p. 98) surfaces unexpectedly. Without any apparent irony, what has been leaked is a document entitled *Appreciation of the Effects of Fission Weapons*. It seems that *any* contact with the atomic invokes a loss of self-control, and the old orders of power cannot deal with it. This is the immediate effect of a fission weapon.

The atomic effect reaches right in to the impervious vein. Lewis, Martin, and the Nobel scientist Mounteney, are portrayed in pastoral harmony discoursing on the implications of the atomic project. Mounteney, for whom 'science ... had been the one permanent source of happiness in his life' (pp. 66-67), is experiencing some inner qualms. He would have liked to say, 'as he might have done in less austere times, that science was good in itself' (p. 67). All evidence to the contrary, he still '*felt* it so' (p. 67 - my emphasis). Thus, he is typical of other atomic scientists, including Mark

Bradley in *Nothing So Strange*. Mounteney does recognize though that to sustain this kind of confidence in the future one will have to be constantly calculating. This will take the form of a nuclearist calculation of the positive effects against the negative, weighing up the statistical benefits against the detriments. At this point in the conversation, Martin exclaims in pain as a swan removes a piece of his palm where bread had been moments before. It is a 'mistake to be absent-minded' (p. 69) he declares. One's mind, if it is to hold onto its capacity for discriminating decisions, will have to concentrate. Otherwise there will be drift. This is a group of men negotiating their crumbling sense of self in the new atomic era. In order to continue to function in this situation, one will have to concentrate on one's self-cognising maps if one is not to miss a weak spot, but this will not be as easy as it might have been before the bomb. According to Walter Luke the bomb means that 'whenever we have to look in the bloody mirror to shave, we shan't be a hundred per cent pleased with what we see there' (p. 181). One's mental map of one's self has been lost and the *solid* specularity of the fully self-cognisant "I" has been disturbed.

Thus the confidently self-cognising subjectivity of Lewis and his contemporaries has come to be defined by what it initially dismissed as incidental. The nuclearist response to this situation, as in *The Accident*, is articulated in the hospital scenes that follow Walter Luke's fight against radiation sickness. Luke, like Saxl, is comforted by following the technical observations of his decline, as if occupying the mind with rationality will somehow arrest the process of pollution. Paralleling *The Accident*, his doctors are unable to offer prognosis on this new phenomenon, but although Luke could not explain how, 'he *felt* physically uneasy' (p. 116). As if to restore the solid self, Luke constantly demands more 'bods', bodies (scientists) for the project. Like Ed Wisla, B.F. Halverson, and Mark Bradley, Walter Luke struggles with his responsibility for the bomb. Like them, he is both fatalistic and pragmatic:

> "I couldn't help being a scientist, could I? It was what I was made for. If I had my time again, I should do the same. But none of us are really going to be easy about that blasted bomb. It's the penalty for being born when we were ... But what else could we do? You know the whole story, what else could chaps like me do?" (p. 181).

Lewis's response is to recount to Luke the meeting he had with Hector Rose at which Rose suggested that the atomic age signalled a period of 'events too big for men'. Luke is impressed with the bureaucrat's rhetoric, and his own response is an agenda for the successful nuclearist subject seeking to internalise the paradoxes and tropes of a continued weapons programme. It may indeed be true that atomic events are too big for men, '"*but we've got to act as though they're not.*"' (p. 181). In the terms described by Michael Carey, nuclearists must control what they can.

CHAPTER FOUR: ASPIRINS FOR ARMAGEDDON

Introduction

Paul Brians identifies two clear peaks of publication in the publishing history of nuclear war fiction, centred on the 1950s and the 1980s. He locates an initial peak of roughly 300 nuclear war fictions published in the decade between 1950-59, then notes a steady decline to 200 publications between 1960-69, and 150 between 1970-79. In the nineteen-eighties there is a second, much higher peak of around 550 published fictions, followed by a post-cold war collapse to less than 50 (extrapolated) in the 1990s.[1] In the second wave there was a 'striking ... renewal of interest in examining the roots of the atomic age' (p. 2). A narrative interest in the 'roots of the atomic age' is generally the point at which the nuclear fable meets the larger nuclear war fiction genre, so this comment can be read as a useful, if provisional, confirmation of a revival of the nuclear fable in the 1980s.

The primary aim of this chapter is to make links between these two narrative waves in terms of their representation of nuclearism. However, this chapter has a second aim, in that it seeks to address another organization of the nuclear socius that the standard histories of the bomb have found less than interesting. Specifically, it investigates the way in which the representation of nuclearism can involve the mobilization of a particular discourse of race.

I propose to investigate the breaks and continuities between the two waves through a reading of two exemplary texts from Brians's archive: Pat Frank's *Alas, Babylon*, first published in 1959, and Denis Johnson's *Fiskadoro*, published in 1985. These texts narrate survival *after* a catastrophic nuclear war, and as such, they are not obviously nuclear fables as I have defined the term so far. There are two reasons for this revised strategy. Firstly, it is my contention that the post-apocalyptic text displays the limit case of the nuclearist fantasy of self-control. Secondly, the elisions and silences of these post-apocalyptic texts are strong indicators of a new politics of representation in the second wave. Thus, I begin this chapter by elaborating on the relationship between a post-apocalyptic subject and nuclearism. Then, I illustrate what might be at stake in the narration of a successful post-apocalypse nuclearism.

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[1] Paul Brians, 'Farewell to the First Atomic Age', *Nuclear Texts and Contexts*, 8 (1992), 1-3, figure, p. 2. As early as 1991, Brians suggests, a new nuclear war fiction could seem 'weirdly out of date' (p. 3).

The Post-Nuclear Subject

My concern so far in this thesis has been the representation of the militarized subjectivity of those people (scientists, weapons engineers, bureaucrats) who have understood themselves to be totally subject to the organizational imperatives of a nuclear threat, and open it up to analysis. Since I have argued that a nuclear criticism must, above all else, pay attention to the representation of this subjectivity, I began the present study by asking what a subjectivity predicated on adaptation to the atomic age might look like, and where it might be most visible. I argued that the early nuclear fables narrate an emergent nuclearist subjectivity predicated on the successful management of the newly available apparatus of apocalypse. These texts are important, I have argued, because they display the internalisation of nuclearist paradoxes as a tense and contradictory social process in the present. Furthermore, these narratives foreground the discursive and didactic aspects of the acquisition of nuclearist subjectivity that other representational forms elide. Even self-confident nuclearists have what Michael Carey has identified as 'always a background of doubt', and my analysis to date has been concerned with investigating the ideological structures that have enabled the nuclearist self to function and to retain an ideological structure of self-control.[2]

In the fantasies of post-nuclear survival that form the bulk of the nuclear fiction archive, these constraints on the self can disappear. As I have suggested earlier, these narratives are fantasies of an *apocalyptic* reorganization of the present social order, and there are no limits on their narrative strategies. Nuclear fables, by contrast, are fantasies of a *non-apocalyptic* reorganization of the present social order, and their narrative strategies are constrained by the aspiration to documentary. However, the intersection between these two narrative forms is intriguingly double-edged. On the one hand, post-nuclear survival is only available as a narrative option after the failure of pre-apocalypse nuclearism. Sometimes explicitly, but always by implication, the enabling, controlled tension in the central paradox of nuclearism must have collapsed in these texts. The nuclearist self depends on controlling the paradox of making more weapons in order to prevent the use of those same weapons. Thus any real use of those weapons as an instrument of war represents a loss of nuclearist self-control. On the other hand, it might be possible to be truly nuclearist in the post-apocalyptic fantasy space of survival. The licence provided by an apocalyptic reorganization of the social order might represent a chance to narrate full adaptation and the removal of the residual background of doubt. In this sense, the survival text raises questions that haunt the

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2 Carey, 'Psychological Fallout', p. 23.

responsible nuclearist subject. For instance, what *would* cause a loss of self-control? If the nuclear event is a result of the loss of self-control, could self-control be restored after a nuclear event? What would the removal of anxiety and consequent full adaptation to nuclear weapons actually look like? It is my contention that a reading of the survival text with these questions in mind can provide a way of extrapolating the ideological directions a nuclearist subjectivity might take after the emergent stage.

This is a view supported by Mária Minich Brewer in her analysis of 'surviving fictions'.[3] In Chapter One, I briefly discussed the way in which masculinist, right-wing fantasies could be said to compete with feminist fantasies for the representation of the post-apocalyptic space. I suggested then that it was important to consider the survival text as a narrative form capable of carrying various ideological meanings. I deliberately did not develop my critique of these texts at that point because I was concerned to move away from nuclear future-watching. As I explained then, nuclear future-watching in criticism and literature tends to occlude the militarization of daily life that, I have argued, has been the significant feature of the nuclear present. Brewer takes a thoughtful, but very different line on these survival texts. Her concern is with the politics of representation, and the notion that the post-apocalyptic narrative space should be actively contested by feminist criticism and writing. In other words, it shouldn't just be given over to masculinist fantasies. Brewer's work is therefore part of a recent, wider feminist literary reassessment of the future fantasy genre. Jacqueline Pearson, for example, has written of the ways in which recent 'women writers have found the tropes of science fiction particularly useful for dealing with the politics of gender'.[4]

Brewer is a textualist nuclear critic to the extent that she regards the general condition of post-war literature to be affected by the nuclear horizon. This effect is visible in the simple sense of a recurrent theme, but also 'more radically, the very structure and concatenation of narrative, rather than its *content* appear to have undergone fundamental mutation[s]' (p. 38). Furthermore, the widespread experiments with narrative in post-modern literature 'result in a narrativity that is profoundly marked by a catastrophic teleology' (p. 38). For Brewer, and for Jacques Derrida (see Chapter One), these tropes have long been available to western literature. Whereas Derrida looked to European modernism in 'No Apocalypse, not now', Brewer's exemplary

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3 Mária Minich Brewer, 'Surviving Fictions: Gender & Difference in Post-modern & Post-nuclear Narrative, *Discourse*, 9 (1987), 37-52.

4 Jacqueline Pearson, 'Where No Man Has Gone Before: Sexual Politics and Women's Science Fiction', in *Science Fiction, Social Conflict, and War* , ed. by Philip John Davies (Manchester: Manchester University Press, 1990), pp. 8-25 (p. 8).

texts are drawn from the eighteenth-century; *Robinson Crusoe* in particular.[5] Whilst these proto-texts defined a catastrophic mode of writing, the post-war period has seen a quantitative shift in the 'order of change affecting the basic structural preconditions of narrative' (p. 39). As I suggested in Chapter One, this is a line also taken by Steven Connor and other critics of post-modernist fiction: certain post-nuclear texts are taken to be exemplary post-modern texts, and vice-versa. The proto-nuclear narratives of catastrophe exemplified by *Robinson Crusoe* are constructed around the motif of rehabilitation and recuperation from the accident or break that generated them in the first place. In these texts the break is merely a *temporary* loss of the individual's 'ontological continuity' (p. 39). Despite the provisional emergence of the threatening other, or the emergence of the accidental as a material force, the subject survives the crisis to enact it in narrative. By contrast, Brewer claims, it is a characteristic of post-nuclear narratives to suggest that this rehabilitation should be avoided. Since the logic of destruction has generated the catastrophic narrative, the relation of 'man' to the world contained within that logic 'ought not ... to dominate beyond the end in such a way as to recycle the closed and circular logic of destruction itself' (p. 40). Thus,

> the catastrophic is . . . doubly inscribed in post-nuclear narrative: first as an Event [that corresponds to the enabling accident/intrusion of pre-nuclear narratives] . . ., second as a perceived need to create a distance, through writing, from a narrative order that has come to represent anachronistic and dangerous fictions that must somehow be survived (p. 40).

Brewer combines this insight with a feminist critical practice, pointing to a post-modern feminist literary awareness that, on the other side of catastrophe, 'there is much that ought not to be salvaged'.[6]

The trouble with this argument, as Brewer readily admits, is that, far from *avoiding* a tired recycling of the conditions of catastrophe, 'much nuclear literature is a work of restoration seeking to reconstruct a survivor society by representing its full anthropological and androcentric presence' (p. 44). All too often, male post-modernist writers (she cites Russell Hoban, Bernard Malamud, and Denis Johnson as particularly guilty parties) attempt to re-inscribe the patriarchal, pre-nuclear-event Oedipal narrative

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5 There are strong reasons for this choice of period. Jacqueline Pearson suggests that recent feminist fantasy genre writing 'forms a striking parallel to the late seventeenth and early eighteenth centuries, when women first tried in any numbers to negotiate a place in the world of literary publication, and made greatest headway in non-canonical genres, and in particular the novel, which they could shape to their own concerns without the anxieties of influence that haunted more established forms' ('Where no man has gone before', p. 8).

6 p. 40. Brewer goes on to suggest that the 'marginal position [of contemporary women writers] with respect to the dominant Oedipal discourse of post-modern writing is grounded in their distinctly different response to nuclear narrative' (p. 48).

that is failing in the pre-event culture.[7] However, despite their best efforts, Brewer argues, this restorative process is always a failure, because 'the difference between [pre- and post-event narratives] cannot be resolved by setting the defective Oedipal machine in motion once more' (p. 46). In other words, no matter how much the survivor society reorganizes itself around Oedipal, patriarchal structures, it cannot erase the break of the nuclear event that it is predicated on. At some point, the ideological negotiation of the break will be stretched to the point of collapse. In the sections that follow, I want to use Brewer's insights into the fantasy of an ontological continuity in order to foreground the ways in which both *Alas, Babylon* and *Fiskadoro* are works of nuclearist restoration.

From Sputnik to Star Wars

Initially, I need to briefly indicate how the two waves are closely related to changes in global nuclear tension. *Alas, Babylon*, for instance, is one of a group of classic nuclear fictions that are roughly contemporaneous with the revival of nuclear fear prompted by the first sputnik in 1957. These fictions were more or less continuously republished through the Cold War period.[8] H. Bruce Franklin has pointed to the fact that most nuclear war fiction before the late 1950s 'had been dammed up in the isolated reservoir of hard-core science fiction'.[9] This period saw nuclear war portrayed, for the first time, in 'novels read by millions and movies seen by tens of millions around the globe' (p. 183).

> These were the years of Nevil Shute's 1957 novel and Stanley Kramer's 1959 film *On the Beach*; Helen Clarkson's *The Last Day* (1959); Walter M. Miller, Jr.'s *A Canticle for Leibowitz* (1959); Mordecai Roshwald's *Level 7* (1959) and *A Small Armageddon* (1962); Pat Frank's *Alas, Babylon* (1959); Alfred Coppel's *Dark December* (1960); atomic physicist Leo Szilard's novella *The Voice of the Dolphins* (1961); Eugene Burdick and Harvey Wheeler's 1962 novel and Sidney Lumet's 1964 *Fail-Safe*; Philip K. Dick's *The Penultimate Truth* (1964); Peter George's *Red Alert* (1958); and the film launched from this novel, Stanley Kubrick's *Dr. Strangelove* (1964) (p. 183).

The first Sputnik was technologically underdeveloped in relation to the nascent American space programme, and was not in itself a military object, but it nevertheless generated a profound sense of unease in the United States. It was immediately

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7 The texts she has in mind are: Russell Hoban, *Riddley Walker* (London: Cape, 1980); Bernard Malamud, *God's Grace* (London: Chatto and Windus, 1982); and *Fiskadoro*.

8 The thirty-third print run of *Alas, Babylon* in 1977 proclaimed 'over 1 million copies in print' on its cover.

9 Franklin, *War Stars*, p. 183.

understood that the SS-6 launcher technology that put the sputnik in orbit could just as easily 'dispatch a ballistic missile toward a target thousands of miles away'.[10] Before Sputnik, the strongest military lobby was the United States Air Force (U.S.A.F.) Strategic Air Command (S.A.C.), which had unsurprisingly advocated a nuclear policy of overwhelming air-bombing capacity. Although this doctrine stretched resources by requiring a constant air presence near Soviet airspace, it found favour in Washington because of the demonstrable superiority of American air power in the Second World War. Strategic thinking in the early 1950s, under Air Force pressure, was locked into a global analysis predicated on the notion of a bomber gap; the historically false notion that the Soviets possessed many more atomic-capable bombers than the United States. Although this fiction of a bomber gap was based on grossly inflated estimates of the Soviet Union's nuclear air-delivery capacity, it organized strategic policy up to 1957 despite President Eisenhower's political scepticism towards 'gloomy estimates from the intelligence people'.[11]

Sputnik quickly generated another strategic fiction, that of the missile gap. This contemporary shift in strategic thinking from bombers to missiles, and from the U.S.A.F. to the U.S. Navy's sea-launched missile capacity, is viewed sympathetically in *Alas, Babylon*. Mark Bragg, an officer within the intensely bureaucratic Strategic Air Command, identifies with the visionary, individualistic force of 'impatient, odd-ball men like [Admiral] Rickover pounding desks for his atomic sub'.[12] Thus, the text concurs with the basic nuclearist assumption that increased security results from the development of new weapons systems. As the survivors remind each other, 'the subs saved us' (p. 311).[13]

By contrast, *Fiskadoro*'s interaction with the strategic nuclear context of the 1980s is much more ambiguous, ironic even. In general terms it needs to be read as part of a widespread artistic and political response in the early 1980s to raised international tensions. The paranoia of the late 1950s had continued through the 1960s and the Cuban Missile Crisis, but eventually it settled into the less obviously offensive posture of *detente* in the early 1970s. The new wave of fear, beginning in the late 1970s, was prompted by a series of factors: the American unwillingness to re-enter

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10 Newhouse, *The Nuclear Age*, p. 118.

11 p. 90. Franklin expands on this issue in *War Stars*, Chapter 6, 'The Triumph of the Bombers', pp. 101-111.

12 Frank, *Alas, Babylon*, p. 16.

13 The absence of any real evidence for a bomber gap or a missile gap was famously parodied in Stanley Kubrick's 1964 film, *Dr. Strangelove*. Once it becomes clear that survival is only possible through the rapid construction of very deep shelters, Strangelove urges the President not to be caught out by allowing a 'mineshaft gap' to develop.

nuclear talks (a legacy of reaction to the invasion of Afghanistan); the MX missile debate; the Strategic Defense Initiative (S.D.I, or 'Star Wars'); the NATO decision to deploy mobile nuclear devices (Pershing and cruise missiles) in Western Europe.

The way in which S.D.I. emerged into strategic thinking virtually without warning is a good example of the way nuclear uncertainty was revived in this later period. The idea of Anti-Ballistic Missiles (ABM) in some form or other had been circulating for decades, but any large scale development of such weapons had been effectively curtailed by an ABM Treaty signed in May 1972 as part of the ongoing Strategic Arms Limitation Talks (SALT) between the United States and the Soviet Union. Ronald Reagan, who has been widely reported to be heavily influenced by Edward Teller on this issue, staggered the Western public and the nuclear bureaucracies by reviving the idea without reference to the Departments of State or Defense.[14] This was effectively a single-handed change of global nuclear strategy from deterrence to strategic defence: 'Washington ... was imposing a whole new strategy ... without warning' (p. 362). Within NATO, surprise at Reagan's move swiftly changed to bureaucratic feet-dragging as soon as it was realised how 'farfetched' (p. 362) Star Wars was technically. The problem was that the Soviet Union accorded much more credibility to Reagan's vision than his own staff, and strategic planners in Moscow began to wind themselves up for a new stage of the arms race as the Soviet Union answered the changed circumstances implied by Star Wars. The point was that *if* Star Wars did work then the Soviet Union's ballistic fleet would be rendered useless. Thus S.D.I. carried with it an implicit threat of an unanswerable first strike, which was precisely the issue that had lead to an ABM Treaty in 1972.[15] The S.D.I. situation was compounded by the fact that there was no negotiating context in which to work this issue through: Reagan had called the Soviet Union an 'evil empire' two weeks before his Star Wars speech, and then the commercial flight KAL 007 was shot down over Soviet air space on August 31, 1983.

Whereas *Alas, Babylon* engages with, and takes sides within contemporary nuclear debates, in *Fiskadoro* this kind of historical material is deliberately absent. The disruptive nuclear event in *Fiskadoro* occurs sometime after Vietnam, but the specifics are unclear. The closest references are darkly ironic: Cuba appears to belatedly win the Cold War stand-off by invading the Florida Keys at the end of the novel; America's

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14 Newhouse, *The Nuclear Age*, p. 360: 'Reagan had met Edward Teller in the autumn of 1966. ... Reagan was briefed ... on an upcoming test of a nuclear device designed to destroy incoming missiles in the air'.

15 *Detente* could not function unless each side tacitly agreed to leave themselves open to a response-in-kind.

religious future appears to be Islamic. The important point to note here is that in the 1950s texts, nuclear war was considered to be available to representation, in much the same way as any other war. By contrast, in the 1980s the possibility of representing that apocalypse seemed much less likely.

Aspirins for Armageddon?

Richard Gerstell started a nuclear survivalist textual archive with his semi-official 1950 best-seller, *How to Survive an Atomic Bomb*.[16] Like all other government-sponsored atomic civil defence material since, it was treated with a great deal of scepticism. For instance, Michael Amrine (see Chapters Two and Three) reviewed it for the *New York Times* as follows:

> This is a good book so far as it gives facts on which citizens can plan with confidence, a dangerous book in so far as it encourages a national tendency to over-confidence. Mr. Gerstell on The Bomb has produced an aspirin for Armageddon.[17]

Thus, as early as 1950, there were suggestions that the survival text might be a dangerous sop to nuclearism. Gerstell was one of many similar writers, however, who took an optimistic view of nuclear war, reading it as a new American frontier. Research in this area by Peter Moss suggests that the consensus view in early nuclear survival manuals was that 'the aftermath, with its nagging low level radiation, creat[ed] new problems to be solved, new hostile surroundings to be conquered only by courage and wit'.[18]

Alas, Babylon is absolutely typical of the first wave of manuals and fictions in the way it portrays nuclear war as an event surmountable through civic resourcefulness. Readers were asked to confront the stark question which seemed to be facing America in the new era of intercontinental ballistic missiles: 'Could you survive an H-bomb attack as the people in this novel do?'.[19] The text is in no doubt about the possibility of post-nuclear survival since it claims to be educational as well as entertaining. It would

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16 Richard Gerstell, *How to Survive an Atomic Bomb* (Washington, D.C.: Government Printing Office, 1950)

17 *New York Times*, 5 November 1950, p. 26.

18 From Mel Mawrence, and J. Clark Kimball, *You Can Survive the Bomb* (Chicago: Ill.: Quadrangle Books, 1961), cited by Peter Moss in 'The Rhetoric of Defence in the United States: Language, Myth and Ideology', in *Language and the Nuclear Arms Debate: Nukespeak Today*, ed. by Paul Chilton, (London: Frances Pinter, 1985), pp. 45-63 (p. 55). This view continued into a later generation of survivalist manuals such as the popular 1980s text, *Survive the Coming Nuclear War*, but later texts place an even stronger emphasis on the development of individualistic, extra-governmental techniques (Ronald L. Cruit and Robert L. Cruit, *Survive the Coming Nuclear War: How to do it* (New York: Stein & Day, 1982)).

19 Frank, *Alas, Babylon*, frontispiece.

point out the 'exact nature and extent' of the 'depression' that would be caused by nuclear conflict involving mainland North America (p. vi). Initial audiences found it 'shocking', but as Paul Brians points out, for a novel that sets out to be a 'warning for preparedness, [it] ... defeats its own purpose by focusing on the good fortune of survivors who are in fact not very well prepared'.[20]

The central character in *Alas, Babylon* is a Korean War veteran, Randolph (Randy) Bragg. Bragg is an anti-isolationist liberal southerner living in Fort Repose, 'a river town in Central Florida' (p. 1). The Bragg family has a long history in the town (back to 1838), and Randy is generally regarded as an example of faded aristocracy. The novel recounts Randy's initial lack of preparedness for the post-apocalyptic environment, then his increasing assumption of authority in the survivor community. The pre-war social distinctions between Fort Repose, its white-trash and 'Minorcan' (i.e. Hispanic) neighbourhood Pistolville, and its un-named black ghetto ('the Negro district', p. 44) are forgotten as the three groups come together under Randy's leadership to resist violent groups of refugees from the cities. By the end, when a U.S. military helicopter arrives with news of the end of the war and a drastically downsized United States, Randy has used his authority as a reservist to: impose martial law; execute bandits; stop the radiation sickness that is being imported into Fort Repose through looting and uncontrolled trading; oversee the first community crops; organize a town militia; prepare the community ready to face 'the thousand-year night' (p. 312).

Brewer's analysis of the survival text is especially pertinent here, because the arrival of the U.S. military is clearly intended to signify the restoration of an ontological continuity, but this restoration cannot be narrated without making visible an accompanying failure. According to the commanding officer of the vanguard force, the United States is 'a second-class power now. Tertiary would be more accurate' (p. 309). Furthermore, this is the end of all-pervasive pre-war American car culture, and he 'doubted that in his lifetime he would ever again see gasoline for sale to private citizens' (p. 310). Thus there is restoration of the structures of authority beyond the nuclear event, but it is beyond the power of this authority to fully reproduce the pre-event socius. Thus, even in a text in which military authority is valorized above all else, the military machine cannot resolve the difference between pre- and post event narratives.

There is also a specifically nuclearist dimension to this trope. *Alas, Babylon* is absolutely blind to its own recycling of the logic of destruction. The survivor society's 'big hope is atomic power', since the nuclear war has not removed 'a big stockpile of nuclear fuel' (p. 309). After all that has occurred, this incredible appearance of a

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[20] Brians, *Nuclear Holocausts*, p. 200.

transcendental atomic signifier to underwrite the post-apocalypse social order requires some attention. At one level, this could be read as a reflection of the success of Eisenhower's atoms for peace propaganda in the 1950s. Frank has clearly reproduced the key nuclearist ideology that it is possible to separate the production of atomic energy from the production of atomic weapons.[21] Since this is entirely consistent with the novel's pro-nuclear politics, it is surely no coincidence that the officer's name is Hart (Pat Frank being a pseudonym for the journalist, Harry Hart). At another level, this is an abrupt and blatant example of the nuclear teleology of many survival texts, in which the survivor society rushes to restore all of its lost technology. This revival of learning is a key trope in many of the more well-known survival texts. For instance, the aspiration to rediscover atomic power is central to Russell Hoban's *Riddley Walker*, and provides a frame for Walter M. Miller's *A Canticle for Leibowitz*.[22] Miller's survival narrative begins several hundred years after a nuclear war, then recounts the cultural renaissance that subsequently leads to a second nuclear war. This time around, however, a small group of technologist monks and children leave the planet in a spacecraft, to return once the Earth has restored its own balance. This, of course, is the ultimate technological fix: if things get too hot we can always leave the planet and start again. The time gap between Frank's almost immediate return to atomic power and Miller's return to a fresh planet is vast, but it is ideologically minute. *Alas, Babylon* is precisely the kind of text that Brewer wishes to oppose.

Denis Johnson does not share a pro-nuclear politics with Frank, but *Fiskadoro* has its own moment of failed restoration. The novel revolves around a teenage boy of the same name living in Twicetown, the new name for the Southern Florida city of Key West. Two missiles land in the vicinity but fail to go off, thus giving the town its new name; one of these missiles, it is understood, is American. The main events take place in the second-half of the twenty-first century, at a time when a quarantine of North America is about to end. Restoration is signalled by a narrative voice from some indeterminate point in Fiskadoro's future, reviewing the place of the main narrative in its own future canon of nuclear texts: 'Most of our dramas and plays seem to concern themselves with ... the world north of the Twenty-Fourth Parallel during the Quarantine, a place and time that were cut off from us for sixty years' (p. 12). Thus,

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21 An ideological distinction that Charley Pederson trips over in *The Accident* (see Chapter Two). Throughout this thesis, I have taken it as a given that nuclear criticism should 'consider nuclear technology, whether for war or energy, as a single human endeavour' (Bertell, *No Immediate Danger*, p. vii).

22 Walter M. Miller, *A Canticle for Leibowitz* (1959; London: Orbit, 1993).

whatever happens to the characters, it seems that literature will survive.[23]

Outside civilization intrudes into Twicetown in the form of daily broadcasts from an official radio station on Cuba, and a pivotal moment takes place when a small squad of descendants of redneck Texans take over Cubaradio and play Jimi Hendrix for several hours before being taken off air. This is read as a portent of unspecified cataclysmic events by most of the characters. It is also an indication of Johnson's complex use of pre-apocalyptic political certainties. After the nuclear war, Cuba is civilized and friendly, but very boring, whereas America is uncivilized and violent but it has Hendrix. Along with Hendrix, America seems to have retained a press freedom unavailable in Cuba: 'Cuba makes a big secret [of the Bible], but Deerfield gone print for everyone' (p. 165). Whereas *Alas, Babylon* is uncritical of American strategic nuclear policy, *Fiskadoro* displays an allegiance neither to Washington or Moscow.

As in *Alas, Babylon* the survivor community has four distinct components. Firstly, there are the multi-racial residents of Twicetown who retain a semblance of civil society and a highly developed awareness of radiation risk. Society here is organized around various interconnected cultural and scientific groups, including the Twicetown Society for Science and the Miami Symphony Orchestra. Both ventures are struggling parodies of their pre-apocalyptic counterparts, and function, at least in part, because there 'wasn't much else to do' (p. 22). As the Islamic frame narrative puts it:

> the people who inhabit these colors, thanked be the compassion and mercy of Allah, have nothing much to trouble them. It's true that starting a little ways north of them the bodies still just go on and on, and the Lord, as foretold, has crushed the mountains; but it's hard to imagine that such things ever went on in the same universe that holds up the Keys of Florida (p. 3).

This fundamentally laid-back attitude to survival is, of course, strikingly different to the go-getting organization in the 'hard survivalist' narrative of *Alas, Babylon*.[24] The issue here is undoubtedly a version of the literary/genre divide I referred to in Chapter One, since Johnson is part of the literary world in ways that Frank never really aspired to.[25] Thus, it seems to me that part of the reason for the prevalence of this attitude in the text is to signal Johnson's distance from the Radioactive Rambo type of fiction that was

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23 In survival texts, there is a sub-genre of Last Man narratives, and it is common for the last man or woman alive to be a writer.

24 I follow Richard Mielke's 'ethical taxonomy of nuclear representation' here, summarized by Ken Ruthven in *Nuclear Criticism*. Thus, "hard survivalist' [texts] appeal to readers of *Soldier of Fortune* and look forward to nuclear war as a bracing experience that will sort out the men from the boys ... . 'Soft survivalist' fiction, on the other hand, ... permits the meek also to inherit the post-holocaust earth' (*Nuclear Criticism*, p. 30).

25 Johnson has published four novels including *Fiskadoro*, an edition of poetry, and a collection of short stories. Typically, *Fiskadoro* is his only nuclear text.

being published in ever-increasing quantities at the same time.[26]

The second group is the Hispanic residents of 'the Army', a 'village of wrecked quonset huts several miles east, a deteriorating shantytown once the dwelling place of sailors, and then marines, and still inhabited mainly by their grandchildren and great-grandchildren and generally known as the Army' (pp. 5-6). Then there are the 'swamp people' in the everglades, who see themselves as the Quraysh, 'the original first tribe of Mohammed' (p. 166). Thus, they appear to be descendants of black inmates of pre-apocalypse Florida jails who had once converted to the Nation of Islam. Finally, there are a variety of transitory groupings, including mutant beggars, rastafarians known as 'Israelites', and traders.

The plot is structured around the prophetic claims of the Israelites regarding a second coming. This prophecy has prompted them to build a huge, symbolic white boat. Flying Man, headman of the Israelites wants the Orchestra to play at some unspecified, and, to the Orchestra, unintelligible event connected with the boat. A few days prior to the concert, the swamp people abduct Fiskadoro after his father dies in a fishing incident, and remove all traces of his memory in a male initiation rite involving the symbolic wound of penile subincision. Upon Fiskadoro's return from the swamp he has discovered an unexpected musical talent, which makes him a star turn at the Israelites' concert. Fiskadoro's loss of memory gives him an ability to forget the 'End of the World', but it also removes him from the symbolic order of Twicetown. Thus, he has to learn the codes of social behaviour once again. In a predictable Oedipal moment the mayor (symbolizing the old order) is forced to remind Fiskadoro that he should not sleep with his mother, but he also recognizes that Fiskadoro's new symbolic order signals the end of his rule. Fiskadoro, the future narrative voice informs us, 'the one known to us best of all, [was] the only one who was ready when we came' (p. 12). Since this is a straightforward Oedipal restoration in Brewer's terms, we should anticipate an accompanying failure of restoration. This failure is located in the frame narrative:

> Thinking about the past contributes nothing to the present endeavor, and in fact to concern ourselves too greatly with the past is a sin, because it distracts our minds from the real and current blessing showered down us [sic] in every heartbeat out of the compassion and mercy and bounty of Allah. But we are human. Can we help it if sometimes we like to tell stories that want, as their holiest purpose, to excite us with pictures of danger and chaos? (p. 12).

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[26] *Fiskadoro* is also a representative text in the sense that the second wave of nuclear fictions contains numerous examples of successful literary authors turning to nuclear themes for one, or more, novels.

The point is that the new ontology provided by Fiskadoro's loss of memory cannot control a desire to tell and re-tell the story of the original moment, and because the original moment is predicated on a nuclear event, these stories will inevitably carry the logic of destruction with them.

Post-nuclear Coping Strategies

In the previous section, I have used Mária Brewer's argument to point to the way that these narratives are acts of ideological restoration, but in this section I explore the deployment of nuclearist tropes to effect that restoration. Both *Alas, Babylon* and *Fiskadoro* narrate the successful personal management of a catastrophic nuclear event, but the kinds of self-control on display are radically different. In *Alas, Babylon*, I have suggested, the survivors rebuild themselves and their community in the image of their pre-apocalyptic existence. Thus, in their case, the nuclear event is a disturbance, but one that can be controlled. In other words, it is a narrative of self-control that displays the key features of nuclearist subjectivity. In *Fiskadoro* there are three levels of strategy for managing the nuclear. The first is total silence, represented by Grandmother Wright, the only person still alive in the community to have come through the 'End of the World'. The second is a managed anxiety, and a physical avoidance of all things atomic akin to Ed Wisla's nuclearism in *The Accident*. The third strategy is the removal of memory, not simply in the sense of erasing the trauma of the end of the world, but also in the sense of forgetting the kind of social structures that lead to the invention and development of the atomic bomb.

Before the nuclear war breaks out Mark and Randy Bragg make a series of preparatory calculations of their geography of threat. Like Richard Feynman (see Chapter One), they imagine the odds of survival as a question of distance from imagined Soviet targets. Mark Bragg, because he is an officer in the U.S. Strategic Air Command Headquarters, is certain he will be at ground zero: "'I'll bet they've programmed three five-megaton ICs for Offutt"' (p. 17). Mark therefore plans to send his wife, Helen, and their children, to Fort Repose if war looks imminent. Randy is doubtful that even Fort Repose will be safe.

> 'Do you think they'd be safer here than in Omaha? After all, we've got the Jaz Naval Air complex to the north of us, and Homestead and Miami to the south, and Eglin to the Northwest, and MacDill and Tampa to the southwest, and the Missile Test Center on Canaveral to the east, and McCoy and Orlando right at the front door, only forty miles off. What about fallout?' (p. 16).

Randy's geography of threat turns out to be precise. When war does break out, each of these Florida sites is methodically targeted by Soviet forces, but Fort Repose ends up

as 'the center of the largest clear area in the whole C.Z. [contaminated zone]' (p. 308). The interesting aspect of this mental mapping is its difference from the reaction it produced in Richard Feynman. Feynman's depression and inability to imagine a future is entirely absent from this discussion. In its place is a discussion of crisis management, and the pragmatic removal of 'Helen and the kids'. This instantaneous adaptation to the threat prepares Randy for the effects of a war. When Mark is able to give Randy a few days notice of the war, Randy's reaction is revealing: 'The nightmare was real. Slowly he forced his mind to function. Slowly he forced himself to imagine the unimaginable . . . ' (ellipses in original, p. 19). This has the hallmarks of a typical nuclearist procedure of self-control: a strong mind can resist the absent-mindedness that the nuclear events tend to produce. From what I have already suggested about this subjectivity, it is perhaps unsurprising that imagining the unimaginable quickly becomes a question of making lists of provisions and stocking up 'to meet the emergency' (p. 19). In other words, the unimaginable is reduced to a *management* of threat.

This is the significance of the residual question of fallout. Although this is the only place in the novel where it merits any discussion, Mark Bragg basically ignores the issue, suggesting that exposure to fallout is a question of 'luck' (p. 17). The narrative significance of this is that the elision of fallout is obviously an important enabling move in terms of survival. By contrast, for instance, in the even more widely-read *On The Beach*, published two years before *Alas, Babylon*, creeping fallout exposure ensures the extinction of the human race.[27] Frank's elision of fallout is, therefore, another example of a striking narrative complicity with the contemporary military agenda (I documented the contemporary suppression of fallout in Chapter Two). It is also a nuclearist procedure, and one that is an extrapolation of those I have identified to date. Sue Rabbitt Roff has pointed out that, when it comes to the effects of fallout, even in the 1990s, 'one hundred years after Roentgen detected the x-ray, the only certainty is uncertainty'.[28] Instead of stopping the production of ionizing material, of course, nuclearism has pushed the problem to one side. Roff suggests that the problem is rendered ideologically safe through an invocation of 'stochastic stoicism' (p. 7). Like Reg Saner (see Chapter One), it seems that there is little choice but to 'hope that the laws of chance will mean that you and yours are spared the injurious effects of man-made radiation fallout' (p. 7). Thus, Mark and Randy are enacting a particularly

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27 Nevil Shute, *On The Beach* (1957; London: Mandarin, 1990). The situation is summarized by one character as follows: '"This is the end of it, is it? I mean, we just go on now getting sicker till we die?"' (p. 295).

28 Roff, *Hotspots*, p. 7.

nuclearist social pattern as they dismiss the problem of fallout. The procedure begins with a 'stochastic', probabilistic calculation of threat, which is then followed by a stoic management of exposure.

The first wave of nuclear fables represented this geography of threat as an unresolved disturbance, or an absent-mindedness. In The *New Men*, for instance, Lewis Eliot's identity, I have argued, was represented as a careful positioning of the self within a gendered, hierarchical social order. The arrival of the atomic event disturbs this social order, producing a temporary collapse of hierarchy and the provisional appearance of new masculinities. This is what I have termed atomic drift. In *The New Men* the nuclearist recuperative response is to control what they can, whilst recognizing that they are permanently marked by the presence of atomic weapons. By contrast, and following Mária Brewer's argument, the recuperative response to atomic disturbance in post-apocalypse fictions is inscribed as a full restoration of the pre-atomic order. In *Alas, Babylon*'s post-nuclear narrative the nuclearist subject is able to fully control that disturbance for the first time. Randy, importantly, never challenges Mark's stochastic stoicism.

In order for this stochastic stoicism about fallout to be convincing the narrative must try to make the post-event threat comparable to that of the pre-event geography. Thus the novel repeatedly insists that the nuclear event is a radical rupture of the social fabric, only to systematically undermine that break in its narrative structure. For instance, the narrative proclaims that:

> yesterday was a past period in history, with laws and rules as archaic as ancient Rome's. Today the rules had changed ... Today a man saved himself and his family and to hell with everyone else. (p. 97)

This disturbance is then confirmed by the collapse of the financial system in Fort Repose. This collapse lead to the suicide of the bank's owner, Edgar Quisenberry. Before the war he had 'scorned the improvident, and now the improvident would be just as good as the careful, the sound, the thrifty'. (p. 122). The point is that the change is represented as a great social levelling, and Quisenberry cannot cope with it, but this is not the *radical* rupture proposed by the narrative. This coming-together of the 'improvident' and the 'careful' is in fact a post-apocalyptic example of the social mingling that nuclear events tend to prompt in the nuclear fable, as I have documented in Chapter 3. The atomic disturbance is always temporary, surprising, but ultimately surmountable through prudent management. Any doubt about this is expunged by the early realization that, throughout the war, 'there is a government' (p. 127). The Civil Defense Conelrad radio frequencies continue to broadcast brief updates on a regular basis. In other words, the nuclear event prompts a local reorganization of the social

structure, but the structures of power remain in place. Significantly, the local reorganizations are nuclearist reorganizations, and I shall return to these tropes in the next Chapter.

In Twicetown, the generation that survives the actual nuclear war are marked by the epistemological rupture that *Alas, Babylon* proposes, but then, in the interests of survival, finds that it cannot narrate.

> Like everyone else who'd survived what in those days was called the End of the World, Grandmother Wright had never said much of anything about it. It was Mr. Cheung's understanding that these people had lived because they'd been too far away from the holocaust to witness it.[29]

On the surface, the historical narrative is irretrievably broken in *Fiskadoro*. Thus, a key issue in this novel is the way each character negotiates the break in different ways. Grandmother Wright is half-Chinese, half-American, a Vietnam War child born in Saigon:

> Whenever she imagined, against her will, that triumph of death over the world, the hordes of skeletons dragging their sacks of skin behind them through the flaming streets, the buildings made out of skulls, the empty uniforms coming inexorably through the fields, the bodies of children stuck full of blast-blown knives and forks - the bottom of everything, the end of the world, a grey blank with nobody to remember it, the vision described, passed on, preserved by *no one* - it was in that city that she saw it, in the city of her father's death (p. 71-72).

Her generation copes by avoiding narrative altogether, by passing nothing on. The children of that wartime generation, caught between an absence of the past and an uncertain future, are by contrast without any sort of ontology. This is figured as an inability to narrate. Anthony Cheung, Grandmother Wright's musician son, is paralysed by a Feynman-like reappearance of the nuclear event in his mind. Cheung desires an ontology, wants to see what she sees, and wishes he could access her memories, but the nuclear event is figured for him as uncontrollable epileptic absences from the world, to the point where he is barely able to walk. In one such moment,

> the profound familiarity of all this was nauseating. The White Dot rushed in utter silence up against his sight and exploded with unbelievable brilliance, the All White, the Ever White, the Ultimate White of the Nucleus, the Atomic Bomb (p. 47).

As in similar situations in the early nuclear fable, this sort of behaviour makes his friends 'nervous' (p. 49), but it makes Cheung think that he is 'from the other age - a former life - that's why I remember the Atomic Bomb' (p. 49). Cheung seeks to repair the ontological break, but is gripped by an inexpressible primordial apprehension of the

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[29] Johnson, *Fiskadoro*, p. 11.

nuclear event. Thus, Cheung echoes Charley Pederson (from *The Accident*), in his urgent desire to understand the nuclear reality he exists within, but is subsequently unable to express this encounter in terms that do not make his companions anxious.

Cheung's restorative fantasies naturally make him one of the 'five members of the Society for Science' (p. 42), who are 'a breakaway faction of intellectuals, the jealous counterpart of the Marathon Society for Knowledge' (p. 46). In a key scene, Cheung and the Twicetown Society are invited to travel to Marathon because the Marathon Society think they have located the 'history they'd all been looking for long enough that they'd given up hope of finding it - the text that would explain the End of the World' (p. 144). The book is potentially so valuable that the Marathon group have traded a boat for this book. This is totally exceptional, because '"most of the time we buy [books] by the kilo"' (p. 146). What they have is a library copy of Frank W. Chinnock's *Nagasaki: The Forgotten Bomb*.[30] The reading at Marathon takes place in the middle of a particularly violent Caribbean storm that is immediately understood by the audience to be an omen. Cheung, rationalist that he is, battles in his mind to remind himself that rough weather should be expected at this time of year, but he can't help thinking about the relationship between atomic texts and atomic bombs: 'By the compelling power of reason, he tried to drive away the fear that merely by reading about this bomb they might wipe themselves off the earth tonight' (p. 150).

As Roderick Chambers, the President of the Marathon Society, reads Chinnock's text against the background of the squall, he reaches a section which narrates the experience of a Japanese naval aircrew that flew through the Nagasaki mushroom cloud. Cheung's attempt to force the nuclear out of his mind increasingly fails, and he begins to experience the narrated events: 'I was there. My eyes burned up. It was the only thing I felt. I remember' (p. 153). At this point the satisfaction at apparently being able to cross the historical gap fades, as he decides it is just a dream. Precisely at the point when he decides that his experience is not real, he begins to feel horribly ill. Chinnock's text mocks him, with a report of the pilot's physical reaction to the cloud: '" . . .*either the fumes or the heat ... had given him a terrible headache and he felt nauseous*"' (p. 153). The point is that Cheung can try to cross the ontological divide by internalising and identifying with the break itself, but all he succeeds in doing is replicating the disabling, disruptive condition of the bomb. It is simply not possible for him to narrate an ontological continuity.

If Johnson's portrayal of Cheung had been the central motif of *Fiskadoro* then the novel would have passed Brewer's strict tests for nuclear narratives. It is not, of

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30 Frank W. Chinnock, *Nagasaki: The Forgotten Bomb* (New York: New English Library, 1969).

course, and Fiskadoro is the restorative force that places the novel in Brewer's reactionary category. At the beginning of the novel Fiskadoro has discovered a clarinet and goes to Cheung to ask him for lessons. Even at this early stage Fiskadoro exists on a different level of rationality from the logical and civilized Cheung. On his second lesson, Fiskadoro turns up several hours late:

> "You're supposed to be a morning lesson," [Mr. Cheung] said. Fiskadoro was shocked and embarrassed. By what foreign arrangements of time and space had he arrived here after noon? (p. 29)

Fiskadoro is able to surmount the problems of the age not by crossing the ontological gap of the event, but by generating an entirely new ontology. As Cheung reminds him: 'Now you don't have the memories to make you crazy' (p. 217). The interesting aspect of Fiskadoro's loss of memory is the role of his primitivist initiation rite among the swamp people. Fiskadoro is drawn early on to the swamp people, first in the personage of a roadside 'alligator-killer'. In his 'rotten breath there was the power to change everything. They fermented things back there in the swamps. They drank the fermented potions and danced inside the fires and were never burned. They had eaten all the white people back there. They had drunk up all the blood' (p. 67). Why should the 'power to change' be predicated on this discourse of racialized primitivism?

One answer is to read this discourse as a refraction of nuclearist teleology. As pre-war tension escalates, *Alas, Babylon*'s Strategic Air Command officers go through predetermined alert stages, directing nuclear forces towards the Soviet Union. Their conversation is recorded:

> Beside Ace's desk, a tape recorder steadily turned, monitoring phone calls and conversations. The General glanced at it and said, "Do you realize that everything said in this room is being recorded for posterity?" They all smiled (p. 89).

It is by no means clear what the shared joke is here. The fact that they *all* smiled suggests a shared atomic knowledge, but of what? Is the joke that none of these men will survive to read posterity's account of their actions? Or is the tape-recorder a joke in the sense that there will be no posterity? Or is this a valedictory smile, shared by men who are concerned to make history? In C.P. Snow's *The New Men*, Sir Hector Rose suggested that events might have become too big for men with the advent of the atomic age. The New Men of Snow's novel reached an accommodation with this situation by systematically pretending that the situation could be controlled. It seems to me that these smiles are those of men who have reached a different kind of accommodation with the atomic sublime. There is an important sense in which the central nuclearist paradox depends on the future looking substantially the same as the past. Since there is no notion anywhere in the novel that the nuclear event represents an end to history, or to

narrative, these smiles can be read as a complacency that whatever these men do, there will always be a historical metanarrative available to survivors. The discourse of primitivism functions in the same way, by providing a metanarrative of mythical continuity. In the fantasy space of the survival text, nuclearism is figured as an avoidance of any break in linear time: at once a looking backward into mythical time as well as a looking forward to time without end. Significantly, this issue is central to historical nuclearist discourse as well. Alvin M. Weinberg, director of the Institute for Energy Analysis at Oak Ridge in Tennessee, one of the points of the Manhattan Project nuclear triangle, has written of the need for 'a permanent cadre of experts that will retain its continuity over immensely long times'.[31]

> No government has lasted continuously for 1,000 years: only the Catholic Church has survived more or less continuously for 2,000 years or so. Our commitment to nuclear energy is assumed to last in perpetuity - can we think of a national entity that possesses the resiliency to remain alive for even a single half-life of plutonium-239? ... The Catholic Church is the best example of what I have in mind: a central authority that proclaims and to a degree enforces doctrine, maintains its own long-term social stability, and has connections to every country's own Catholic Church.

Thus, even in the material world of nuclearism, safe management seems to be predicated on a certain kind of religious control of the self.

The Atomic Erasure of Difference

At the start of *Alas, Babylon* Randy Bragg has recently lost a local election disastrously. His outward looking anti-communism ('he knew that the battle for Asia was being lost in counties like [his]' (p. 8)) is lost on an electorate split by the prospect of Northern notions of racial integration extending to the old Confederacy. Randy's liberal perspective on race issues was formed in the multi-racial battle units of Korea, and he now finds it 'strange that a Negro could be an officer and a gentleman and an equal below Parallel Thirty-Eight, but not below the Mason-Dixon Line' (p. 48). This does not stop him resuming his patriarchal authority over a 'Negro' family, the Henrys, who have been closely associated with the white Bragg family. The original connection is presumably slavery, but this is not made explicit in the text. Although the 'laws of hunger and survival ... honored no color line' (p. 188), the black characters continue to speak in dialect, thus preserving a racialized ontological continuity. As the novel progresses it becomes clear that Randy's small group cannot survive without Malachai Henry's 'mechanical ingenuity' (p. 21), without the artesian water 'that can't be

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[31] Alvin Weinberg, director of the Oak Ridge National Laboratory, writing in 1973, cited by Donna E. Smyth, *Subversive Elements* (Toronto: Women's Press, 1986), pp. 149-150.

contaminated' (p. 50) on the Henrys's land, without commandeering the Henrys's low-tech Model-A Ford (p. 165), and without the Henrys's agricultural tradition: 'Because of the Henrys, they could all look forward, one day, to a breakfast of corn bread, cane syrup, and bacon' (p. 182). They also cannot survive without the death of Malachai, who sacrifices himself for the community in a gunfight with city gangsters. The gap between this restoration enabled by traditional country skills and, in *Fiskadoro*, the restoration enabled by a black, primitivist initiation rite is very small. In both cases survival is predicated on the services of the racial other.

This trope pervades Frank's novel. 'Alas, Babylon', the coded warning of nuclear war that Mark Bragg sends to his brother is also a shared boyhood secret of racial voyeurism: 'When they were boys, he and Mark used to sneak up to the back of the First Afro-Repose Baptist Church on Sunday nights to hear Preacher Henry calling down hell-fire and damnation on the sinners in the big cities'.[32] Each of Preacher Henry's descriptions of condemned decadence ends with the refrain 'Alas, Babylon!'. Specifically, come the apocalypse, '"all wife-swappers, whisky-drinkers, and crap-shooters are going to get it!"' (p. 14). In Randy's case this message turns out to be his salvation, since his assumption of community leadership is predicated on his resistance to all three possibilities. In the atomic drift of the temporary crisis he stops drinking, stops gambling, and does not wife-swap, even though Mark has this last option for Randy.

Helen is a paradigm of militarized femininity, in the sense that Mark's identity as a nuclear missile commander is legitimated by Helen. He tells Randy that:

> 'She was all the woman I ever needed. She was like this: Back when I was a captain and we were moving from rented apartment to rented apartment every year or so, I got a terrific offer from Boeing. She knew what I wanted. I didn't have to tell her. She said, "I want you to stay in SAC. I think you should. I think you ought to be a general and you're going to make a general.' There's an old saying that anyone can make colonel on his own, but it takes a wife to make a general. I guess there wasn't enough time, but had there been time, she would have had her star' (p. 36).

Before the war Mark explicitly negotiates Helen's future with Randy: 'What I mean is, she has tremendous energy and courage. If you let her, she'll give you the same kind of loyalty she gave me. Let her, Randy. She's all woman and that's what she's made for' (p. 36). Randy 'doesn't quite understand' what Mark is talking about, but everyone else in the novel is clearly aware of the situation. Randy keeps missing the signals that everyone else sees, that he is destined to end up with Helen. Helen is deeply reluctant to let Elizabeth McGovern share their house, and her reaction puzzles Randy. Dan

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32 Frank, *Alas, Babylon*, p. 14.

Gunn, the local doctor, explains the situation as follows:

> 'Helen is a fiercely protective woman - protective of her children. With Mark gone, you and the house are her security and the children's security. She doesn't want to share you and your protection. Matter of self-preservation, not infatuation' (p. 168).

There are two ways to read this wife-swapping. At one level, this sub-plot is a puerile male fantasy licensed by the nuclear event. Indeed, Frank wrote another nuclear novel called *Mr. Adam* in 1946, in which 'the nuclear bomb serves only as an excuse for a mildly titillating humorous fantasy of one [non-sterile] man impregnating the world's women'.[33] These kinds of male fantasy are entirely typical of the survival text.[34] Three decades later, a survivalist novel by Ardath Mayhar followed a remarkably similar plot to *Alas, Babylon*.[35] The entry in Paul Brians's bibliography records:

> a sort of nuclear war version of the *Swiss Family Robinson*. A Vietnam veteran finds his skills useful as he and his family struggle to survive in rural East Texas after civilization has been destroyed in a pre-emptive nuclear strike. The family emphasizes self-reliance, the rejection of governmental authority, and the importance of children. They have to deal with a vicious gang of marauding women.[36]

Mayhar's text substitutes Vietnam for Korea, and East Texas for Central Florida, and it articulates a later anti-government survivalist stance, but the basic plot and cast of characters are extremely similar. I refer to it here because the appearance of 'a vicious gang of marauding women' obviously struck Brians as bizarre enough to make a special note. This fear of women as devouring other is risible, but it is also an important reminder of the masculinist consensus in these novels; the reactionary gender politics are so pervasive that they have to be figured as a gang of marauding women before they reached a mentionable threshold.

The second way to read this sub-plot in *Alas, Babylon* is in terms of the novel's discourse of self-control. Randy in fact resists Mark's, then Helen's, overtures, eventually marrying Lib McGovern (and Dan Gunn marries Helen). By avoiding the hell-fire preacher's curse on 'wife-swappers', the social order is preserved, and the

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33 Brians, *Nuclear Holocausts*, p. 200.

34 Angela Carter has suggested that 'one of the most curious phenomena of the post-war period has been the growth of fictions about the blissfully anarchic, tribal lives the lucky fifteen million survivors are going to lead in a Britain miraculously free of corpses, in which the Man with the Biggest Shot-Gun holes up in some barbed-wire enclave and picks off all comers' ('Anger in a Black Landscape', in *Over Our Dead Bodies: Women Against the Bomb*, ed. by Dorothy Thompson (London: Virago, 1983), pp. 146-156 (p. 147)). A significant feature of these texts is the repeated representation of 'polygamous marriage arrangements' (p. 147).

35 Ardath Mayhar, *The World Ends in Hickory Hollow* (Garden City, New York: Doubleday, 1985).

36 Brians, *Nuclear Holocausts: A Supplement*, no page numbers.

temporary reorganization is successfully negotiated. Reading it this way invokes a further intriguing question, paralleled by *Fiskadoro*: why is the only person to give full expression to what that order should look like both black and a figure of childhood derision by white children?

It is my contention that this question, and the question of racialized primitivism in *Fiskadoro*, can only be properly addressed in terms of a specifically nuclear militarization of the self, as I have outlined these procedures in previous chapters. Much of the new research on militarization is an attempt to foreground the influence of discourses of race, ethnicity, and gender on military structures. Cynthia Enloe's work, I have argued, is typical. 'If there [was] an image that define[d] television's Gulf Crisis', she has suggested, it was 'a dishevelled white woman coming off a Boeing 747, an exhausted baby on her shoulder. States exist, this media story implies, to protect womenandchildren [sic]'.[37] Significantly, these images hide an important marriage politics in Kuwait.

> Though you don't see them on the evening news, there are an estimated seventeen thousand Filipina women today [September 1990] working as domestic servants in Saudi Arabia. Thousands of others have been cleaning, washing, and minding children in Kuwait and the United Arab Emirates. ... Government officials, not only in the Philippines but also in Sri Lanka, Indonesia, Jamaica, and Ethiopia, have been counting on the paychecks that maids send home to lessen their nations' imbalance of payments and to keep the lid on politically explosive unemployment. These Asian women, now trapped in occupied Kuwait or crowded into Jordanian refugee camps, have been crucial players in reducing the global tensions generated by international debt (p. 167).

After the invasion, reports that Iraqi soldiers had raped these women were widespread, but importantly, 'as a rich Kuwaiti women you would have less chance of being raped than you would as an Asian maid' (p. 168). These insights into the gendered politics of ethnicity in war-time Kuwait lead Enloe to suggest that in order 'to make sense of ... the Iraqi occupation of Kuwait, we have to talk about soldiers' ideas of manliness, middle-class women's presumptions about housework, and the IMF's strategies for handling international debt. Debt, laundry, rape and conquest are understandable only in relation to each other' (p. 168).

From within this framework, this chapter's excursion into the fantasy space of post-nuclearism suggests that in order to make sense of nuclearist subjectivity it might be necessary to talk about white people's presumptions about domestic labour, about fundamentalist religion, and about the intersection of primitivism and masculinity. The interesting question is how these notions, along with the trope of stochastic stoicism,

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37 Enloe, *The Morning After*, p. 166.

and a lurking problem of representation, interact with the emergent nuclearist procedures of self-control in a new wave of nuclear fables. This, then, is the subject of my next chapter.

Nuclear Criticism and Race

As a concluding remark, it is important to point out that nuclear criticism *has* been alert to a connection between atoms and race. However, it has tended to view this connection at the level of civil defense strategy. Paul Brians has noted how some recent survival texts 'view nuclear war as a kind of gigantic slum clearance project preparing the way for a new and better world free of liberals, pacifists, and bureaucrats'.[38] As Dean MacCannell suggests, the intersection of the urban slum and the atomic is always a question of race:

> In the United States the deepest structural oppositions are those between rich and poor, black and white, and rural and urban. ... After World War II ... there was a historically unprecedented and rapid demographic shift in the United States, which, in less than two decades, produced a rigid new parallelism of oppositions with black-urban-poor on one side and white-suburban-rich on the other. One can read this shift ... as a structurally peculiar and dangerous situation, as an indication of hostility towards minorities on the part of the dominant white culture ... Or, one can read this change ... as the emerging link between post-Hiroshima strategic foreign policy and the new domestic order.[39]

In other words, MacCannell suggests, strategic policy has colluded with domestic policy such that any nuclear attack would remove an unwanted sector of society. This notion certainly appears in *Alas, Babylon*. Lib McGovern's father is an out-and-out racist who is forced by the situation to mend his ways, becoming through necessity, 'mechanic, second-class' to Malachai Henry (p. 170). Before the war, McGovern senior is heavily influenced by the local Civil Defense official, Bubba Offenhaus. Offenhaus, he reports 'isn't worried' about nuclear war, and 'says the only real danger we face is being overrun by people swarming out of Orlando and Tampa. He doesn't even think there's much chance of that. ... But he does say we'll have to watch out for the ... migrant labor, the orange pickers and so forth' (p. 75). Black people, in other words. Civil defense for Offenhaus is a question of defending against the racial other. Importantly, though, he is not worried about the local black service population in Pistolville: 'Daisy, our cook and Missouri, the cleaning woman, may be all right' (p.

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38 Brians, 'Red Holocausts', pp. 325-326. See also Martha A. Bartter, 'Nuclear Holocaust As Urban Renewal', *Science Fiction Studies*, 13 (1986), 148-158.

39 Dean MacCannell, 'Baltimore in the Morning . . . After: On the Forms of Post-Nuclear Leadership', *Diacritics*, 14, 2 (1984), 33-46 (pp. 38-39).

75). In other words, Offenhaus produces a racist discourse marked by the tropes of colonialism, in the sense that the other is manageable in its right place. It is this nuclear *dislocation* of the racial other that is so disturbing.

Roger Luckhurst has suggested that post-Cold War nuclear geography is strongly marked by anachorism, by the unexpected location of an object. For instance,

> the appearance "overnight" of nuclear weapons in Kazakhstan panicked the Western press by its dangerous incongruity, its geographic breach of neat Cold War geometrics, its boundary lines, stark divides, good and bad objects.[40]

I would suggest that Luckhurst underplays the force of this insight, and the long *pre*-Cold War history of nuclear anachorism. The roots of the atomic age, for instance, are strongly marked by the geography of colonialism. In the summer of 1939 Germany suspended exports of uranium ore from the recently-invaded Czechoslovakia. This news galvanised Leo Szilard into meeting Albert Einstein because of Einstein's contacts with Elizabeth, the Belgian Queen Mother. Szilard was aware, as very few others were, that if a bomb project were to proceed the only other ready source of uranium ore was the Belgian Congo. Szilard tried successfully to persuade Einstein to recommend to the U.S. authorities that they secure the Belgian stocks as a matter of some urgency. The resultant letter, more famously, also intimated that a bomb might be possible. The interesting, anachoristic point about this much-cited episode is that, like the gender politics of Los Alamos, the politics of colonialism are only visible in the margins of the historical record. It is, for instance, possible for every historical text to narrate Einstein's initial engagement with the American bomb project without further comment or critique on the colonial connection.[41] In these texts 'Belgian' and 'Congo' are words that can sit comfortably next to each other without explanation.

The atomic age has *always* intersected with colonialism.[42] The implications of this are visible at the end of Michael Ondaatje's recent novel, *The English Patient.* Kirpal Singh, a sapper from the Indian sub-continent serving with the Allied forces in Italy, is forced by the news of Hiroshima to reconsider the colonial politics that have located him up to that point:

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40 Luckhurst, 'Nuclear Criticism: Anachronism and Anachorism', p. 90.

41 See, for instance, Rhodes, *The Making of the Atomic Bomb*, pp. 303-308, or Jungk, *Brighter Than A Thousand Suns*, pp. 84-87. The Belgian Congo does not merit an entry in the index of either history.

42 The excavation of this hidden history was the explicit aim of much anti-nuclear campaigning in the 1980s. See, for instance, the provocatively entitled pamphlet from Women Working for an Independent and Nuclear Free Pacific, *Pacific Women Speak: Why Haven't You Known?* (Oxford: Green Line, 1987).

> My brother told me. Never turn your back on Europe. The deal makers. The contract makers. The map drawers. Never trust Europeans, he said. Never shake hands with them. But we, oh, we were easily impressed - by speeches and medals and your ceremonies. What have I been doing these last few years? Cutting away, defusing, limbs of evil. For what? For *this* to happen?[43]

As Ondaatje's text makes clear, it may be politically necessary to pay attention to the intersection of nuclearism with discourses of colonialism and race. In the next chapter, this intersection forms the basis of an analysis of a representative text from the second wave of nuclear fables.

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43 Michael Ondaatje, *The English Patient* (London: Pan, 1993), pp. 284-285.

CHAPTER FIVE: *STALLION GATE* AND MODERN NUCLEARISM

Introduction

This final chapter is an investigation of the tropes of contemporary nuclearist subjectivity: what form did it take after four decades of the Soviet-American dynamic, and five decades of radioactive pollution? My analysis of post-nuclear survival texts in the last chapter suggested that it was likely that the representations of nuclearist subjectivity in the second wave of nuclear fables would still be strongly marked by the tropes of emergent nuclearism. My discussion of Martin Cruz Smith's *Stallion Gate* below indicates the extent of any intersection. One important aspect of second wave nuclearism is that it has been documented in ways that first wave nuclearism was not. Nuclearism has recently become a subject for ethnographers and sociologists, who have chosen to study nuclearists at home and at work. Thus, I have begun this chapter with a discussion of how far the older procedures for managing atomic anxiety have survived their original historical moment.

The nuclear state, of course, has moved on from the Manhattan Project. In this post-Cold War period, it is even in a period of retrenchment. In an important sense, the 1980s were the end of certain nuclear fantasies about limitless, safe, cheap power, but the nuclear military-industrial complex persists: the nuclear arsenals still exist, and the waste from reactors and weapons production continues to pile up. In order to pay attention to this historically different formation, I have used Françoise Zonabend's account of a nuclear reprocessing plant as a representative sociological account of nuclearist subjectivity. I contend that Zonabend makes visible a modern nuclearist subjectivity that is both a revision and an extension of the emergent form. The first wave of nuclear fables was able to narrate a subjectivity invisible to the historical narratives. By contrast, the second wave narrates dimensions of nuclearism that are also visible in the sociological narratives. In a second section, I read Martin Cruz Smith's *Stallion Gate* as a representative second wave nuclear fable, but I take my analytical cue from the insights provided by Zonabend.

Part 1: The Modern Nuclearist Subject

After the Cold War, the issues of low-level radiation, global fallout, and nuclear waste became particularly visible to Americans as they woke up to the environmental cost of their nuclear state. For instance, when the photographer Carole Gallagher called her touring exhibition, 'American Ground Zero: The Secret Nuclear War', she was expressing a growing public sense that the nuclear state had been slowly killing

sections of its own populace for four decades.[1] Significantly, even nuclearist discourse has started to acknowledge the reality of this legacy:

> It is concluded ... that data relating to the role of gene mutations in tumorigenesis, the monoclonal origin of tumours, and the relationship between DNA damage repair, gene/chromosomal mutation and neoplasia are well established and broadly consistent with the thesis that, at low doses and low dose rates, the risk of increased neoplasia rises as a simple function of dose and does not have a DNA damage or DNA repair related threshold-like component. ... In the present state of knowledge, it is appropriate to assume an increasing risk with increasing dose.[2]

In other words, *any* exposure to ionizing radiation can cause damage to living organisms; there is no safe threshold dose below which there is no injury to living cell tissue. Although Alice Stewart demonstrated conclusively as long ago as 1958 that even supposedly harmless routine x-rays were causing genetic defects *in utero*, it has taken another four decades for the radical implications of her work to filter into the official dosing discourse of the British nuclear industry.[3] In America, as late as 1980, the National Academy of Sciences could agree that 'no association with cancer would be found at radiation doses below a certain threshold', but in 1990 the same body unanimously accepted 'the linear, no-threshold hypothesis'.[4] Despite these time delays, this change in scientific consensus within nuclearism is a useful indicator of the way that some aspects of the nuclearist world-view are now under sustained political and environmental pressure. Whilst the notion of safe exposure is rapidly becoming untenable, other assumptions underpinning the industry's practices are much more resistant to challenge. For example, the Pantex Plant in Texas used to assemble America's nuclear weapons systems; now it maintains them, dismantles them, and stores the surplus plutonium cores. The site is above the largest and most heavily-used source of artesian water in the North American mid-west, and clearly, 'one of the main sources of environmental concern ... is the potential contamination of the Ogallala

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1 Now published in book form: Carole Gallagher, *American Ground Zero: The Secret Nuclear War* (Cambridge, Mass.: MIT Press, 1993).

2 National Radiological Protection Board (NRPB), *Risk of Radiation-induced Cancer at Low Doses and Low Dose Rates for Radiation Protection Purposes*, Documents of the NRPB, 6, 1 (Didcot, Oxon.: NRPB/HMSO, 1995), p. 75

3 The implications of Stewart's work prompted the American Atomic Energy Commission to conduct its own study. This concluded that at least 4,000 American infant deaths could reasonably be attributed to fallout. The history of the debate about threshold limits of exposure/dose is well-documented by Catherine Caufield in *Multiple Exposures*. See also Jay M. Gould, and B.A. Goldman, *Deadly Deceit: Low-Level Radiation High Level Cover-Up* (New York: Four Walls Eight Windows, 1991).

4 Roff, *Hotspots*, p. 7. An event surely indicative of the impact of the Cold War on radiation safety issues.

Aquifer, which is about 150 meters deep in the area of Pantex'.[5] Despite evidence that 'points to possible future contamination' (p. 238), Pantex has been able to resist the downsizing and expensive clean-up process that has been the recent fate of many nuclear plants.[6] Like the survivors in *Alas, Babylon*, Pantex, and the Department of Energy (D.O.E.) who are responsible for monitoring the plant, believe that artesian water cannot be contaminated.

As I have pointed out in previous chapters, artists like Gallagher were not alone in subjecting the nuclear state to renewed critical attention in the 1980s. Sociologists and ethnographers also began to pay serious attention to the worldwide nuclear industry. Paul Loeb's study of the Pacific Northwest Laboratory on the Hanford Reservation in Washington State was published in 1982. Grace Mojtabai's work at the Pantex Final Assembly plant at Amarillo on the Texas Panhandle came out in 1986. Françoise Zonabend's study of the reprocessing plant at Cap de la Hague in France was published in French in 1989. More recently, Debra Rosenthal has written on the Sandia National Laboratory, and Hugh Gusterson has just published a full-length study of the Lawrence Livermore Laboratory.[7]

Importantly, these studies suggest that the procedures of an emergent nuclearist subjectivity, grounded in the 1940s and 1950s, were still circulating in the nuclear plants of the 1980s. I have argued, for instance, that the calculation and management of atomic threat was a key emergent nuclearist procedure, and it appears that this has since been institutionalized. Thus, Hugh Gusterson notes how the latest edition of the U.S. Government publication, *The Effects of Nuclear Weapons*,

> features a pouch at the back containing the "nuclear bomb effects computer" - a circular slide rule that enables the reader to calculate "1-99% probability of eardrum rupture," or the "probability of a glass fragment penetrating 1cm of soft tissue," if they know the strength and

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5 *Nuclear Wastelands*, p. 238.

6 For instance, the Fernald Uranium Processing Plant, near Cincinnati, Ohio, closed in 1989. The site has been renamed as the Fernald Environmental Management Project, as attempts have begun to deal with the on-site contamination (see *Nuclear Wastelands*, pp. 210-215 for a discussion of the issues at Fernald). For a summary of the general downsizing, see Christopher Anderson, 'Weapons Labs in a New World', *Science*, 262 (1993), 168-171.

7 Loeb, *Nuclear Culture*; Mojtabai, *Blessèd Assurance*; Françoise Zonabend, *La Presqu'île au Nucléaire* (Paris: Editions Odile Jacob, 1989), translated from the French by J.A. Underwood as *The Nuclear Peninsula* (Cambridge: Cambridge University Press, 1993); Rosenthal, *At the Heart of the Bomb*; Gusterson, *Nuclear Rites*. To date, there are no comparable studies of sites in Britain. The closest comparable work is the comprehensively critical Health and Safety Executive report on Aldermaston, *The Management of Health and Safety at Atomic Weapons Establishment Premises: a Review by the Health and Safety Executive; Part 1, an Overview* (London: HMSO, 1994).

distance of a nuclear explosion.[8]

Whereas Richard Feynman could only hope to measure ranges of lethal radiation and blast and fire damage with mental arithmetic, modern nuclearists can carry this precise talisman in their back pocket.

The less technical procedures of nuclearist self-control still seem to work too. I suggested in Chapter Two that when Charley Pederson administered glucose solution to the radioactive body of Louis Saxl this was a 'crude body-building remedy', and a charm against catching Saxl's atomic dis-ease. It appears that modern weapons lab workers think in just such crude terms. One of Debra Rosenthal's interviewees reports the only intrusion of nuclear doubt into her life as follows:

> 'Every once in a while, *if my blood sugar's real low*, I'll think, my God, my daughter's at home. If there was a nuclear war, how would I ever get to her?'.[9]

Life on *The Nuclear Peninsula*

Gusterson and Rosenthal both provide illuminating ethnographic detail, but the rest of this section treats Françoise Zonabend's *The Nuclear Peninsula* as an exemplary sociological study of modern nuclearism. This choice is based primarily on her foregrounding of the industrial aspect of modern nuclearism. As I argued in Chapter Two, it is important to pay attention to the structural implications of Louis Saxl's comment in *The Accident* that 'the science ended at Chicago, in 1942 ... There's been no science to speak of out here, we manufacture a product here'.[10] Cap de la Hague is a reprocessing plant, retrieving weapons-grade plutonium and recycling uranium from spent reactor fuel. The process involves the use of highly toxic chemical reagents and the extended manipulation of extremely radioactive material. The level of industrial organization required for this to happen suggests that it may be more appropriate to think of the modern nuclear state in terms of workforces, management and bureaucracies rather than the individualistic atomic scientists of Los Alamos, or even of Lawrence Livermore and Sandia.

I have also argued (in Chapter One) that the social effect of a nuclear site is rarely confined to its high-security fence. Cap de la Hague is an excellent example of the way that an entire community can be economically tied-in to a nuclear plant. In

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8 Gusterson, *Nuclear Rites*, pp. 112-113.

9 Rosenthal, *At the Heart of the Bomb*, p. 205, emphasis added. Hugh Gusterson also refers to this comment in *Nuclear Rites* (p. 118), but he unaccountably changes the interviewee's gender to male.

10 Masters, *The Accident*, p. 15, as already cited in Chapter Two.

particular, 'the economic fortunes and political equilibrium of the [Côtentin peninsular] are bound up with the maintenance and development of its nuclear industries'.[11] Thus, this insight into the way nuclearism organizes entire communities provides a second reason for selecting *The Nuclear Peninsula.*

In order to describe how workers are able 'to bear the burden of fear that is implicit in the job' (p. 112), Zonabend has coined the useful term, 'the nuclear everyday' (p. 101), as a way of signposting the unexceptional, routine quality of their work.

> By focusing on the men and women who actually work at the plant and are daily confronted with the invisible but ubiquitous presence of radioactivity, I attempted to understand how they react to it, how they think about it, and how they experience it. What is the nature of their relationship with this energy whose dangerous effects are so unpredictable, this phenomenon that they need to make a deliberate conceptual effort to locate within their own grids of interpretation? (p. xi)

This cartographic emphasis on the 'grids of interpretation' through which individual subjects map out their relationship with nuclear power makes her study particularly productive in relation to my own study of the nuclear fable. As I shall illustrate, these shared interpretations resonate with the kind of didactic narratives of self-control passed between nuclearist subjects that characterize the nuclear fable.

As Zonabend points out, the most all-pervasive aspect of modern nuclear industrialism is automation. The notion of a hands-on nuclear process has virtually disappeared:

> With the object of improving safety, the trend is towards more and more automation of production tasks and a greater and greater degree of computerisation of control functions. Man, regarded as the weak link in the man/machine partnership, is gradually being eliminated' (p. 102).

As with all industrial processes of this kind,

> too much safety is boring, and boredom spawns the *desire for risk.* 'You sometimes find yourself hoping for a problem, be it mechanical or chemical, even nuclear, involving contamination, even if that's not what you really want. ... The job's an awful bore apart from the incidents!' (p. 103).

Although the kind of encounter with atomic fuel that killed Louis Slotin at Los Alamos in 1946 is completely alien to modern nuclearism, the tropes of self-control seem to hold true even at the point where technology removes most of the human contact with the atomic. Colonel Hough in *The Accident* raised the nuclearist possibility that the proper fear of the power of the atom was not whether people would lose control of it,

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[11] Zonabend, *The Nuclear Peninsula*, p. 2.

but 'whether they would lose control of themselves in handling it'.[12] It seems that in the over-controlled environment of the modern nuclear plant there is a seductive desire to reinstate control in personal terms. In other words, a modern version of the 'thoughts of a different kind' that were so dangerous in the world of *The Accident* exists in the world of Cap de la Hague. When I suggested in Chapter Two that some accounts of Slotin's death hinted at the dark possibility that he *deliberately* brought the experimental spheres too close, I did not expect to find a similar trope in contemporary nuclearism. Here, though, there is a new kind of nuclearist balance. The emergent nuclearist subject had to contend with a dangerous atomic spiral in which contact with fission products might induce an anxious absent-mindedness in a human, and human absent-mindedness might produce terminal atomic errors. The modern nuclearist, by contrast, has to contend with a paradoxical situation that is a direct legacy of those responses to the earlier fear. A certain level of operator control has to be built in to the system in order to prevent atomic disturbance becoming attractive in relation to a boring nuclearist norm. In other words, the systematic distancing of the operator from the modern atomic object requires a level of automation that carries with it a new kind of absent-mindedness. The key modern question then, is still, in part, a question of how nuclearists sideline anxiety, but it is also a question of how 'to adapt to this system of constraints and controls, ... and render boredom tolerable' (p. 104).

The discourse of self-control in emergent nuclearism also included the judicious selection of those individuals who might manage themselves better than others in atomic situations. At Cap de la Hague now, it is clear that there are two kinds of workers, who characterize themselves as *rentiers* or *kamikazes*. Whereas a *rentier* is a deeply cautious person, literally someone who lives on the interest accrued from invested assets, a *kamikaze*, as the name implies, appears to be fearless. The difference between the two groups lies in their attitude to the accumulation of radiation exposure. Whereas the *rentiers* are meticulous about precautionary procedures and are consequently willing to spend more time in an exposed situation once fully prepared, the *kamikazes* are people for whom 'getting the job done in the shortest possible time' (p. 104) is the paramount objective. The important point is that those 'in charge of recruitment are well aware of these two types of behaviour ... and steer them towards the jobs best suited to ... the exigencies of production' (p. 105). Thus, it seems that the emergent nuclearist principle of selecting personnel on the grounds of their variable capacity to manage atomic disturbance has become a structural force in the modern nuclearism of Cap de la Hague.

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12 Masters, *The Accident*, p. 290.

Good and Bad Radiation

All workers at the plant deploy the trope of stochastic stoicism as a matter of course, and no-one believes that what they are doing is completely safe. 'Young people', for instance, 'entering the plant today know where they stand as regards the risks to which they will be exposed. Yet they all banish their anxiety with the same refrain: "There's less risk in working here than there is in taking your car out each morning"' (p. 101). This comparison only works, however, if routine exposure to low-level radiation is considered to be safe (within official limits). Consequently, this allegory of risk obscures the nuclearist assumptions about dose that are currently under pressure. Within the nuclear plant, the notion of a threshold dose organizes reaction to radiation such that a careful distinction is always, and routinely, made between irradiation and contamination. The core nuclearist paradox for weapons scientists and emergent nuclearists was that building bombs and talking peace were not mutually exclusive. In the reprocessing plant there is a new, modern nuclearist paradox, in the sense that knowing what radiation can do is no object to working with it.

Irradiation is not seen as a problem, and is in fact often associated with positive values such as the sun's light. Contamination, however, is always associated with filth. Zonabend summarizes the distinction as a sequence of binary oppositions:

IRRADIATION	CONTAMINATION
RAY	DUST
CLEAN	DIRTY
STRENGTH	DECAY
"you're tough"	"you're rotten" (p. 108)

The older nuclearist tropes of bodily strength clearly operate here too, but they are modulated by this new binary. Contamination makes you rotten, and 'the contaminated person is regarded as sick ... . Above all, he may spread the contagion around him, upsetting the whole social order'. (p. 109). In the world of *The Accident*, atomic feelings had this property too. For the emergent nuclearist it was by no means clear that the gap between emotional infection and radiation poisoning was real. B.F. Halverson, for instance, could not explain the 'queer marks' that were 'no possible trick of radiation, for it occurred in men who never approached radiation'.[13] I would contend that the distinction between irradiation and contamination is a modern imposition of an organizing fantasy structure onto the continuum-like emergent nuclearist response to contact with atomic power. Self-control in the face of atomic disturbance is no longer a question of simply keeping one's distance, but has become a question of *managing* that

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[13] Amrine, *Secret*, p. 100, as cited in Chapter 3. This raises the interesting possibility that many of the scientists *were* suffering from radiation poisoning.

distance. Irradiation itself no longer causes an atomic disturbance of the social order, but contamination does. Thus contamination, not radiation, is 'something a person must seek to guard against or keep under control' (p. 113). This is a crucial shift in the social patterns of nuclearist subjectivity. Through this fabricated paradox, the workers at Cap de la Hague have found a way to fully adapt to living with atomic power.

In the same way that Walter Luke's accident in *The New Men* threatened his bones, and in both *The New Men* and *The Accident* the irradiated man's blood count is meticulously observed, contamination at Cap de la Hague 'is experienced as penetrating flesh and blood' (p. 111). Once the paradoxical tension of working with, but not being affected by, radiation collapses, then at this point of contamination, all the crude emergent nuclearist procedures still operate. Just as no-one is prepared to discuss radiation sickness with Louis Saxl, 'around the contaminated man, nothing is said. It is a way of marginalising him, of holding him at a distance' (p. 109). Like other kinds of atomic disturbance visible in the early nuclear fables, contamination 'comes between couples, breaching the social order' (p. 109). In fact, there is a complex intersection of marriage politics and radiation safety, which Zonabend illustrates by reporting how partners hate workers 'bringing anything from the plant back to the house' (p. 109), and will not sleep with a person once they have been contaminated.

The Politics of Irradiation

Unfortunately, Zonabend can give no account of how workers at Cap de la Hague in the 1990s have had to revise their binary belief system in the light of the collapse of the threshold theory of exposure. In concluding this section, I want to note that the idea of irradiation as managed exposure, and contamination as unmanaged, out-of-control exposure, has particular historical roots. The distinction between controlled low-level radiation and uncontrolled high-level radiation underpinned the Atoms for Peace propaganda of the 1950s, and is a refraction of the false divide between civil and military uses of atomic energy. In this sense, it is a version of older nuclearist certainties. In 1950, for instance, it was possible to argue seriously that:

> a uniform irradiation of the whole human species, sufficient to reduce the actual rate of reproduction, might now be regarded, if it were practicable, as not by any means disadvantageous. Uneven radiation, on the other hand (arising from atomic explosions rather than atomic energy), is serious for individuals or groups who receive heavy doses, especially heavier doses than their neighbors, and especially sudden doses rather than accumulations.[14]

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[14] C.D. Darlington, health physicist speaking in 1950, cited by Rosalie Bertell in *No Immediate Danger*, p. 199.

Irradiation is also seen in terms of 'even' accumulation, but the 'sudden dose' of contamination that takes the worker way over their dose limit is akin to atomic explosion. The metaphor is not an idle one because of the intimate connection between the threshold theory and the atomic explosions of the Second World War. As Sue Roff has recently argued,

> it is important to note that all contemporary scientific and biomedical discussions about the types and extent of injury caused to humans by ionizing radiation are grounded in the biomedical studies of the survivors of the August 1945 bombings of Hiroshima and Nagasaki. So many of the current results from studies of, for instance, leukaemia clusters around nuclear power stations, are assessed against the data and results generated by the studies conducted in Japan. ... *The studies of the survivors of Hiroshima and Nagasaki are always considered to be studies of people who received a massive instantaneous dose of radiation.*[15]

The point is that injuries and tissue damage caused by residual radiation fallout, and radioactivity ingested through the food chain, are rendered statistically invisible. In this way the suppression of fallout data in the 1940s and 1950s has organized and legitimated the nuclear industries of the world.

The Tricks of Tacit Knowledge

I have suggested so far that modern nuclearist subjectivity can be read as a revision of the emergent form, which is largely predicated on pre-existing structures of the apparatus of apocalypse. Zonabend suggests that 'workers in the nuclear industry use certain tricks of language and exploit certain flights of fancy ... [and] they refashion an industrial world to suit themselves' (p. 104). In other words, there is an active component to modern procedures of self-control. This will be a key concern for this chapter, since it is at the point of this *active* re-fashioning that the second wave nuclear fable intersects with the sociological accounts of modern nuclearist subjectivity. In order to explain the significance of this refashioning it is necessary to return to Zonabend's analysis of the *rentier*. For the *rentier*,

> control consists firstly in ensuring that ... danger does not arise and secondly in seeking to understand any incident that does occur so as to evolve certain knacks, certain ways of doing things, "tricks of the trade" that the old hands then try to pass on to the younger generation' (p. 113).

This is an example of the kind of tacit nuclear knowledge that Donald Mackenzie has drawn attention to (see Chapter One). It is one site where didactic narratives of self-control passed between nuclearist subjects. The important point is that Zonabend shows

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[15] Roff, *Hotspots*, p. 6, my emphasis.

that there are certain possibilities outside the scope of Mackenzie's work, because instead of reinforcing control, this tacit knowledge often takes the form of a tactical *circumvention* of the plethora of rules and control procedures. Zonabend's best example is the case of a worker who does not wear a second set of personal gloves while working in a glove-box because: '"if [an internal] glove is punctured you don't notice. Whereas working bare-handed you check yourself more often' (p. 113).

The significance is that at moments like this, these tricks of tacit knowledge 'introduce little cracks into the monolithic complex of rules, orders, and obligatory systems by which [the worker] is usually bound' (p. 113). These 'tiny, everyday procedures constitute so many defensive strategies to combat anxiety' (p. 113), but they are also potential flaws in the system. If, for instance, one working shift does not tell the next about a particular deployment of tacit knowledge, then serious accidents become possible. These *enabling* cracks in the system of control are further exemplified by the protective symbol of the radiation dose badge. Theoretically, these badges police the boundary between irradiation and contamination, but there is a constant 'traffic in films' (p. 117) among the workforce. In other words, by swapping a contaminated badge for a clean one it is possible to manage contamination such that it can be viewed as mere irradiation. Thus, modern nuclearist self-control is organized around the management of the control procedures themselves. The traffic in badge films is not strictly a removal of the data. Instead, it is a personal management of the data on which categorizing decisions can be taken. The 'queer marks' that were indications of atomic disturbance for B.F. Halverson, have been replaced with an institutional mark that renders the disturbance safe. Thus what was once a mark of bad radiation (contamination) has been replaced, at the level of a social procedure *as well as* at the level of fantasy, with a mark of good radiation (irradiation).

Thus a modern nuclearist subjectivity seems to function on the gaps in control procedures, on a tactical ignoring of official advice, and on the personal management of dose. In summary, Zonabend's work suggests that modern nuclearist subjectivity is still predicated on crude procedures of distance, but these procedures are mediated by an enabling management of the social space of nuclear work, and they are structured by the fantastic distinction between good and bad radiation. In the next section, I turn from ethnography to fiction once again, in order to illustrate a reappearance of Zonabend's nuclear *socius* in narrative.

Part 2: *Stallion Gate*, A Representative Second Wave Nuclear Fable

At times, there is a visible complicity between the history of science and nuclearism. In his standard history of the bomb, Richard Rhodes, suggests that 'a bomb exploded in the desert damages not much besides sand and cactus and the purity of the air'.[16] The absence here of any discussion of fallout is more than historical oversight. It seems to me that this is a wilful removal of certain experiences from the nuclear archive. Rhodes simply ignores the stories of the non-scientific other, exemplified by countless first-hand accounts of the effects of test fallout:

> I was probably three or four. My brother and I were outside and we were on the swing. There was this great big red ball on the horizon and I thought, "It's a flying saucer." I was really impressed. ... I remember my mother saying, "I want you to stay in today," and she wouldn't hang the clothes on the line. ... I think the first time I became aware of [fallout injury] was when the sheep died. ... Two-headed lambs, and there would be piles of dead lambs that were born dead. We thought that was life, that they would be born without legs and two heads.[17]

Thus, in the historical narrative of *The Making of the Atomic Bomb*, Rhodes outrageously reinscribes the nuclearist certainty regarding the benign effect of low-level radiation.

This complicity with nuclearism is also visible in Robert Seidel's review of a number of books on the bomb written in the 1980s. Seidel, who has been the official historian of the Lawrence Livermore Laboratory, begins by suggesting that 'where popular history and journalism fail, fiction often succeeds'.[18] As the review progresses, however, it becomes clear that Seidel is being rather disingenuous in his valorizing of fiction. Although 'the historical novel, an exercise in disciplined imagination, can often reveal facets of historical truth to the uninitiated in a forceful and interesting way' (p. 528), the single fiction he reviews is only included to be immediately dismissed. This fiction is Martin Cruz Smith's 1986 novel, *Stallion Gate*. Thus, although '*Stallion Gate* is, like his *Gorky Park*, a "good read," it so deviates from reality as to obscure rather than enhance its historical background' (p. 528). This peculiar reviewing strategy, and the reasons that Seidel gives for rejecting *Stallion Gate*, are worth closer attention.

The first problem with *Stallion Gate*, from Seidel's point of view, is that 'Smith

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16 Rhodes, *The Making of the Atomic Bomb*, p. 677.

17 Claudia Boshell Peterson, interviewed by Carole Gallagher in October 1988, in Gallagher, *American Ground Zero*, p. 125. Peterson is a "downwinder"; i.e. someone who lived in the path of the fallout clouds from atmospheric tests in the American Southwest.

18 Robert Seidel, 'Books On The Bomb', *ISIS*, 81(1990), 519-537 (p. 528)

has introduced as protagonist not a scientist, but Sergeant Joe Pena [sic], a Native American soldier from "Santiago" (recognizable to locals as San Ildefonso Pueblo)' (p. 528). The review continues as follows:

> This not-so-noble savage observes everything about Oppenheimer, Klaus Fuchs, and Groves, except what is important, which is the quality of their work. Like the PBS series on Oppenheimer of a few years ago, it attempts to substitute sex for science and drama for history. Eventually, Joe figures out in his own way that greater forces are involved, as he sprints away from the tower at Trinity while the countdown progresses. By then, of course, it is too late. It seems Smith spent rather too much time recreating the characters of the real actors ... to figure out what the bomb was really about (p. 528).

For Seidel, the only possible critical interest in *Stallion Gate* is the quality of work done by the atomic scientists. At one level, this is a legitimate expression of the disciplinary interests of a historian of science. At another level, however, the review repeats a set of racist tropes that the novel itself foregrounds and subverts. The fact that this is the only novel Seidel selects for review makes it difficult not to regard this strategy as an active suppression of non-nuclearist perspectives.[19] Importantly, Seidel has precedents. For instance, his review of *Stallion Gate* is not too far in tone and langauge from a certain kind of review of the first wave of nuclear fables. To the uncredited *Times Literary Supplement* reviewer of *Command The Morning*, Pearl Buck made 'heroic' efforts in her attempt at 'no less than the story of splitting the atom', but 'one suspects that she, as well as her readers, feels on more congenial ground in the "human" scenes where personality and emotion war with the hard facts of science, and the result is inescapably a little frivolous'.[20]

Seidel is both more patronizing and more insidiously nuclearist, since there is an implication that Smith, like Joe Peña, catches on *too late* to the proper study of Los Alamos. To say, as Seidel does, that the 'not-so-noble savage observes everything' is to conflate the narrative voice with Joe's perspective. What Seidel does not announce, but his copy of the novel undoubtedly would, is that Smith identifies with his Native

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19 There were several other Manhattan Project novels available for review. For instance: Lawrence Dunning, *Keller's Bomb* (New York: Avon, 1978); George E. Simpson, and Neal R. Burger, *Fair Warning* (London: New English Library, 1980); Mark Elder, *The Prometheus Operation* (New York: McGraw-Hill, 1980); Thomas McMahon, *Principles of American Nuclear Chemistry: A Novel* (Boston, Mass.: Little, Brown, 1970); Robert Olen Butler, *Countrymen of Bones* (New York: Horizon, 1983); or, James Thackara, *America's Children* (London: Chatto and Windus, 1984)

20 *Times Literary Supplement*, 11 September 1959, p. 517.

American heritage.[21] Deliberate or not, this slippage of narrative voice in Seidel's review produces an effect by which Smith ends up as another 'not-so-noble savage'. Joe figures out 'in his own way' what is really at stake, and there is a clear implication that it is to be hoped that Smith, in his own way as a writer of fiction, not history, could do better too.

Jane Caputi has pointed out that 'there are scores of Euro-American narratives (fictional and factual) of the development of atomic power in New Mexico ... [and] the vast majority of these narratives ... simply ignore the Indian presence and perspective'.[22] Seidel not only legitimates that silence by suggesting that any view outside of the scientific is inadequate, he also deploys a nuclearist procedure similar to the survival narratives I explored in Chapter Four. In the same way that survival in those novels was predicated on the mobilization of a discourse of race, the metaphoric survival of a history of atomic science untainted by 'sex' and by 'drama' is predicated on a similar mobilization. This might suggest that the nuclear fable, because it makes visible the marriage politics (sex), and social patterns (drama) of nuclearism is anti-nuclearist *de facto*. As I have argued earlier, the situation is too complex for a simple opposition to be convincing; there is often a certain level of narrative complicity with nuclearism within the nuclear fable. However, I would suggest that it is reasonable to work against Seidel's review of *Stallion Gate* as a way of exploring the dimensions of a representative second wave nuclear fable. In the sections that follow, I read *Stallion Gate* to uncover, as Seidel puts it, what the 'bomb was really about'. It is my contention that it is precisely through the narrative matrix of 'sex', 'drama', and atomic science's other that the nuclear fable can continue to inform us about modern nuclearist subjectivity, and how it might be possible to resist it. Initially, I explore the representation of what has been termed 'radioactive colonialism'. Then, referring back to the previous section on Cap de la Hague, I read Joe Peña as an exemplary modern nuclearist subject. Then I discuss the various modes of resistance to nuclearism represented in the novel, before considering its potential as an anti-nuclear text.

Stallion Gate and Radioactive Colonialism

Stallion Gate begins with Joe Peña in military prison for sleeping with an officer's wife. He is offered a deal by a racist, anti-semitic, Manhattan Project security

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21 This heritage is Senecu Pueblo, according to Jane Caputi in 'The Heart of Knowledge: Nuclear Themes in Native American Thought and Literature', *American Indian Culture and Research Journal*, 16, 4 (1992), 1-27 (p. 9). Every copy of *Stallion Gate* that I have seen makes this heritage clear, often as a marketing device.

22 Caputi, 'The Heart of Knowledge', p. 9.

officer from Texas, one Captain Augustino. Peña could be offered a job driving and body-guarding J. Robert Oppenheimer if he will also report back to Augustino on Oppenheimer's contacts and conversations. Oppenheimer will need a liaison with the Los Alamos Indian population, and Augustino needs a more covert liaison with the scientists. Joe and Oppenheimer knew each other as children, when Oppenheimer was sent to the Southwest for a tuberculosis cure and they used to ride together.[23] When they meet again, Oppenheimer is quick to recount an incident on the trail that struck him 'as an offer of eternal friendship' (p. 16). Oppenheimer identifies with mystical elements that he perceives to exist in the Native American culture of the Southwest, and is pleased to be seen with his own personal Indian. As Oppenheimer's bodyguard, Joe has the status of a tourist attraction: 'Apparently Fuchs had been giving Fraulein Weiss the usual Los Alamos tour: There are the mountains, there are the mesa, there is the Indian' (p. 17). Later, when Joe drives General Groves, 'the story got around that even the President had asked Groves about his "Indian companion"' (p. 46).

Thus, one of the books key dynamics is set up, in the sense that Joe is caught between Anglo and traditional Pueblo cultures. He is a warrior, but in someone else's army, having fought with his brother in the Philippines. He is a boxing champion, and an excellent musician, but at some level he is also 'damaged goods' (p. 11), prone to self-destructive impulses as a result of his split cultural identity. His brother Rudy disappeared on Bataan, and his traditionalist mother 'wrote to him not to come back to Santiago because as far as she was concerned her only real son, Rudy, was dead. So instead of going home, Joe took the colonel's wife to bed and got shipped to Leavenworth' (p. 83). He has rejected the traditionalist path represented in the novel by his mother, the renowned potter Dolores, and by his uncle and community elder, Ben Reyes. This split, expressed by his aunt, Sophie Reyes, in terms of Joe not having 'his own words' (p. 243), resonates through the novel.

Against Augustino's racism, anti-semitism, and anti-red hysteria Joe tends to side with 'Oppy'. The following exchange is typical:

> 'Sergeant, tell me,' the captain whispered, 'have you ever thought of this as the Century of the Jew?' (p. 36)
> 'I'm talking, Sergeant, of the Third Great Jew. ... Sergeant, what would you say if I told you that J. Robert Oppenheimer is an agent of the Soviet Union, intent on developing an atomic weapon here only so that he can deliver the finished plans to his Soviet friends?'
> Joe didn't know what to say. They had entered a depth of insanity that he was unprepared for (p. 38).

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23 For a historical account of the eighteen-year old Oppenheimer's visit to Los Alamos see Rhodes, *The Making of the Atomic Bomb*, pp. 120-121.

But he also takes sides with Oppenheimer against his own family and the tribal priests when they suggest that Joe ought to try to stop the project. At the end of the novel Joe realizes that Oppy's friendship is paper-thin, and his affinity with Indian culture all one-sided. When Joe tries to tell Oppy that the tribal elders are attracting lightning to the desert in order to sabotage the first atomic test, Oppy lashes out with the following put-down: "'do you think I'm going to let the effort of all these good men be endangered by a ... tribe?"' (p. 359, ellipses in original).

The relationship between Joe and Oppenheimer mirrors the structures of power that have been characterized as radioactive colonialism: the exploitation of Indian lands and people as resources for the nuclear state. As is typical of all colonialisms, some Indians have often been willing economic participants, as land-owners, as miners, and as bidders for nuclear waste storage facilities. As Winona LaDuke and Ward Churchill have argued, the Laguna Pueblo situation south of Los Alamos is typical.[24] The Anaconda Corporation leased the pueblo land for a uranium strip-mining operation, prioritizing Indian labour and paying higher wages than average on reservations. The income allowed the tribal council to establish a symbolic independence from the federal government. Then, 'the bubble burst when Anaconda pulled up stakes and left the husk of their mining operations: a gaping crater and piles of virulently radioactive slag' (p. 124). The clean-up costs alone are likely to be more than the royalties received by the Laguna over a period of thirty years.

The point is that Oppenheimer's bomb leaves Joe's people with precisely a crater and radioactivity and not a lot else. Helen Jaskoski has written convincingly about this as follows: 'the invention and development of the nuclear present and future has occurred in proximity with, and affected the lives of, people who have maintained with stubborn persistence the ancient cultures of North America'.[25] Those people, however, have been the smallest possible factor in the calculations of the nuclear state. As Oppy reminds Joe towards the end of the novel:

> "You know, Joe, we are fast approaching the climax of this enormous endeavor. I don't have the time or the patience to deal with you or your adventures anymore, not when the effort of thousands of people and the lives of thousands of soldiers are hanging in the balance. You are the smallest possible factor in Trinity. Please don't fuck it up" (p. 267).

Non-scientific personnel in general are notably absent from the atomic historical narrative. Very occasionally, the early nuclear fables did look in this direction. B.F.

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24 Winona La Duke and Ward Churchill, 'Native America: The Political Economy Of Radioactive Colonialism', *Journal Of Ethnic Studies*, 13, 3 (1985), 107-132

25 Helen Jaskoski, 'Thinking Woman's Children and the Bomb', *Explorations in Ethnic Studies*, 13, 2 (1990), 1-22 (p. 2).

Halverson, for instance, in *Secret*, makes a passing reference to the labour pool that the construction of Oak Ridge is predicated on:

> to Halverson the Ridge was always two peoples. In the mountain eyes the bewilderment of ignorance . . . the aching weariness of poverty, the bodies twisted and gnarled, the teeth dirty and crooked, so extremely un-American, and so American. And in the others, the keen kids, the bewilderment of knowledge.' (p. 48).

Elsie McMillan, wife of a Los Alamos scientist, unwittingly expressed the one way nature of the relationship between atomic science and atomic labour in a 1980s memoir. She recounts how her cleaning woman from San Ildefonso Pueblo does not arrive at work one day. It subsequently turns out that she was giving birth. The revealing aspect of this domestic incident is that despite over a year of daily contact, McMillan had no idea that 'my big, beautiful Pascualita' was pregnant.[26] As this episode makes clear, Indians are scenic, and may be collected like their pottery, they are a ready source of domestic and industrial labour, but they are ultimately peripheral objects in the nuclearist gaze. In this sense, Smith's use of Joe Peña as protagonist is an act of politicized restoration. As Smith has said, writing about Los Alamos without noticing the Indian presence 'is like telling a story about England or France and not mentioning the English or the French'.[27]

The Indians Won

A point that seems to have gone unnoticed in nuclear criticism is that *Stallion Gate* is not Smith's first nuclear text; his first published novel was a nuclear fantasy called *The Indians Won*.[28] After the American Civil War the Indians unite to create a separate nation in the plains of the mid-west, which stops the incursion of Army-led settlements until the late twentieth century. As Smith points out in his preface to the new edition, this is historically plausible:

> after the Civil war, the American army was reduced to a standing force of 25,000 men. Most of the forces massed against insurgent Indians - Crow, Sho-Shone, Pawnee, Cherokee. Our popular image of the U.S. Cavalry coming to the rescue is incomplete, unless you are willing to accept that the cavalry was led, supported and was frequently saved by Indian allies (Preface, no numbers).

Once again, the importance of the go-between, or the native informant is paramount to a historical moment. The main events of the book take place as white America makes

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26 Elsie McMillan, 'Outside the Inner Fence', in *Reminiscences of Los Alamos, 1943-1945*, pp. 41-47 (p. 44).

27 Interview with Jane Caputi, 'The Heart of Knowledge', p. 9.

28 Martin Cruz Smith, *The Indians Won* (1970; London: Severn House, 1982)

incursions into the Indian nation. This is brought to an abrupt halt when the Indians announce that they have atomic bombs, but with a crucial difference. They claim to have a device, but they refuse to test it, on the grounds that 'The Mother Earth was a far too precious spirit for that' (p. 206). Anxious messages come from Washington, Moscow and London, and 'all of them demanded that the bomb be tested so that they would know if [the Indians] were telling the truth' (p. 206). Orange Moon, the spokesman for the Indian nation, replies that 'his scientists told him that it would work and that was enough for him' (p. 207). At this point, a more standard thriller narrative takes over, and there is an action-packed ending in which agents of militarism in the U.S. attempt to assassinate the Indian ambassador, but are eventually apprehended by the 'good' forces of the President.

There are three interesting features of this early story. Firstly, this idea of an ambiguously theoretical atomic weapons system predates Jonathan Schell's much more famous version in *The Abolition*.[29] Secondly, the refusal to test fits Jane Caputi's sense that:

> most Native American writers show no great fascination with the details of weaponry, nuclear war, disaster, or bizarre post-holocaust scenarios. Moreover, their works defy categorization as pro- or antinuclear. Rather, a recurrent theme is the call for holistic, sacred, poetic, balanced, and frequently gynocentric perspectives of nuclear technology.[30]

Thirdly, and most significantly for my present discussion, the non-Indian world copes with the Indian bomb as follows: 'For months after, newspapers around the world made fun of the Indians' paper bomb but in the end they found themselves believing in it all the same' (p. 207). Then Smith adds an interesting coda, suggesting that 'the bomb was like the Indians in a way' (p. 207). In other words, non-Indian thought is structured by both denigration and faith in the power of the Indian other. This has a peculiar atomic resonance in the nuclear fable.

The Accident began with a travelogue on the road to Los Alamos from Santa Fe, noting that:

> for all that the signs of life in the landscape are small and indirect, this land has been used for a very long time. Santa Fe became a seat of government before the Pilgrims landed at Plymouth Rock ... but Santa Fe is still much younger than the pueblos here and there along the Rio

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29 Jonathan Schell, *The Abolition* (New York: Avon Books, 1986). Schell's idea is for weaponless deterrence, in which *potential* nuclear forces line up against each other. Each nation has factories for nuclear weapons on full alert, but no actual weapons.

30 Caputi, 'The Heart of Knowledge, p. 2. Smith claims to have taken no payment for the 1982 edition: 'Since the Indians didn't really win, they should at least get royalties!' (*The Indians Won*, Preface, no numbers).

Grande.[31]

Masters makes an explicit link between 'the Indian ceremonies that have been performed around here for centuries' and the atomic science on the Los Alamos mesa (p. 4). At a certain point in a ceremony, there is a 'transmuting moment' and 'from that point on everything is potent, has meaning, is to be respected and feared' (p. 4). Masters clearly has Oppenheimer's famous pronouncement that he had 'become Death' in mind here, but the connection between Indian and atomic ceremonies is both taken seriously and held up to ridicule in *Stallion Gate*.

Joe is the agent of a transmuting moment in both worlds. During an experiment on a similar apparatus to that featured in *The Accident*, Joe's bodymass reflects an additional number of neutrons so that the reaction is just pushed over the critical point. Unlike the accident that killed Louis Slotin, this accident was kept from being harmful by a safety piston that pushed the two cores apart before a prompt burst could occur. The second moment is when he takes a priest's place in a fiesta ceremony in the pueblo. Oppenheimer completely mis-reads the ceremony he first watches, and then participates in. Where Oppenheimer sees colourful, slightly inept Indian clowns dancing for American victory, Joe sees a carefully structured symbolic critique of the Manhattan Project. Oppenheimer is manipulated, through traditional Pueblo clowning, into telling the world about his secret bomb in the metaphors of dance.[32] Once he realizes what has happened, Oppenheimer's certainty about the Indians begins to break down: '"I thought we had good relations with these people. I thought we were friends"' (p. 173). The narrative sets Oppenheimer up for this revelation with an earlier conversation. '"We don't need Captain Augustino and his security apparatus"', Oppenheimer claims to Anna.

> "Los Alamos has a much better defense. The Hill isn't a place; it's a time warp. We are the future surrounded by a land and a people that haven't changed in a thousand years. Around us is an invisible moat of time. Anyone from the present, a mere spy, can only reach us by crossing the past. We're protected by the fourth dimension" (p. 166).

Thus, once again, nuclearist discourse intersects with white notions of primitivism. Protection is precisely the imagined, seamless teleology of the primitive, but as the dance reveals, the Pueblo priests are completely engaged with the present reality.

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31 Masters, *The Accident*, p. 2

32 'Clowns have a special and complex role in Pueblo religious ritual. Among their duties are the testing of society's rules by showing the effects of breaking rules, and restoring community harmony and equilibrium with parodies of exaggeration and excess' (Jaskoski, 'Thinking Woman's Children and the Bomb', p. 6).

Reading Joe Peña as a nuclear worker

When Augustino releases Joe from Leavenworth, he is certain that Joe will 'return to [his] various scams' (p. 6), but this is the price Augustino is prepared to pay for having 'his man' on site (p. 6). Joe lives on his wits, which is one of the things that makes him so mobile between the various groups upon the mesa. In the world of Los Alamos, Indians are seen as elusive, unreliable, and essential. I would suggest that this willingness to react to the opportunities of the moment is, in an important sense, akin to the work practices of the nuclear workers that Zonabend met and described in *The Nuclear Peninsula*. The official tolerance of 'tricks of the trade' is what enables Cap de la Hague to function at all.

Helen Jaskoski has pointed to the way Joe manages his own version of the modern nuclearist paradox, in the sense that it is possible to know what radiation can do and yet carry on dismissing it.[33] Roberto tells Joe that he has had a dream in which the people on the Hill are making a 'gourd filled with ashes' (p. 241). Two Hopi elders and a woman in Acoma' have reported having exactly the same dream. In each dream the gourd is taken to the top of a ladder, it is then broken open, and 'the ashes fall and cover the earth' (p. 241). A key feature of each dream is that 'the ashes will poison the clouds and the water and the ground and everything that lives on it' (p. 242). Significantly, Joe is completely dismissive of this correlated prophecy. '"Sounds like scientific proof"' (p. 242) he tells them dismissively. As Helen Jaskoski has pointed out, this reaction 'betrays a careless obliviousness to the diseased and radioactive cattle he himself has had to destroy' earlier in the novel.[34] The local Indian economy is in overdrive because of Los Alamos, and the men in the Santiago pueblo cut and brand calves before dawn so that they can get to Los Alamos in time for their work as furnace stokers.[35] Joe's job is to check these semi-wild cows with a Geiger counter, and deal with the ones that have become contaminated.

> In the yellow flames, he could see that the steer was mottled, the hide half bleached. Every canyon around Los Alamos had cows, and every canyon had sites where poisonous isotopes were vented or exploded, spewed and sown into the soil and water. Which was why the personnel on the Hill underwent nose wipes, ass wipes and radioactive urine checks, but for the ignorant animals that wandered the sites, Army

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33 Jaskoski, 'Thinking Woman's Children and the Bomb', p. 9.

34 Jaskoski, 'Thinking Woman's Children and the Bomb', p. 9.

35 The Los Alamos view of this is reported by Bernice Brode: 'Each day before dawn, during the furnace season, the crew of stokers would arrive. They were an unworried Spanish and Indian lot who sang and beat rhythms on the drums and cans' ('Tales of Los Alamos', in Lawrence Badash, Joseph O. Hirschfelder, and Herbert P. Broida, eds., *Reminiscences of Los Alamos 1943-1945*, Studies in the History of Modern Science, 5 (Dordrecht, Holland: Reidel, 1980), pp. 133-160 (p. 144)).

> policy was "Kill it, burn it, bury it," and the perfect instrument was Joe. (p. 70)

Joe is momentarily disturbed by a pregnant cow with a hide that had turned white from radiation poisoning. It reminds him of a pregnant elk shot by Augustino. When Augustino shot the elk, Joe's residual Pueblo cultural response is outraged by the breaking of a taboo against destroying the seed of life. This new encounter in the slaughter-yard is a moment at which Joe might quit the Los Alamos site. But once Oppy explains that 'hair can react to low levels of radiation' (p. 71), Joe seems to forget the earlier incident, and kills the irradiated cow without considering the taboo. The price of this adaptation to the nuclearist perspective is his own cultural dislocation. In allowing himself to be persuaded to break taboo, Joe behaves precisely as a modern nuclearist might: in possession of full knowledge of the effects of radiation, but able to manage the modern paradox of safe and unsafe radiation as a matter of enabling nuclearist faith.

Resistance?

Joe trusts Oppy on radiation, and if there is one theme that persists in the two waves of nuclear fables, it is this calculation of trust. In Cynthia Enloe's sense, the characters in *Stallion Gate* all work through the key questions that have sustained the Cold War: Whom can I trust? What are my loyalties? Are there alternatives to the government's expectations of me? It takes Joe a long time to question his personal loyalty to Oppenheimer.

Anna Weiss, who becomes Joe's lover, is a Jewish exile from the Nazis. Anna's job is the theoretical calculation of atomic blast: the institutionalization of a geography of threat.

> No one looks ahead to after the bomb is used. Or asks whether the bomb *should* be used, or at least, demonstrated to the Japanese first. Because they haven't reached the event of Trinity itself, they don't think of the consequences. I have. On the punch cards are not only the fireball, the shock wave, the radiation, but also an imaginary city. ... I can stop the blast at any point. I can go backwards and forwards. Nobody else sees it, as if they can't imagine a shadow until the sun is up. I see it every day. Every day, I kill these thousands and thousands of imaginary people. The only way to do it is to be positive that they are purely imaginary, simply numbers. Unfortunately, this reinforces a new fantasy of mine. There are times when I feel as if I am one of those numbers in one of those columns on one of the punch cards flying through the machine. I feel myself fading way (p. 216).

Moving backwards and forwards in time, and being able to manage the nuclear event, Anna's calculations encourage the nuclearist fantasy of a continuous historical narrative

that I discussed in Chapter Four. There is, I suggested, an important sense in which the central nuclearist paradox depends on the future looking substantially the same as the past. The cards produce the dangerous impression that whatever the scientists do, there will always be a signifying presence beyond the nuclear event. Anna's response is to physically remove herself from Los Alamos, before the atomic disturbance of Trinity requires her to begin managing nuclearist reality. Unlike Louis Saxl, who decides too late to leave, Anna does not have to die for her anti-nuclear critique. She is, however, subject to an exclusion from rational discourse. Oppy and Joe are the only people at Los Alamos who know that Anna was officially certified 'crazy' in Germany as a teenager (p. 185). Oppy knows that this certification was a way of containing a precocious mathematical talent, but when it suits him to ignore Anna's views against the bomb, he still lets the notion that she is 'insane' (p. 189) organize his attitude to her politics.

Anna is a profound influence on Harvey, Joe's jazz clarinetist in the Los Alamos dance band. Harvey, too, is a mathematician. Harvey, as I suggested in Chapter Two, is modelled on the young atomic physicist Volney Wilson.[36] He comes from the Texas Panhandle 'where we have tent meetings where people roll on the ground and drool and talk in Hebrew, Hittite and Welsh. It's nothing to speak the simple alphabet of algebra or the garbled Greek of physics'[37]. After the German surrender Harvey decides to quit the Project, because 'nobody remembers' (p. 106).

> We started this project only because Hitler had his project, so he couldn't blackmail us with his bombs. Now it looks like he never made one. Now we say we're going to use it on Japan, which doesn't have any project (p. 106)

He insists that 'we have to make the ethical choice. ... I didn't leave Amarillo to become a physicist to atomize a hundred thousand human beings' (p. 106). At this stage, Joe's loyalties are not to Harvey, but to Oppy. 'The world', he says, 'was full of victims, all too eager to take you with them' (p. 108). He therefore deploys the military argument about the invasion of Japan: 'Harvey, there are men dying on shitty piles of sand all over the Pacific. There are men stuffed in the holds of ships heading to Japan for the invasion. I think *they're* going to suffer for your decision. Who else have you told?" (p. 107) Significantly, Harvey has not yet told Oppenheimer. Joe's last act of loyalty to Oppenheimer is to convince Harvey that what he is doing on the Hill is beneficial. Harvey, unlike Anna, falls into the nuclearist line. This is figured in the

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36 Although Joseph Schwartz claims Wilson actually left the Manhattan Project, Joseph Rotblat (who was Schwartz's source) could not confirm this when I wrote to him about Wilson (Letter to S. Dorney re. Manhattan Project, 19 September 1996 (Unpublished)).

37 Smith, *Stallion Gate*, p. 106.

novel at the moment when Harvey gives away his precious jazz clarinet, thus signalling a recalculation of loyalties away from Joe and jazz, and back towards Oppy and science.

Joe is a go-between until the very last minute. It is only in the last few pages that he finds a voice of his own, and this is nearly too late. The priest, Roberto, was certain that Joe appeared in the dreams about the gourd of ashes as a giant. Joe, or the giant, would climb the ladder to the gourd in the moments before it opened and covered the world in poison. Joe is dismissive, as he has no intention of being anywhere near ground zero on the day of the test. When Anna leaves for Mexico, Joe refuses to go with her, and he finds himself drawn to what he imagines is the certainty of Oppy. This brings him to Trinity on the day of the test, and Oppy's impatient betrayal of Joe's loyalty. In the face of Oppy's true feelings about Joe's 'tribe', he begins to enact his role in the dream that Roberto has told him about, and leaves Roberto's fire sticks at the Trinity site in defiance of Oppy's express wishes. Thus, in making a decision that he cannot take back, he begins to find his 'own words'.

In a final confrontation at the bomb tower with the racist Texan, Augustino, Joe is shot but is able to escape.[38] But the Trinity countdown has begun and Joe is still at Ground Zero, caught once again in the middle of two realities. This time the options appear to be more absolute: life or death. He knows, from a previous conversation, that if he can get one mile from the tower, and find water, he *may* survive. Harvey's reward for returning to Oppy's fold was to announce the final countdown. So, as Harvey's voice comes over the site loudspeakers, Joe realizes his own status as potential nuclear victim very late in the day. At zero minus two, Joe sees:

> a slit trench for coaxial cable that had never been filled in. Maddened by the nearness of their destination, a thousand toads scaled the high shoulder of earth and abandoned stakes and at the crest sang with pulsing throats. Those on the other side slid deliriously into the miracle of water (p. 374).

So he *may* just make it into the trench with the forces of life. The novel ends abruptly at this point, with the line: 'From the eye of the new sun, a shadow flying' (p. 374).

How should this ending be read? Jane Caputi reads this moment within the tradition of the Native American novel. For Caputi, and apparently for Smith too, 'the resolution of the novel resonates with ancient beliefs regarding sacrifice and the constitution of a new world based on the character of the sacrificial being'.[39] From this point of view,'the novel concludes with a Pueblo man providing the core energy of a

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38 In this sense, at least, the Indians win, echoing Smith's other nuclear novel.

39 Caputi, 'The Heart of Knowledge', p. 12.

new world into which human culture has moved' (p. 13).

At first glance, this reading seems to suggest the latent presence of the nuclearist teleology that I explored in Chapter Four. In this reading, Joe is the sacrifice that crosses the ontological rupture of the nuclear event. However, Caputi suggests that this is *not* a question of the return of what 'ought not to be salvaged', in Mária Brewer's phrase. The novel foregrounds the imminent return of Thinking Woman, a figure from the Pueblo creation myth. Anna, as Caputi points out, might be an 'avatar of the creator'.[40] In other words, the bomb marks a terminal point, but not of the world. Instead, it marks the end of the fragmented, self-destructive masculinity that Joe represents, and its replacement by a symbolic order predicated on the rejection of male violence, and symbolized by Anna's departure from the Hill, and Thinking Woman's reappearance in the world.

My emphasis, by contrast, must be on the way that *Stallion Gate*, and the other nuclear fables, have negotiated a tension between assimilating and resisting the tropes of nuclearism. From this perspective, it is most important that Smith signals his own anti-nuclearism in an echo of Anna Weiss's comments about her work on atomic blast. Atomic scientists, she suggested, suffer from a failure of the imagination; they would be unable to imagine a shadow until the sun is up. In this sense, Smith's final lines suggest that there is still time for that act of imagination and resistance before the full heat of the new sun. I argued at the end of Chapter Two that ambiguity, and the mobilization of speculative questioning presents certain problems for a nuclearist worldview. Like *The Accident* then, *Stallion Gate* does not resolve its final ambiguity. In 1955, Masters let the productive social ambiguity of Hillel's epigram of being for oneself *and* for others pervade his text. Once again, thirty years later, at the end of *Stallion Gate*, a reader might also be expected to make a nuclear choice; and if not now, when? Joe made his anti-nuclear decision, a little late, but perhaps not, as Robert Seidel might have it, *too* late.

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40 Caputi, 'The Heart of Knowledge', p. 13.

CONCLUSION

> Talking of the danger
> as if it were not ourselves
> as if we were testing anything else.[1]

I began this thesis with a quote from Hugh Gusterson that argued for an ethnographic denaturalizing of nuclearism. In *Nuclear Rites*, Gusterson considers what might be at stake in this process. 'I am often asked', he writes, 'why an anthropologist would study a nuclear weapons laboratory. The risk of being labelled deviant by colleagues in anthropology and irrelevant by arms control specialists is high'.[2] My thesis has proposed a critical study of the relationship between imaginative writing and nuclear weapons, and in the course of the project I have often been startled by the anachronistic reaction to such a notion. This reaction has sometimes parodied the imagined split between the humanities and the sciences that agitated C.P. Snow and F.R. Leavis in the 'Two Cultures' debate after Snow's 1959 Rede Lecture.[3] Although this debate was itself a parody of the existing relationship between science and art, its legacy seems to linger. From the literary side has sometimes come the sense that there is nothing interesting to say about technology. From the scientific side has come the sense that science will be always be misunderstood, and scientists always misrepresented by literary critics.[4] In part, then, this thesis has been a resistance to the discursive compartmentalization of science and literature that can, as I have argued in Chapter Five, reproduce the binaries of nuclearism.

I have sought to demonstrate how the nuclear fable can provide what Ken Ruthven has called a 'transactional' critical analysis of the relationship between the material order of nuclear weaponry and the representational order of narrative. I have tried to show how a nuclearist subjectivity has been articulated, assimilated and resisted in narrative since 1945. These tropes resurface in Douglas Coupland's recent novel, *Generation X*. A character called Dag has taken time out from a trip to the Trinity bombsite to ring home:

> 'You'd love it here, Andy, Scotty's Junction is where atom bomb scientists, mad with grief over their spawn, would come and get sloshed in the Ford saloon cars in which they'd then crash and burn in the ravines; afterwards, the little desert animals came and ate them. So tasty. So *bib*lical. I *love* desert justice' (p. 69).

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1 Adrienne Rich, *Diving Into The Wreck* (New York: Norton, 1973), p. 4.

2 Gusterson, *Nuclear Rites*, p. ix.

3 The full debate is now available in Stefan Collini, ed., *The Two Cultures* (Cambridge: Cambridge University Press, 1993).

4 There have, fortunately, been many exceptions to this reductive binary.

Dag is mixing his nuclear genres. This vignette is both a nuclear fable, in its fascination with the social processes of the nuclear everyday, and a post-nuclear narrative, in its fascination with the metaphors of a fatal landscape. These images of car crashes, carnivorous bugs, biblical spans of time, and natural law reference a particular sub-genre of the survivalist narrative exemplified by Roger Zelazny's *Damnation Alley*, and later by the Mad Max films.[5] But Dag, like every character in *Generation X*, references atomic history and atomic fantasy with intense irony. The italicized sections convey the recognition that this nuclear vision is irretrievably second-hand, a compilation of other images from the nuclear archive. The interesting point is that although the ironic tone signals a certain distance from the atomic scientists and the death they leave in the desert, these references are also a shared nuclear iconography that mediates a homo-social bond between Dag and Andy. In other words, the intersection between modern masculinity and nuclearism persists.

At one level, I am drawn to Dag's desolate version of the atomic age. I suggested in Chapter One that the experience of the nuclear threat was unlikely to be monolithic. It was likely, I argued, to be historically specific, and to be mediated by the social factors of age, class, race and gender. Thus, I am drawn to *Generation X* partly because Coupland, at other moments in the novel, has expressed certain key versions of the nuclear threat as my generation (those born in the 1960s) have figured it.[6] In particular, my generation seems to figure the nuclear threat with an ironic fatalism. In our geography of threat New Zealand recurs as a space somehow beyond the reach of nuclear death. As Coupland puts it, we all seem to have a 'private New Zealand' (p. 71). The trouble is that these private New Zealands of the mind are always, and immediately, accompanied by another thought: 'New Zealand gets nuked, too' (p. 67). The point, I would suggest, is that my generation has grown up with a desire to resist the images and the social formations of nuclearism, but we are also too assimilated, too knowledgeable about nuclearism, to firmly believe that the conditions of a pre-fallout time are available to us.

At another level, however the work I have done for this thesis has taken me away from Coupland's paradigm for my generation. From the point of view of my investigation into the tropes of nuclearist subjectivity, Dag's phone call to Andy foregrounds a key issue for my methodology. What is the difference between Dag and Andy mobilizing a shared nuclear iconography as a way of negotiating their own intimacy, and Charley Pederson and Ed Wisla negotiating their atomic future over the

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5 Roger Zelazny, *Damnation Alley* (New York: Berkley, 1969)

6 Based on anecdotal evidence from friends, students, and colleagues.

collapsing body of Louis Saxl in *The Accident*? Does the phone call contain a different dynamic to that of Martin and Lewis Eliot, recalculating the possibilities of brotherly-love against the background of a British bomb project in *The New Men*?

Undoubtedly, these interactions are of the same order of experience. These are all people circulating nuclearist tropes in the atomic age. However, and this has been the primary concern of my thesis, these circulations each have a culturally specific component that is not immediately clear from a historical homogenization of these interactions as 'atomic '. In Chapter Three, for instance, I followed recent work on militarization by Cynthia Enloe to argue that there is a political point to exploring the notions nuclearists have about 'themselves as men interacting with women and with other men'.[7] This kind of study, Enloe argued, 'may shed light on tensions and contradictions within ... military systems, exposing them as less impermeable, more fragile' (p. 99). Thus, even the apparent omnipresence of nuclearism may be opened to critique.

Sociology and ethnography, I have argued, have much to say about these nuclearist masculinities. There are certain things that the ethnographic perspective can tell us about what it might mean to exist with apparatus of apocalypse. It can, for instance, tell us that nuclearists acquire the subject positions of nuclearism in a learning process. They *mature*, in Hugh Gusterson's terms. It can also tell us that nuclearists internalize certain procedures of self-control, and that they are always managing anxiety. It can also tell us that nuclearist behaviour has particular social patterns. The ethnographic model is excellent, I would suggest, at setting out the dimensions of nuclearist subjectivity. It is much less useful when it comes to explaining precisely *how* nuclearists acquire their subjectivity, and *how* they internalize procedures of self-control.

Popular narrative fiction, I have argued, is a key site where this process becomes visible. It is precisely because this form requires 'sex' and 'drama', in Robert Seidel's dismissive terms, that the social patterns of nuclearist subjectivity can be revealed as a process in time and space. In fiction, imaginary nuclearist subjects are required to explain their relationship to atomic energy to other subjects, in ways that the historical record, and even the sociological record is unable to narrate. In the gender politics of a fictional Baltimore Professor and his ex-scientist wife, or of a young, Jewish scientist and his anti-nuclear fiancée, it is possible to see the 'tensions and contradictions' that are both the enabling force, and the point of potential collapse, of everyday nuclearism.

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7 Enloe, *The Morning After*, p. 97.

In conclusion, I think it is important to recognize that, like Carole Gallagher, I have found researching the nuclear state and its representations 'both riveting and disturbing'.[8] Dag, in *Generation X*, tells another kind of nuclear fable about Otis, an aspect of himself. This 'fictitious narrative' has a 'useful truth' for nuclear critics.

> Otis had moved to Palm Springs because he had studied weather charts and he knew that it received a ridiculously small amount of rain. Thus he knew that if the city of Los Angeles was ever beaned by a nuclear strike, wind currents would almost entirely prevent fallout from reaching his lungs. (p. 69).

Otis receives an atomic postcard from a friend, a sixties picture of an atmospheric test. The strange thing about the postcard is the size of the mushroom cloud. Otis had always conceived them to be immense, all-consuming fireballs that 'occupied the *whole* sky' (p. 70). This one is tiny, 'lost out amid the valleys and mountain ranges in which it was detonated' (p. 70). Otis considers that he may have totally mis-read the nuclear threat that has organized his life to date. Maybe, he wonders, '"I can free myself of Bomb anxiety' (p. 70). Otis travels through the nuclear wastelands of the Southwest Desert, visiting the test sites to see if the image has an basis in reality. It turns out that, 'yes, *atomic bomb mushroom clouds really are much smaller than we make them out to be in our minds*'.[9] Maybe, 'there was nothing to worry about at all' (p. 71).

At the other end of the phone, Andy wonders if this is a happy ending, but apparently not. Otis realizes that his discovery has all the qualities of a good marketing campaign. In the same way that a good soap powder encourages an excess of consumption, by proclaiming that it can get your clothes cleaner than you thought they already were, then the idea that mushroom clouds are smaller than you think they are, might encourage a transcendent dependence on the consumption of atomic bombs. Once consumers saw the:

> new, smaller, *friendlier* explosion size, the conversion process would be irreversible. All vigilance would disappear. Why, before you knew it you'd be able to buy atomic bombs over the counter - or *free with a tank of gas*!" (p. 71).

The point is that certain kinds of investigations into the culture of the atomic age may end up reinforcing the adaptive process at the heart of nuclearism. My study of the nuclear fable, I would hope, is a small act of resistance against that adaptation.

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8 Gallagher, *American Ground Zero*, p. xxiii.

9 p. 70. The careful creation of an iconography of the mushroom cloud is discussed by Peggy Rosenthal in 'The Nuclear Mushroom Cloud as Cultural Image', *American Literary History*, 3 (1991), 63-92.

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