Disentangling Humanism

Science, Future Mastery, and the Biopolitics of Species in Cold War Literature and Culture

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Abstract

This thesis argues that the culture of the cold war United States is marked by a fantasy of 'the human' that depends upon its own constructed sense of interconnectivity with nonhuman worlds. Through examining five different sites of scientific-cultural intersection at which the division between human/animal is complicated, the thesis traces a development in philosophies of humanism between the 1950s and 1980s: from a doctrine concerned with the veneration of a singular and ontologically exclusive human subject, towards a system of ideas that functions through the destabilisation of such a subject. In doing so, the thesis develops a reading methodology of 'disentangling humanism'—a name for the process of unthreading humanism from the contexts in which it seems to disappear.

Across its five case studies, the thesis traces a humanism that operates through mediated forms of inclusion—rather than exclusion—of nonhuman others. Chapter One examines the figure of the virus as an expression of collapsing species boundaries in an increasingly networked world, deployed by midcentury writers to recentre various cultural ideals of the properly human. Chapter Two reads J. G. Ballard's apocalyptic fiction from the 1960s in the context of a developing environmental consciousness regarding nuclear testing and chemical toxicity. Ballard's vitally material fictions depict a human caught between its primal origins and technological futures—underlining a shifting and discursive logic of mattering that occurs in the space between these locations. Chapter Three examines the co-implicated logics of nuclear risk and extinction in the 1960s and 1970s. Looking to a collection of cultural texts, including wildlife film, educational anthropology and novels by Thomas Pynchon and Philip K. Dick, the chapter argues that the constructed threats of nuclear apocalypse and extinction are managed through a mediated model of interconnectivity with the nonhuman.

Chapter Four turns to the science of behaviourism as a site at which human–animal relationships are reimagined during the 1970s. With particular focus on John C. Lilly's work on interspecies communication, and through analysis of the fiction of James Tiptree Jr. and Ken Russell's film *Altered States* (1980), the chapter argues that the combination of behaviourist and cybernetic thought produces a paradoxical model of communication between human and nonhuman that also functions as a transcendent ideal of future mastery. Chapter Five, finally, looks to discourses of health and hopeful futures in the culture of the late cold war. Drawing on contexts of environmental health discourses, the chapter reads the fiction of Kurt Vonnegut and Octavia Butler through the lenses of queer negativity and misanthropy. After speculating a form of misanthropy that resists anthroponormative futures, the chapter argues that Vonnegut and Butler imagine futures that draw our attention laterally towards the multispecies present.

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Introduction

> Scientific progress has reached its "end", and the end is turning out to be the end […] of man himself.
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> Dwight Macdonald, *The Root is Man*

> There have been two critical points in the past of evolution, points at which the process transcended itself by passing from an old state to a fresh one with quite new properties. The first was marked by the passage from the inorganic phase to the biological, the second by that from the biological to the psychosocial. Now we are on the threshold of a third. As the bubbles in a cauldron on the boil mark the onset of the critical passage of water from the liquid to the gaseous state, so the ebullition of humanist ideas in the cauldron of present-day thought marks the onset of the passage from the psychosocial to the consciously purposive phase of evolution.
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> Julian Huxley, *The Humanist Frame*

> My humanity soared.
>
> Don DeLillo, *White Noise*

Fantasising The Human

In Baltimore in the early 1960s, a creature is held captive in a subterranean facility. An amalgam of amphibian and human, the creature is visited by men who study him, but also beat and abuse him: his otherworldly hybridity holds secrets that they covet. But the creature is also visited by a woman who cleans the facility: like him, she is mute, lacking the faculties of speech that delineate the space of difference between the scientist observers and their monstrous object of study. This is the premise of Guillermo del Toro's film *The Shape of Water* (2017), a cold war fantasy of desire and difference that stages its vision of geopolitical strife and domestic exclusion at the human's outermost limits. The film recapitulates the generic patterns of the 'creature feature'—most obviously *Creature from the Black Lagoon* (1954)—a genre that often

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functions in traditional critical accounts as a vehicle for anxieties of an American good life threatened by the spectral monster of communism. Del Toro's film is suffused with this well-worn political narrative: studied by denizens of the US security state as a key to unlocking methods for better surviving space flight, the creature is also sought by Soviet agents, a contested prize in cold and covert warfare. But Del Toro's focus lies in the interstices of this binary history, in the marginal spaces occupied by Elisa, the aforementioned cleaner, and Dr Hoffstetler, a Soviet double agent set apart by his compassion for the beast. The fantasy that sees the creature extracted from his home in the Amazon as a conduit for technological dreams of transcendence is supplanted, for Del Toro, by another fantasy: one that transforms Elisa's lack into the condition for a desire that exceeds the boundaries of the human.

The Shape of Water, from its contemporary retrospective view of the cold war, draws into focus some of the major themes that this thesis attends to during the same period of history: namely, a fantasy of 'the human' that serves as a central organising cultural logic, and a remainder to this fantasy, coded as 'nonhuman' or 'animal', that is (re-)produced simultaneously. Del Toro is well attuned to the currencies of dream and desire that define the cultural world of the cold war United States, structuring his film, like Thomas Pynchon's *Gravity's Rainbow* (1973), around a cinema screen: for Pynchon, the screen of the Orpheus Theatre marks both the beginning and end to the parabolic path of the V-2 rocket that the novel's structure follows, while for Del Toro, the screen that sits beneath Elisa's apartment projects worlds that leak into our own. Like many contemporary representations of the period, Del Toro's film tells its story in part via incidental glimpses of screens, and in addition to the projected movies we see televisions depicting animals in space programs, police dogs attacking civil rights protestors, and humans wearing animal costumes dancing to music. These animal images function as an atmospheric presence in the film, thematising the simultaneous centrality and exclusion of animals from the project of technological mastery that the film depicts. But

just as the simulacrum of progress centres around the animal image, so too is the human produced as its own fantasmatic image; in this case, as expressed by violent techno-man Strickland, head of the laboratory investigating the creature and member of the security establishment: the image of a Christian God reflected back as white, American Man.

Del Toro's point is to show that such a fantasy of the human is maintained precisely through the management of its nonhuman remainder—a remainder that must remain central and yet excluded, functioning, as does the film's amphibian-man, as both the key to the human's self-image and as its violently excluded other. And yet, through Elisa's relationship with the creature, this fantasy proves to be permeable, the water that provides the medium for their interspecies coupling leaking through the ceiling of the theatre below and penetrating the dream worlds that are projected upward and outward. Equally penetrating is the creature's own agency, exerted against Strickland in a bite that severs some of his fingers; emblems of human digitality that once reattached continue to rot, ensuring that his forward-facing, techno-positivity is followed always by the smell of fleshly decay. Del Toro's depiction of the symbolic fabric of human identity reveals a fantasy that harbours the seed of its own undoing; an oppositional rendering of 'human' and 'animal' that fails upon the film's revealing an uneasy co-implication between the two.

The fantasy depicted in *The Shape of Water* in many senses repeats the one charted in this thesis: a transcendental 'human' that appears as if haunted by an animality working against it from within. This is, in one regard, to say that cold war culture is marked by an acute awareness of the animality that Sigmund Freud, in *Civilisation and its Discontents*, writes as existing latently in the unconscious: a memory of the olfactory sensorium left behind by evolution's forward momentum, but lingering still, like the odour of Strickland's putrefied flesh, just out of view. Indeed, as Carrie Rohman argues, Freudian psychoanalysis hinges on both its association of the unconscious with animality, and its own self-ordained task of

maintaining the properly human structures of the ego: 'implicit in this Freudian trajectory', she writes, 'is the initial and then reiterated disavowal of neurotic animality in order to become and remain human'.[1] As we can see clearly in Del Toro's contemporary representation of the period, such a disavowal of human animality structures the project of technological progress that so defines the cold war, marking the ascension of this particular vision of 'the human' into a transcendent techno-future epitomised ultimately by the ideology of the space program—an imperative that Fabienne Collignon associates with Pynchon's Dominus Blicero, harbinger of a lunar 'deathkingdom' that ties space travel inextricably to nuclear annihilation in a frozen 'condition of total peace/war'.[2] The formulation of 'the human' that the thesis reads depends partially upon just such an image: a subject whose forward momentum exemplifies a transcendent development and evolution of 'life' even as it simultaneously enshrines a politics of death.

But the disavowal of animality central to this Freudian interpretation tells only part of the story. While the general descriptor 'human' functions throughout the thesis to describe such a future-oriented, forward-facing subjectivity, it also often simultaneously names a condition increasingly comfortable with its own co-constitution with the more-than-human. This interpretation is grounded, in the first instance, in what Cary Wolfe and Jonathan Elmer identify as the contradictory impulse in Freud's interpretation of animality: 'the essential antinomy of Freud's account' that takes animality 'to be both historically continuous with humanity and essentially different from it'.[3] Del Toro plays upon such a logic of co-constitution when, at the beginning of his film, a voiceover heralds a 'tale of love and loss, and the monster who tried to

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[1] Carrie Rohman, *Stalking the Subject: Modernism and the Animal* (New York: Columbia University Press, 2009), p. 23.

[2] Fabienne Collignon, *Rocket States: Atomic Weaponry and the Cultural Imagination* (New York: Bloomsbury, 2014), p. 72.

[3] Cary Wolfe and Jonathan Elmer, 'Subject to Sacrifice: Ideology, Psychoanalysis, and the Discourse of Species in Jonathan Demme's *The Silence of the Lambs*', in Cary Wolfe, *Animal Rites: American Culture, the Discourse of Species and Posthumanist Theory* (Chicago: University of Chicago Press, 2003), pp. 97-121 (p. 109).

destroy it all'[4]—the 'monster', of course, describing not the amphibian-man but Strickland, the monstrous human who, like Wolfe and Elmer's description of Hannibal Lecter, 'embodies the truth of Freud's fantasy of origin, the same truth the fantasy is meant to disguise—namely, that the Freudian analyst and the Freudian object (here the Freudian animal) are fundamentally co-implicated'.[5] But the crossover between animality and the future-propelled human goes beyond this sense of aporetic doubling. In *The Shape of Water*, Del Toro presents not just an animality that haunts and structures the symbolic fabric of human identity, but also an animality that functions, in full view, as a model of human futurity. This is the creature itself, whose body produces electric-blue pulsations that miraculously heal those it touches; an ability that functions not at the level of the repressed, but rather as a supplement to human life in the narrative. The real point of aporia lies not in the reappearance of a suppressed animality, but rather in the decidedly political question of how and for whom the radically breached species boundaries of Del Toro's cold war fantasy produce material effects in the world—a problem resolved in the film's final act by a union between Elisa and the creature that functions as both queer interspecies relationship and a stabilising recourse to an image of romantic love.

Del Toro's film depicts a fantasy of the human caught between an animal past and a species-defying future. Animality functions both to expose the internal contradictions within the human's own self-image, and define the conditions for a radically transformative future. Such a future, as well as being marked by the instrumentalising interests of security culture, becomes aligned in Del Toro's film with a liberatory discourse that looks beyond the human for its politics of transgression; a model of multispecies relationship that dispenses with the Freudian matrix of repression and return and instead looks to a new set of coordinates entirely. A useful touchstone here is Donna Haraway's 'A Cyborg Manifesto', an essay that champions

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[4] *The Shape of Water*, dir. by Guillermo del Toro (20th Century Fox, 2017).
[5] Wolfe and Elmer, 'Subject to Sacrifice', p. 109.

'illegitimate fusions' between human, animal and machine as a model for a new kind of politics, as well as a new kind of epistemology, for the late-twentieth century.[6] Haraway is aware of the genesis of her own cyborg mythology in the context of military systems of defence, and outlines a dual set of understandings that frame her enquiry:

> From one perspective, a cyborg world is about the final imposition of a grid of control on the planet, about the final abstraction embodied in a Star Wars apocalypse waged in the name of defence, about the final appropriation of women's bodies in a masculinist orgy of war. From another perspective, a cyborg world might be about lived social and bodily realities in which people are not afraid of their joint kinship with animals and machines, not afraid of permanently partial identities and contradictory standpoints. The political struggle is to see from both perspectives at once because each reveals both dominations and possibilities unimaginable for the other vantage point.[7]

Haraway's point revolves around repurposing the 'boundary confusion' that she associates with techno-scientific advancement—processes tied inextricably to military strategy—towards more radical political ends, fostering a productive indeterminacy that struggles 'against perfect communication, against the one code that translates all meaning perfectly'.[8] First published in 1985, at the height of the Reagan administration's science fiction policies of strategic defence, Haraway's essay presents the cold war as fertile ground for new stories: a period of uncertain futures and leaky boundaries in which the stable oppositions between human, animal and machine are permanently polluted. The cyborg, in this regard, is a revolutionary figure, emanating for Haraway from a feminist reading of the boundary confusion of techno-culture, and inaugurating a condition in which the fluidity of boundaries is the primary focus: 'an argument for *pleasure* in the confusion of boundaries and for *responsibility* in their construction'.[9] Such a condition, for Haraway, functions ultimately as a source of political and ethical potential, challenging the violence and oppositional logics of human/animal,

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[6] Donna J. Haraway, *Manifestly Haraway* (Minneapolis: University of Minnesota Press, 2016), p. 57.
[7] *Ibid*., p. 15.
[8] *Ibid*., p. 57.
[9] *Ibid*., p. 7.

nature/culture that Western metaphysics has for so long enshrined.

Del Toro's film finds similar potential in partiality to Haraway, depicting Elisa's relationship with the creature as forging a path to a new world of liberated fluidity, and away from what the film shows to be a mechanised, quantified existence—Elisa's masturbation in the bath prefigures her interspecies sexuality, but is cut short by the egg-timer that manages her automated schedule. If the fantasy of the human functions first as a product of such a mechanised existence, in which the human is separated from (yet haunted by) its own mammalian being through the imposed structure of technology, then the conclusion of the film seems to abandon this fantasy altogether. But to read the film in this way—and here lies the issue that ties *The Shape of Water* to the central problematic of the thesis—is to bifurcate the human from an animality that we assume transcends it. Such a conceptual move, which reads against the oppositional, violent, and future-oriented subjectivity embodied by Strickland, depends on a view of animality as a vital force that punctures the symbolic fabric of human identity, refusing to be rendered meaningful by its coordinates. But in reading thus, another kind of disavowal takes place between the Freudian monstrosity of Strickland's animality, and the subversive, radical animality of the amphibian-man—a disavowal that purports to surpass the symbolic, and yet nevertheless reinstates it as a structuring logic within its vision of (dis)order. Nowhere is this more apparent than in the slippage that takes place in a conversation between Elisa and her friend Giles. Faced with the unlikely plan to rescue the creature from its vivisectors, Giles protests that 'it's not even human', and Elisa responds: 'If we do nothing, neither are we'. In reality, the operation of such a humanism might result not in the underwater union with which Del Toro ends his film, but rather in the creature's placement in a zoo, with Elisa feeding it in an act of humane love: an act of inclusion that functions not as a radical departure from, but instead as an intensification of control.

Masked in the ethical imperative communicated in this exchange is a commitment to

the identity 'human' that persists through the process of its own dissolution in Del Toro's film. It is in identifying just such a logic—a fantasy of 'the human' that operates through its own connection to, rather than disavowal, of animality—that this thesis intervenes. In the chapters that follow, I examine five separate sites of cultural-scientific interface that, between the 1950s and 1980s, evidence a developing co-implication between the ideals of humanism and the notion of relationality with nonhuman worlds. The idea of scientific advancement is crucial to the thesis because, across its five case studies, nonhuman animals play a central role in the development of knowledge: whether through vaccine research, ecosystem science, wildlife film, behavioural science, or projections of planetary health, animals exist at the heart of new models of technological advancement. Moreover, in cultural engagements with these sites of knowledge, human/animal species difference is often deconstructed in a manner epitomised by Haraway's notion of boundary confusion: ontological difference between human and animal is reimagined as a space of complex relation and co-embodiment. My task, in the first instance, is to examine how scientific development paves the way, often in conversation with cultural discourses, for such a reimagining of the boundary between human and animal during the cold war. But most pertinently, the thesis argues that depictions of revolutionary hybridity across cultural and scientific contexts function to reinscribe the fantasmatic subject of humanism. While scholarship across animal studies and posthumanism often attends to the exclusions that allow humanist discourses to persist, my thesis focuses on a politics of *inclusion* that entrenches a logic of hierarchised species difference precisely through its production of variegated forms of relationship with nonhuman animals. Such a politics is tied inextricably to the entanglements enacted at the scientific sites that the thesis reads—practices of inter-, cross- and trans-species knowledge that lay the groundwork for humanism's dismantling as well as its flexible persistence. Relationality with nonhuman worlds functions ultimately to produce new ways of being human—and in doing so fosters new rubrics of exclusion.

In the following section of this introduction, I set out a path towards understanding the fantasmatic subject of humanism in relation to three thinkers: Dwight Macdonald, Julian Huxley, and Norbert Wiener. I argue that these three voices define the parameters for the systems of thinking that the thesis examines, each imagining a particular kind of crisis of human identity that helps me to outline the historical trajectory of the thesis from the postwar years to the 1980s. Macdonald represents a cultural expression of such a crisis, writing in the immediate postwar moment and through the 1950s of an unthinking commitment to the idea of progress that marks the work of his peers; a pursuit of technological advancement that endangers something quintessentially human that stands to be lost. Huxley, meanwhile, points to both cultural and scientific articulations of this crisis, developing an evolutionary theory of progress that reflects his position as Director of the United Nations Educational, Scientific and Cultural Organisation (UNESCO), an organisation devoted to the dissemination of cultural knowledge internationally. Writing in the early 1960s of his theory of 'evolutionary humanism', Huxley emblematises a humanism constituted through a vision of relationality with the nonhuman, and evidences a consolidation of humanist discourse with developing theories of ecological interconnectivity through the 1960s and 1970s. Wiener, finally, in his 1948 work *Cybernetics: or Control and Communication in the Animal and the Machine*, outlines a discourse that develops through the cold war period and into definitions of what we might call the 'information age'. Wiener represents the origins of much of the scientific discourse that the thesis draws on, theorising the concept of 'information' as a form of communication that crosses the boundaries between human, animal, and machine. Between these thinkers, we find a concurrent development of humanist thought that mirrors the trajectory traced by the thesis: from the idea of a fundamental human nature that can be defined positively in and of itself, towards the distribution of such a fantasy across networks of relation that fuel and maintain it in unexpected ways.

Man in Crisis: Macdonald, Huxley, Wiener

In his book *The Age of the Crisis of Man*, Mark Greif charts an intellectual and cultural history of the concept of 'Man'; a figure that, Greif argues, becomes something in the midcentury United States that 'everyone insisted must be addressed, recognised, helped, rescued, made the centre, the measure, the "root", and released for "what was in" him'.[10] As Greif's list suggests, the discourse of Man presented no united front, instead developing between the 1930s and late 1960s according to sets of broad and overlapping concerns regarding human nature, history, faith, and the encroaching threat of technology. What Greif's approach underlines, far from an irrefutable historical grounding to these questions, is rather the discourse's emptiness, operating 'in the face of the massive degradation of the rights of man' marked by the atrocities of the Second World War by staging the simple imperative: 'there must be something that must be protected'.[11] While necessarily universalising, often leaving 'basic forms of exclusion and inclusion unthought', the discourse of Man was also a contested and flexible space, defining the parameters for a dynamic resurgence of humanism that would unfold over the remainder of the century.[12]

An early cold war example of this discourse is the anarchist theoretician and New York Intellectual Dwight Macdonald. In his 1946 tract *The Root is Man*, expanded in a further edition published in 1953, Macdonald makes an apocalyptic critique of the idea of scientific progress. While the ideals of science, future progress and optimism guide the political theories that inform his own radical voice, Macdonald remains skeptical of what he describes as 'socialism on a scientific basis'.[13] Such a model of thinking takes as 'the most elementary common sense'

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[10] Mark Greif, *The Age of the Crisis of Man: Thought and Fiction in America, 1933-1973* (Princeton: Princeton University Press, 2016), p. 8.
[11] *Ibid*., p. 12.
[12] *Ibid*., p. 18.
[13] Dwight Macdonald, *The Root is Man* (New York: Autonomedia, 1995), p. 65.

the idea that 'the "real" nature of scientific advance is to benefit humanity'.[14] For Macdonald,

this is an attitude of dangerous complicity with the harms that inevitably accompany the

forward advancement of scientific knowledge; an ideology of 'Present by the Future' that loses

sight of contemporary atrocity in its idealising deference to an imagined future.[15] Rather than

only problematising the commitment to the future found in progressive thought, Macdonald

makes a more fundamental connection between science and the metaphysics governing the

intellectual world of the early cold war. Comparing the development of chemical weaponry to

the destruction wrought by the atomic bomb, Macdonald argues that

> If one suggests that perhaps there may be more Evil than Good in scientific progress, not in the sense that there is anything *intrinsically* (*i.e.* metaphysically) good or bad about such progress, but in the *historical* sense that up to now the Bad results of every technological advance seem to outweigh the Good ones, and that what with The Bomb and our new DDT-for-People this promises to be even more strikingly the case in the future—if one ventures such a wild notion, his reaction is violent. One is told—and I speak from experience, that one is (1) an ascetic who rejects this-worldly, human satisfaction in favour of some kind of mortification of the flesh; (2) a Utopian dreamer whose value judgment, regardless of its ethical merits, has not the slightest practical significance or chance of historical realisation.[16]

Macdonald's second point is an accurate representation of a popular narrative during the

postwar period: that technological change, far from a phenomenon under the control of

humanity's collective intentions, instead marks an inevitable, mechanical process that will

continue despite the efforts of its Luddite detractors. Man is now at the behest of the machine.

But Macdonald's first point—that rejecting the narrative of progress equates in the eyes of his

critics to a form of flagellating self-denial—harbours a more complex argument about the

relationship between technology and the human. To put it simply: for Macdonald,

technological change has been elevated, in the discourse of his time, to the status of life itself,

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[14] *Ibid.*, p. 66.
[15] *Ibid.*, p. 66.
[16] *Ibid.*, p. 67.

standing for a supposedly natural development of human libidinal desire.

Here, Macdonald advances an argument that, while not referenced directly, marks a development of Freud's notion of the death drive: technology is an expression of human life which, in its compulsion to change, evolve and grow, advances the human towards a terminal condition that places death paradoxically at the centre of the drive towards life. As Greif observes, Macdonald's critique of his contemporaries' blind adherence to narratives of progress makes his work an important precursor to an argument that would be much more familiar by the 1960s: that American techno-optimism shares a genealogical relationship with the dehumanising technologies of the concentration camp.[17] Greif ties this aspect of Macdonald's work to the broader developing discourse of responsibility that, in other critiques of technological progress, advances the notion that America share in the guilt for the atrocities of the Second World War.[18] It would be easy, on this point, to read responsibility as the site at which Macdonald's humanism gets the better of him—a universalising rhetoric which, in advocating a return to 'Man' as a remedy for the generalised danger of technology, ignores the multiple exclusions that take place within the category of the human of which such a discussion would demand recognition. But Macdonald's humanism is more imaginative than its own limitations suggest, and his critique of progress presages criticisms that can be levelled at other humanist thinkers' incorporation of techno-positivity into their philosophies. In proposing a politics based in the direct statement of his book's title—'the root is man'—Macdonald theorises a humanism that is not only opposed to the death brought about by technological change, but seeks to situate itself outside of the metaphysical plane of life and death that Macdonald describes simply as 'progress'.

Macdonald's humanism functions according to its juxtaposition of man and machine,

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[17] Greif, *The Age of the Crisis of Man*, p. 76.
[18] *Ibid*., p. 76.

rejecting both mechanised existence and complicity in the technological atrocities of the nuclear age in favour of a politics of the individual, and that individual's most basic needs. As such, Macdonald attempts to recuperate an essential vision of human nature as an antidote to the moral contamination that he associates with the technological. In this regard, he exemplifies an anxiety that persists throughout the cold war period: that scientific progress comes at the price of an intrinsic human morality. But for someone like Julian Huxley, Macdonald's rejection of technology would be seen to limit the potential of his humanist vision for the contemporary world. Huxley—a British biologist and the first Director of UNESCO— epitomises an internationalist strand of postwar humanism, with UNESCO's mission, in Greif's words, framed as 'encouraging education in the nonracial unity of all mankind and stimulating an international culture that must become single and universal'.[19] Such a mission reflects the system of ideals that characterises the progressive humanism popular in the postwar US; a mythology of unity deciphered by Roland Barthes as a sentimental discourse that functions 'to suppress the determining weight of History'.[20] But Huxley, working within the parameters of a universalism that flattens difference in its search for an ahistorical human nature, also theorises a humanism that rejects the 'eternal wisdom' and 'gnomic truths' that form the target of Barthes's critique.[21] Writing in the 1961 volume *The Humanist Frame*, Huxley defines humanism not as a universal truth, but rather as an 'idea-system' based on an 'understanding of man and his relations with the rest of his environment'.[22] Rooted in the principles of evolution, Huxley's vision of humanism functions through modelling the connections that he sees as ignored by other epistemological systems: from 'cosmic process to present-day polities, from the planetary web of world ecology to the individual lives entangled

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[19] *Ibid.*, p. 85.
[20] Roland Barthes, *Mythologies* trans. by Annette Lavers (New York: The Noonday Press, 1972), p. 101.
[21] *Ibid.*, p. 101.
[22] Julian Huxley, 'The Humanist Frame', in *The Humanist Frame* ed. by Julian Huxley (New York: Harper, 1961), pp. 11-49 (p. 14).

in it, from the dim roots of man's past to the dawning possibilities of his far future'.[23]

Like Macdonald, Huxley situates his vision of humanism as opposing the militarisation of the globe, writing that such an idea-system could serve to 'heal the split between the two sides in the ideological cold war'.[24] But unlike Macdonald's critique of progress, Huxley's work represents a wholesale assimilation of technological change into its concept of the human, incorporating a set of ideals based around dynamic change, purposeful evolution, and future 'destiny' into its rubric.[25] Like the shifting fantasy depicted in *The Shape of Water*, Huxley mobilises the human's own animality through the evolutionary framing of his work, writing descriptions which at times function to decentre the notion of a fundamental human nature: 'for all his distinctiveness', he writes, man 'is linked by genetic continuity with all the other living inhabitants of the planet. Animals, plants, and micro-organisms, they are all his cousins or remoter kin, all parts of one single branching and evolving flow of metabolising protoplasm'.[26] Nevertheless, and instead of marking an interest in worlds that exceed the human's own, Huxley's depiction of the human's protozoan origins functions as the first stage in a linear trajectory that leads upwards towards technological transcendence: 'As fish, they had been confined below a bounding surface. Now the air above them expanded out into the infinity of space'.[27]

For Huxley, tracing the human's evolutionary ancestry facilitates as much a model of the future as it does an image of the past, the conceptual imagery of claustrophobic water giving way to—and in some ways mirroring—the pregnant emptiness of space (incidentally, this image is reversed in the final act of Del Toro's film, which depicts a descent back under the surface of the sea). This set of ideas, which Huxley describes as 'evolutionary humanism',

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[23] *Ibid.*, p. 15.

[24] Julian Huxley, 'Preface', in *The Humanist Frame* ed. by Julian Huxley (New York: Harper, 1961), pp. 5-11 (p. 6).

[25] Huxley, 'The Humanist Frame', p. 15.

[26] *Ibid.*, p. 19.

[27] *Ibid.*, p. 20.

mirrors a dominant pattern of thought that the thesis traces: namely, that the human's status as an ontologically distinct and exclusive being can be informed by its complex co-implication with the nonhuman world.[28] Just as Macdonald's humanist argument contains the seeds for an anti-humanist or posthumanist critique of Progress, so too does Huxley's work introduce ideas that hold the potential for a reassessment of the humans' role at the centre of all thought. This is a central problematic of the thesis, and precisely the issue that the method of disentangling, to which I turn in the following section of this introduction, seeks to address: that the potential for thinking beyond the human often exists simultaneously in the same contexts as its reestablishment as a central and organising figure.

I want to explore, finally, the importance of the two terms I have just used—anti-humanism and posthumanism—in relation to another figure in midcentury thought: Norbert Wiener. Not automatically thought of as a humanist thinker, Wiener is known as an original figure in the field of cybernetics: a discipline that, through a series of meetings dubbed the Macy conferences held between 1941 and 1953 in New York, established new ways of thinking across the 'hard' and social sciences. By proposing a shared language of 'information' across different contexts, including social systems, animal behaviour, and the human body, cybernetics sought to outline universal logics that paid no heed to the ontological boundaries that existed between these categories: as Wiener summarises, there is no reason to assume that 'the essential mode of functioning of the living organism should not be the same as that of the automaton'.[29]

In her analysis of Wiener's work, N. Katherine Hayles argues that despite laying the groundwork for the deconstruction of the liberal humanist subject, Wiener remains committed to the values that constitute such a subject—namely, the idea that a quintessentially human

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[28] *Ibid*., p. 48.
[29] Norbert Wiener, *Cybernetics: or Control and Communication in the Animal and the Machine* (Cambridge: The MIT Press, 1985), p. 44.

autonomy must be maintained against its erosion by the machine. Hayles associates such a

commitment with the etymological roots of the term 'cybernetics' in 'steersman': a term that

denotes a cybernetic subject 'light on its feet, sensitive to change, a being that both is a flow

and knows how to go with the flow'.[30] This observation is visible in Wiener's association of

his own field with a striking sense of moral ambivalence: 'long before Nagasaki and the public

awareness of the atom bomb', he writes, 'it had occurred to me that we were here in the

presence of another social potentiality of unheard-of importance for good and for evil'.[31] As

Jussi Parikka observes, the Macy conferences contribute to an image of a new world

inaugurated after the Second World War—a new epoch of 'computers, network technologies,

and "postmodernisation"'.[32] Wiener's caution regarding the abuse of technology speaks to such

an epochal designation, reproducing the concern found in Macdonald that technological

advancement harbours necessarily deleterious effects. Cybernetics, as Wiener presents it,

functions by restoring agency to a human subject caught in the mechanistic workings of

systems that purport to maintain balance, and yet proliferate exclusion and inequality. Wiener's

example is global capitalism and the idea of free competition—an 'official article of faith in

the United States' that purports to foster free and equal opportunity and competition, but in

Wiener's view in actuality produces 'no homeostasis whatsoever'.[33] As Hayles notes, Wiener

is concerned less with the automatically balanced nature of systems, and more with a cybernetic

organism that, in 'freely adapting its behaviour to meet new circumstances', can succeed itself

'in preserving homeostatic stability in the midst of even radically altered environments'.[34]

Cybernetics functions to restore agency to a human subject from whom it has been removed.

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[30] N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999), p. 104.
[31] Wiener, *Cybernetics*, p. 27.
[32] Jussi Parikka, *Insect Media: An Archaeology of Animals and Technology* (Minneapolis: University of Minnesota Press, 2010), p. 121.
[33] Wiener, *Cybernetics*, pp. 158-159.
[34] Hayles, *How We Became Posthuman*, p. 104.

In this regard, Wiener's work epitomises the figure that Hayles describes as the 'posthuman': a subject that, constituted via flows of information and networks of relation, seems to lack the essential attributes of agency and free will that liberal humanism venerates. As well as emerging via Wiener's work, such a subject guides critical accounts of the crisis of Man. Greif's engagement with the concept comes in a section that draws together the concepts 'postmodern', 'posthistory' and 'posthuman' as three articulations of the same essential responses to the genealogy of crisis that his book traces. Arguing for a basic equivalence between the term 'posthuman' and its related phrases 'more than human', 'beyond the human', 'becoming animal' and 'cyborg', Greif suggests that each concept is 'proffered as if it constituted a reconceptualisation', describing historical 'changes in kind' that mark decisive epochal cuts in time.[35] Entertaining the validity of these categories of analysis, Greif goes on to note that

> Historical novelty does exist, and it is analytically essential. But "posthumanism" (old-style) possessed much more of "the posthuman" (new-style) than one might expect. More important, "the posthuman" is inbuilt to the chronologies and irresistible schemas of conceptualising the modern; one must not miss how the category and its attributes had already been programmed for its present "discoverers", and the degree to which it is already partly contained and constituted by the postmodern and posthistorical (themselves analytic epiphenomena of the same background historical schemas). Asserting that the posthuman furnishes everyone the means for a *voluntary* psychic break with the Enlightenment or the anthropocentrism of the past, meanwhile, is an unanalytic wrinkle more like the antique, maieutic advocacy of the crisis of man and its promises of re-enlightnenment.[36]

Greif's analysis mirrors the sense of an epochal break in time that we find in Wiener, conceptualising the subsequent critical and philosophical assessments of this condition as mirroring, quite ineffectually, this narrative of historical change. While right to identify the centrality of the 'crisis of Man' discourse that his own work identifies as remaining central to

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[35] Greif, *The Age of the Crisis of Man*, p. 324.
[36] *Ibid*., pp. 324-325.

the idea of the 'posthuman', Greif misses an important set of distinctions between the contemporary categories of analysis that he mentions—namely, the difference between the 'posthuman' subject and the field of posthumanism. The posthuman—a figure that appears in cybernetic discourses and is drawn into focus by theorists like Hayles—represents the subject of liberal humanism imperilled, the historical break refuted by Greif referring primarily to the onset of such threats in the dawning of the information age. Posthumanism, rather, is the practice of reading which, as Wolfe argues, draws into focus precisely those aspects of 'any discourse or critical procedure' that mark the 'constitutive (*and* constitutively paradoxical) nature of its own distinctions, forms, and procedures—and take account of them in ways that may be distinguished for the reflection and introspection associated with the critical subject of humanism'.[37] Posthumanism, then, involves reading the complex instances in which humanism sows the seeds for its own critique—and disentangling the elements of such a critique from their humanist contexts.

Disentangling Humanism

What might it mean to disentangle humanism from its place within the culture of the cold war? During this period, the category 'human' comes into focus as an avatar for several dominant ideas: a figure of universal inclusion and emblem of liberal democracy; a metaphysical ideal threatened by the 'machine'; a model for a proper kind of relationship to the natural world; and

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[37] Cary Wolfe, *What is Posthumanism?*, (Minneapolis: University of Minnesota Press, 2010), p. 122.

a figure of collective responsibility for anthropogenic harm.[38] In each of these cases (and this list is far from exhaustive), the appellation 'human' provides a false kind of stability, naming a base and fundamental structure through which the historical changes of the late twentieth century can be understood. In using the human as an exclusive lens through which to conceptualise their ideas, such perspectives mark a renewed commitment to *humanism* in midcentury US culture—and thus form the basis for the many critiques of humanism that have followed. To summarise such critiques, we can have recourse to Paola Cavalieri's revealing definition: humanism is a 'doctrine of human ontological and moral superiority based on the allegation that all and only humans are free insofar as they are antinatural and rational beings'.[39] In making the human its exclusive category of thought, humanism enshrines a series of attributes—including but not limited to rationality, language, tool use, creativity—as denoting a politics of inclusion and exclusion; a measure of humanity that relies upon the production of the not-human as its remainder.

For contemporary scholars working in the fields of animal studies and posthumanism, a primary figure of this remainder is the nonhuman animal; a category that seems to embody the inverse of humanisms's positive definitions, rendered permanently excluded on an ontological basis from the privileges of subjectivity. One of the major tasks of this thesis is to further examine the centrality of such a logic of species difference to articulations of the crisis

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[38] For a detailed analysis of 'the human' as an emblem of universal inclusion, see Seán McCorry, 'Speculative Humanisms: Postwar Universalism and the Question of the Animal' in *The Palgrave Handbook of Animals and Literature* ed. by Susan McHugh, Robert McKay and John Miller (Cham: Palgrave Macmillan, 2021), pp. 459-473. Macdonald and Huxley epitomise the second and third concerns that I list respectively, viewing the human as threatened by processes of technological change and as a model for a proper kind of relationship with nonhuman ecosystems. My final point relates to the role played by the cold war in historical arguments about the beginning of the Anthropocene—the geological epoch defined by human impact on planetary systems. For an examination of the role played by radioactivity in the designation of this epochal term, see Elizabeth M. Deloughrey, *Allegories of the Anthropocene* (Durham: Duke University Press, 2019).

[39] Paola Cavalieri, 'Consequences of Humanism, or, Advocating What?', in *Species Matters: Humane Advocacy and Cultural Theory* ed. by Marianne DeKoven and Michael Lundblad (New York: Columbia University Press, 2012), pp. 49-75 (pp. 51-52).

of the human in the literature and culture of the cold war period. But my main interest lies not with articulations of absolute ontological difference between human and nonhuman as a measure of humanism's cultural dominance. Instead, the thesis looks to cultural, intellectual, and scientific discourses that, throughout the latter half of the twentieth century, work both directly and indirectly to blur the lines of this great opposition. As precursors to the development of posthumanism as a theoretical concept—as well as the adjacent but different figure of the 'posthuman'—these discourses function sometimes precisely to *disrupt* the stability of humanism's dominant model of reality, presenting the human as itself traversed by the animal and the technological in ways that undermine its position at the centre of thought. But in addition to this developing critique of the human's ontological and ethical exclusivity, the discourses that the thesis examines evidence a humanism that is itself discursive in its ability function dynamically across different contexts. Far from relying solely on an image of the singular, rational subject (something we might describe as 'Man' in addition to 'the human'), these discourses demonstrate the *effects* of such a subjectivity—a mastery of and over the self, the future, the technological, and the animal—as occurring precisely through this subject's dissolution. Through challenges to the human's claim to moral, ethical, and ontological centrality, humanism persists as a relational force—a force that functions both through and despite deviations from its own norm.

The primary goal of the thesis—and a name for the reading practice it deploys—is the disentangling of humanism from contexts in which it seems to disappear in cold war culture. Scholars addressing the universalising tendencies of humanism in the postwar period have successfully demonstrated how the supposedly neutral category 'human' conceals a commitment to a particular kind of subjectivity rooted in a rational, white and gender-specific formulation of 'Man'; a humanism that harbours a politics of exclusion within its own rubric of unprecedented inclusion. Disentangling marks a partial continuation of this task, seeking to

uncover that which lies latent under the surface of discourses that seem to abandon the human and yet still harbour it lurking within as a dominant force or structuring logic. But equally, disentangling humanism describes a process of parsing the inconsistent, paradoxical, and conflicting instances in which humanism rubs up against the in- and nonhuman, prevailing despite and through the discourses that herald its own dismantling: a process of unthreading the assemblages within which humanism often plays more than one role. In a specific sense, this process reveals humanisms that are comfortable with their own contradiction, continuing to function in various guises through discourses that seem at first sight to negate them. In a more general sense, the work of disentangling reveals humanism to not function simply as a great category of thought exerting structure and control over the present through the enshrined historical force of the Enlightenment. Rather, disentangling reveals humanisms that are constituted themselves through ongoing sets of relations; adaptable, dynamic, and changing sets of ideas that situate themselves nevertheless as metaphysical norms.

In proposing such a methodology, the thesis combines the form of direct critique visible in Cavalieri's definition with the interest in questions of complexity, entanglement, and relationality that mark contemporary theoretical work across animal studies, posthumanism, and new materialism. As Eva Giraud argues, recent theoretical work in these fields too often views entanglement 'as a good in itself—with questions about intervention hinted at but ultimately left underdeveloped'.[40] For Giraud, instead of assuming 'that less anthropocentric forms of ethics and politics automatically proceed from the recognition of relationality', it is important to pay attention instead 'to the entities, practices, and ways of being that are *foreclosed* when other entangled realities are materialised'.[41] In a similar vein, yet in a different conceptual framework, Julietta Singh develops a theory of 'dehumanism' that aims to

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[40] Eva Giraud, *What Comes After Entanglement? Activism, Anthropocentrism, and an Ethics of Exclusion* (Durham: Duke University Press, 2019), p. 7.
[41] *Ibid*., pp. 2-7.

illuminate the dependencies in postcolonial criticism upon forms of mastery that such criticism sets out to reject.[42] Singh constructs dehumanism as simultaneously describing the process of dehumanisation that colonial subjects are exposed to, and as a process of reading that aims to illustrate new ways of being: 'If the masterful work of global imperialism functions through the dehumanisation of those it aims to conquer, and if we can now argue that the human to which we have been aspiring is intimately bound to a logic of mastery', Singh writes, 'then looking toward those "other genres of being human" that have been lived and will be lived by those subjected by imperial force might offer us other performances of the human that allow us to begin to practice nonmasterful forms of politics'.[43] Informed by such approaches, my method of disentangling humanism looks to illuminate anthropocentric logics of exclusion that persist through discourses that recast humanism as functioning through its relation with the more-than-human world. It also aims to elucidate that the same processes that decentre the human often simultaneously allow the articulation of new forms of mastery; a form of dehumanism that, to reverse the order of Singh's statement, develops new ways of being human that appear to function as radical departures from the logic of humanism, and yet nevertheless enshrine the same forms of mastery that more straightforward critiques of anthropocentrism work to expose.

The dichotomy between critique and complexity also has particular resonance in the field of cold war criticism. As Tobin Siebers argues, modern criticism 'has made a virtue of cold war paranoia', developing reading practices that centre around unearthing, exposing, and laying bare structures of power that exist beneath the surface of texts.[44] For Siebers, cold war criticism 'has introduced a model of the self-conscious critic whose greatest desire is to deny

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[42] Julietta Singh, *Unthinking Mastery: Dehumanism and Decolonial Entanglements* (Durham: Duke University Press, 2018), p. 4.
[43] *Ibid*., p. 15.
[44] Tobin Siebers, *Cold War Criticism and the Politics of Skepticism* (New York: Oxford University Press, 1993), p. 34.

his or her own agency in the world'—a fact that 'shows that modern criticism is tied to our vision of what the World Wars and the postwar era have taught us about the darker nature of human beings'.[45] Cold war criticism operates through exposing structures of control that become legible through their withholding of agency from the subject(s) in question. As such, through its interaction with a historical period defined in part by 'a history of false endings', and marked by the political mobilisation of uncertainty, cold war criticism often recourses to a paranoid epistemological style that locates structures of power and secret affiliations amid uncertainty and disorder.[46] This way of characterising cold war criticism gives particular insight into the role played by humanism in the field, with the impulse to restore agency underlining an image of the properly human that is available to be recuperated from its position of obscurity within the labyrinths of cold war power. Alternatively, a focus on entanglement— not just between human and animal, but traced through the complex networks of communication and hidden complicities that mark the period—reveals a human that seems increasingly impossible to recuperate, now distributed and distorted within technological networks that give no clue to an 'original'.

But to focus solely on such a dichotomy between critique and complexity is to miss the point of disentangling—a practice of reading that tries to remain attuned to the interwoven complexities of power while retaining a critique of mastery in all its variegated forms. In one sense, this approach allows the thesis to assert the radical potential of the texts it examines— work that, across the domains of science and culture, attempts to reimagine the monolithic and singular line between human and animal as a zone of complex difference and relationship, and often in doing so charting new models for reimagining the political and ethical relationship between humans and animals. But my approach also allows for an ongoing critique of the

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[45] *Ibid*., p. 34.
[46] *Ibid*., p. 29.

humanisms that function through and alongside this radical work, working to re-establish their own fantasmatic commitments to mastery.

In its examination of questions of human identity, science, and discourses of species, the thesis intervenes in a space that has seen increasing scholarly interest of late between cold war criticism, animal studies, and related fields. Sarah Daw's book *Writing Nature in Cold War American Literature* (2018) argues that the cold war functions as a 'covert presence in much recent ecocriticism', contributing to historical definitions of the epochal designation 'Anthropocene' because of the geological traceability of nuclear weaponry.[47] Daw's work examines the influence of Eastern philosophy on midcentury thinkers, and argues that writers during the period circumvented the idea of nuclear apocalypse 'through the depiction of an infinite, ecological Nature' projected to endure beyond the end of human life.[48] In observing similar themes, the thesis argues that such a vision of nature often functions to recentre humanist concerns, marking a fantasy of the human extended through its own sense of interconnectivity with the 'natural' world. In his study *Physics Envy: American Poetry and Science in the Cold War and After* (2015), Peter Middleton examines the relationship between poetry and nuclear physics at midcentury beyond the 'metaphorization of science', and towards an assessment of the role of science 'as inspiration for a poetics of inquiry'.[49] Drawing on the prevalent infiltration of scientific ideals into the public imaginary via publications such as *Scientific American*, Middleton highlights the sense of doubling that frames this project when he recounts the argument made by neurophysiologist Ralph W. Gerard that science is 'gradually superseding the more primitive cultural practices of the arts and literature that lie coiled up in the reptile brain'.[50] In the texts that this thesis reads, such a dichotomy gives way

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[47] Sarah Daw, *Writing Nature in Cold War American Literature* (Edinburgh: Edinburgh University Press, 2018), p. 5.
[48] *Ibid*., p. 18.
[49] Peter Middleton, *Physics Envy: American Poetry and Science in the Cold War and After* (Chicago: University of Chicago Press, 2015), p. 19.
[50] *Ibid*., p. 6.

to scientific and cultural discourses that peer simultaneously forwards and backwards in evolutionary time, looking to the human's reptilian origins as a model for its transcendent futures. Just as nuclear physics provides a sense of total possibility mirrored in developing conceptions of 'poetic knowledge', so do the scientific-cultural discourses that this project examines forge radically new methods for assessing the relation between the human and its own animality, as well as the broader systems and environments that make up the external nonhuman world.[51] In arguing for the centrality of questions of species to the cultural-scientific world of the cold war US, my thesis charts new ground not only in demonstrating the role played by thinkers in reimagining the human/animal species line as a space of complex difference, but in the simultaneous discursive adaption of humanism to these circumstances.

Chapter Summaries

Tracing the different articulations of humanist ideas between Macdonald, Huxley, and Wiener showcases a fantasy of the human constituted variously as threatened by the morally contaminated spectre of progress; as a subject augmented by its relationality with the nonhuman world; and as a figure that is both denied and granted autonomy through its increasingly systematised existence. In its examination of five scientific-cultural sites in which humanism plays a constitutive role, the thesis aims to showcase the persistence of such a fantasy across contexts that appear initially to negate it—and to demonstrate, equally, how critiques of humanism must proceed via a disentangling of the posthumanist elements that they harbour. The chapters take place chronologically, and showcase a development of humanist ideas between the 1950s and 1980s in the culture of the United States. Each of the chapters, in addition to deploying the posthumanist reading practice of disentangling, is further theorised internally; the thesis draws variously from psychoanalysis, biopolitical theory, new

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[51] *Ibid.*, p. 34.

materialism, media theory, and queer theory. Often reading across scientific and cultural contexts, the thesis identifies logics that operate between these locations, rather than mapping any straightforward operation of influence between one and the other.

Chapter One focuses on the figure of the virus as a recurring presence across scientific and cultural contexts at midcentury. Frequently attributed to anxieties surrounding the penetration of communism into the vulnerable body of US politics, the chapter reads the virus more broadly as an expression of collapsing species boundaries in an increasingly networked world. Reading Jack Finney's novel *The Body Snatchers* (1955), William Burroughs's cut-up trilogy (1961-1964) and Richard Matheson's novel *I Am Legend* (1954), the chapter argues that viral infection functions variously to highlight the notion of an indistinct, biological excess; a slippage between concepts of language and information that produces new kinds of anthropocentric mastery; and an expression of sovereign individuality threatened by an internal animality. Chapter Two reads J. G. Ballard's apocalyptic fiction from the 1960s—including the novels *The Drowned World* (1962) and *The Drought* (1965) as well as the short story 'The Terminal Beach' (1964)—in the context of a developing environmental consciousness regarding nuclear testing and chemical toxicity. Ballard—who is the only British author examined in the thesis, but whose work maintains a perverse fascination with US techno-culture—develops an imaginary that displaces the human within the vast temporalities of its own pre-history. Examining Ballard's work through the material figures of toxicity, the cold war bunker and the fossil, the chapter argues that his manipulation of material worlds functions to distil its own biopolitical logic of matter and mattering.

Chapter Three turns to the co-implicated logics of risk and extinction in the cold war 1960s and 1970s. The chapter argues that mediated narratives of nonhuman extinction and nuclear risk draw upon similar conceptual frameworks, based in the operationalisation of future uncertainty as a model of securing and securitising the present. After tracing the concept of

extinction through its representation in Thomas Pynchon's *Gravity's Rainbow* (1973) and popular scientific contexts, the chapter analyses two different sites of mediated representation: Walt Disney's 'True-Life Adventures', a series of educational wildlife films, and 'Man: A Course of Study' (MACOS), an educational programme that made use of anthropological film. Across these contexts, the logic produced is one of an abstract humanity bolstered by its interconnection with nonhuman worlds, and in explicating such a logic, the chapter turns finally to a reading of Philip K. Dick's novel *Dr. Bloodmoney* (1965). Chapter Four examines the science of behaviourism as a site at which human–animal relationships are reimagined during the 1970s. Drawing on the work of John B. Calhoun, John C. Lilly and the fiction of James Tiptree Jr., the chapter examines the influence of cybernetics on behaviourism, mapping the discipline's dependence on a mechanistic model as a feature of its anthropocentric limitations. Lilly's work in interspecies communication represents a conscious movement away from such a model; the chapter investigates how Lilly's work with dolphins trials a multidirectional, cybernetic model of communication with cetaceans while remaining committed to a transcendent form of future mastery. Finally, the chapter reads Ken Russell's film *Altered States* (1980) as interpreting Lilly's work through a psychoanalytic lens—a strategy that leads Russell's film to depict the human as existing in uneasy synchronicity with its own animality.

Chapter Five, finally, turns to an examination of discourses of health and hopeful futures in the work of two authors: Kurt Vonnegut and Octavia Butler. In Vonnegut's *Galápagos* (1985) and Butler's Xenogenesis trilogy (1987-1989), both authors draw upon discourses of misanthropy to present affirmative models of a literally post-human world. After drawing on contexts of environmental health discourse in the 1980s, the chapter looks to theories of queer negativity in order to speculate a form of misanthropy that resists anthroponormativity—or the assumption that the human represents the normative condition for

all thought. With reference to the work of Eve Kosofsky Sedgwick, the chapter finally argues that such a misanthropy—while marking a politically pertinent position—presents a paranoid way of knowing that mirrors the epistemologies enacted by the thinkers examined throughout the thesis. Following Vonnegut and Butler's example, the thesis ends by speculating a reparative misanthropy as a method for paying attention to the multispecies present.

Chapter One

Viral Biopolitics: Contagion, Immunity, and the Discourse of Species

Introduction

In this chapter, I examine the figure of the virus as an analogue for several intersecting cultural, scientific, and political concerns at midcentury in the United States: the nature of community and individuality; shifting definitions of 'life' and its relation to the human; and the relationship between language and the emerging concept of 'information' to human identity. Depicted in popular contexts as occurring at the very frontiers of life, research in the sciences of virology and immunology infiltrated the cultural imagination of the 1950s, combining narratives of technological mastery with a biopolitics of public health that was achieving new significance in a swiftly globalising postwar world. As well as responding to the literal biological dangers posed by viruses, cultural representations of infection at midcentury reflected the politics of the cold war, with viruses often standing in for fantasies of the malignant communist infiltrator, charged with subverting the life processes of liberal democracy from within. Each of the texts that the chapter reads—Jack Finney's *The Body Snatchers* (1955), William Burroughs's 'cut-up trilogy' (1961-64), and Richard Matheson's *I Am Legend* (1954)—has been interpreted by critics as engaging such a political imaginary. But beyond the geopolitical metaphorics of viral invaders, the representation of infection across these texts reflects a more fundamental concern with the integrity of human identity amid rapid technological change and shifting definitions of 'life'. Moreover, as a figure that destabilises the image of the human as a bounded and consistent individual subject, the virus brings about a confrontation with the human's own species-being, conjuring ideas of corporeal vulnerability, physiological mechanism, and the porosity of external boundaries.

The chapter reads the virus as problematising the condition for a politics of 'inside' and 'outside' across the work of its three central authors. In each of these cases, what initially appears as a consistent and universal humanity threatened by apocalyptic contagion becomes something quite different: a representation of the limits of liberal humanism when faced with the indistinct excess of the biological; a meditation on cultural control as a condition for the human's emergence from its primal, pre-linguistic history; and a vision of sovereignty as paradoxically depending on the human's own animality. The section on *The Body Snatchers* discusses the biological excess of Finney's pod people as thematising the internal contradictions of liberal humanism: an extension of community that threatens the existence of bounded individuality. Burroughs, meanwhile, engages a cybernetic imaginary that sees the human constituted through viral 'information': a logic of control that Burroughs resists through his technique of cutting and splicing text. *I Am Legend*, finally, depicts a vision of sovereign individuality turned back on itself and made autoimmune—a vision of the human that Matheson depicts as threatened by its own internal animality. In each of these cases, the logic of immunity functions to secure human identity, while at the same time foreclosing it, marking protection from viral threat as contingent upon an incorporation of otherness that contaminates the idea of an ontologically consistent 'human'. In the imaginary that the chapter traces, the virus serves as a dynamic force behind different kinds of political meanings applied to different kinds of flesh; a biopolitical figure for a shifting, discursive logic of inclusion and exclusion that crosses the spectrum of human and nonhuman life. Before examining how such a logic functions in the work of Finney, Burroughs, and Matheson, I first want to offer a contextual analysis of the position occupied by the virus in the scientific-cultural imagination at midcentury.

I. Viral Discourse at Midcentury

In an article published in *Life* magazine in June 1955, medical journalist Robert Coughlan summarises some of the breakthroughs, and unanswered questions, surrounding definitions of viruses at midcentury. Despite being near to defeating them once and for all, Coughlan notes with unwavering optimism, medical science still struggles to define viruses 'with any confidence'.[1] Capturing the unique strangeness of infection, Coughlan writes that

> Most of them are too small to be seen except with the super-powerful electron microscope and too small to be trapped even by the finest filters. It is debatable whether they are even alive: at least they lack most of the attributes of life, including the power of self-reproduction. Yet somehow, when one of them enters a living cell, it captures the cell's vital processes and converts these to its own use, forcing them to produce *more* virus and resulting in damage or death to the cell.[2]

In tracing the conceptual difficulty of both naming and resisting viral disease, Coughlan conjures a set of images that resonate with cultural narratives far beyond the walls of the laboratory. In a broad sense, viruses challenge definitions of life itself; while lacking life's most recognisable attributes, the virus also uncannily mirrors them, possessing powers of animation and reproduction usually reserved for more recognisable forms of life. In a more specific sense, viruses emphasise the danger of the human's own 'vital processes' becoming usurped. As the article notes, this threat involves a hostile takeover of the human's own apparatus of life; a loss of control that proliferates from within. But rather than dwelling on an image of viral reproduction that takes place within the body, Coughlan at first stages his observations as its perimeters. This is best illustrated by the article's headline image: a prone body, classically human and statuesque, is depicted as under siege from a 'Lilliputian horde' of viral agents.[3] Rather than attending to what goes on within the body, the image stages viral

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[1] Robert Coughlan, 'Science Moves in on Viruses', *Life*, 20 June 1955, p. 122.
[2] *Ibid.*, p. 122.
[3] *Ibid.*, p. 122.

reproduction as a war that occurs at its exterior borders—borders that medical science is tasked with defending.

By utilising the conceptual language of conflict, Coughlan's article sets out to explain cutting-edge medical knowledge in a way that might be familiar to a midcentury American public. Analysing the same image, Emily Martin notes that in their depiction as monstrous others, viruses are lumped in with germs and bacteria in a generalised conception of microbial threat. The image, Martin notes, showcases a culture obsessed with the surface of the body, with narratives of infection marking literal physical breaches and wounds as the most vulnerable sites at which disease could enter.[4] The analogue here with cold war geopolitical concerns about national borders is clear: as a marker of malignant forces that threaten the body from without, the virus parallels the threat of communism to the life of the American body politic. But this story of hard boundaries isn't the only one at work in Coughlan's piece. Writing of Jonas Salk's development of the polio vaccine, Coughlan notes that there are two main methods for engineering immunity. First, scientists can 'somehow [...] "kill" or inactivate the germ so that it loses its power to infect but not its power to stimulate the production of antibodies'.[5] Second, and in a method that was preferred in earlier programs of vaccine development, the virus is kept 'alive':

> One is to try to tame it down by getting it to take hold in an "unnatural host", an animal or perhaps a chick embryo. The first law of nature being survival, the virus adapts itself to life in the new circumstances, and in so adapting it changes so that it loses its virulence for its natural host, which in the case of polio is man.[6]

Far from the metaphor of invasion emphasised by Martin, this passage showcases an awareness of viruses as existing in symbiosis with their hosts. Accompanied by a cartoon image of a

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[4] Emily Martin, *Flexible Bodies: The Role of Immunity in American Culture from the Days of Polio to the Age of AIDS* (Boston: Beacon Press, 1994), p. 27.
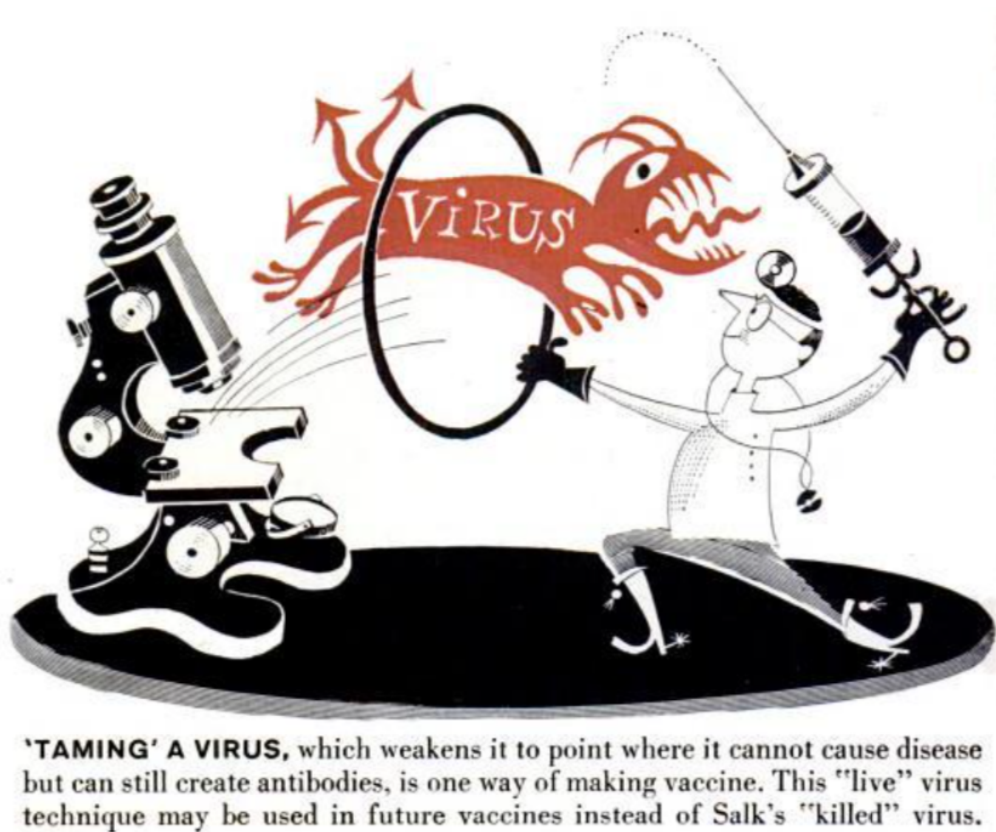[5] Coughlan, 'Science Moves in on Viruses', p. 128.
[6] *Ibid*., p. 128.

scientist 'taming' a virus depicted as an animal jumping through a circus hoop, the passage represents viruses not as foes to be vanquished but rather as organisms that must be trained and domesticated. Coughlan uses two examples in which actual nonhuman animals figure in this process: Edward Jenner's development of the smallpox vaccine using infected material from cows, and John Enders and Thomas Peebles's work on a measles vaccine using rhesus monkeys as test subjects. In the latter example, after establishing the virus in tissue culture, the researchers failed to produce a measles infection in the rhesus. The surprising reason for the failure, Coughlan notes, 'is that rhesus monkeys have a taste for civilisation: in their native India and southeast Asia they live near villages. Consequently they pick up measles from humans and arrive here already supplied with antibodies and hence with immunity'.[7] As well as involving an accommodation of 'live' viruses behind the supposedly hard boundaries of the body, the picture of immunity painted by the article involves comprehending infection as a multispecies phenomenon in which animals exist at various points on the immunitary hierarchy of 'civilisation'.

Examining the role of the rhesus in polio research, Neel Ahuja argues that the monkeys occupy a complex position in the overlapping imaginaries of medical research, decolonisation, and primate captivity. Ahuja notes that, as models for both observational research and the production of serum made from infected spinal matter, 'rhesus bodies could be literally harvested as vaccine medium, even as their reproductive processes were engineered as models to demonstrate the transition states of disease and the efficacy of vaccine therapies'.[8] The nexus of positions occupied by the rhesus also involved a process of domestication: the monkeys, Ahuja writes, 'were literally imported into the continental boundaries of the nation; they were broken of their cultural association with a wild and untamed animality; and they were

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[7] *Ibid.*, p. 129.
[8] Neel Ahuja, *Bioinsecurities: Disease Interventions, Empire and the Government of Species* (Durham: Duke University Press, 2016), p. 109.

'TAMING' A VIRUS, which weakens it to point where it cannot cause disease but can still create antibodies, is one way of making vaccine. This "live" virus technique may be used in future vaccines instead of Salk's "killed" virus.

(Figure 1)

increasingly held captive in indoor labs that attempted to establish their suitability to model human bodies and minds'.[9] Rather than being built around the image of a steadfast and bounded human individual, the midcentury virus research documented by Ahuja involved multiple instances of cross-species interaction, both material and affective. As made visible in Coughlan's *Life* article, the multispecies viral imaginary that arose from such practices involved bodies changing roles based on their specific circumstances: having shared infection with human populations, the rhesus of Enders and Peebles's research become 'civilised'. Likewise, having been represented earlier in the article as chaotic and monstrous entities, the virus depicted in the graphic representation of Salk's 'live' vaccine method has been 'tamed';

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[9] *Ibid.*, p. 114.

rendered knowable as a form of life that is no longer a threat to the vulnerable public. Immunity becomes a dynamic system of meaning applied to different kinds of flesh across the categories of human and nonhuman; a form of mastery no longer dependent upon hard boundaries, but rather on the incorporation of an otherness that has been neutralised and rendered safe to the human.

So far, this section has touched on two broad and coexisting narratives associated with the virus at midcentury: the 'body at war', to use Martin's phrasing, which focuses upon a stable conception of the human body at risk from a threatening outside; and the developing idea that immunity involved some kind of co-constitution between, at the broadest level, 'human' and 'nonhuman'. Coughlan's *Life* article showcases these two narratives existing alongside one another, with the more complex notion of immunity ultimately bolstering the article's concluding metaphoric image of 'total victory' against 'the most elusive and damaging of all the invisible creatures that are—except for man himself—man's worst enemies'.[10] Rather than producing a more complex assessment of immunity as a co-mingling between self and other, the article recuperates the image of political exclusion with which it begins, transforming the disruptive potential of immunity into a strategic reformulation of impervious Man.

The themes at work in Coughlan's *Life* article showcase some of the ways in which viruses infiltrate the cultural consciousness of the postwar United States. In her study *Contagious*, Priscilla Wald conducts a broad analysis of the concept of contagion as it occurs 'through the commingling of theories about microbes and attitudes about social change'.[11] In a chapter on cold war viral cultures, Wald argues that there is a link between the discipline of virology and the notion of political malignancies infiltrating the world of liberal democracy. Narratives abound at midcentury, Wald notes, of a United States under siege from the 'viral

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[10] Coughlan, 'Science Moves in on Viruses', p. 136.
[11] Priscilla Wald, *Contagious: Cultures, Carriers, and the Outbreak Narrative* (Durham: Duke University Press, 2008), p. 2.

invaders' of communism, threatening to brainwash the average citizen in a direct mirroring of 'the virus's ability to appropriate the mechanisms of the cell for its own reproduction'.[12] While acknowledging that the fields of virology and immunology developed separately from one another in the postwar period, and thus produced their own separate cultural meanings, Wald highlights that the threat of viral communism hinges on the perceived behaviour of a virus once it has entered the body of a host, as well as how that body responds to the invader.[13] Such narratives revolve around two major anxieties that define the period. The first has to do with the ways in which viral infection—in both biological and political varieties—highlighted the newly reconfigured geographies of an interconnected world. As Nicole Shukin argues, the trope of biomobility taps into universalist discourses of 'the global' that were especially predominant in the postwar period, inscribing the sense of an unseen and insidious threat within the otherwise benevolent view of the 'family of man'.[14] Second, the trope of viral communism highlighted a US culture that perceived itself to represent the antithesis to political control. While based around the notion of national borders that were vulnerable and porous, the viral narrative that Wald identifies within midcentury culture is steadfast in its delineation between self and other, underlining the primacy of the individual and its concomitant values of freedom, independent thought, and self-expression.

Understood between these two anxieties, the viral threat depicted across the texts that this chapter examines should be read not as an expression of communism, but rather as a more complex reflection of US culture's self-image at midcentury. This image, I argue, is concerned directly with questions of life, language, and what it means to be properly human (and not animal). Writing on the formulation of political universalism at postwar, Seán McCorry argues

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[12] *Ibid.*, p. 173.
[13] *Ibid.*, p. 173.
[14] Nicole Shukin, *Animal Capital: Rendering Life in Biopolitical Times* (Minneapolis: University of Minnesota Press, 2009), pp. 182-183.

that the 'humanist subject was reconceptualised in this period as a generic universal subjectivity—an avatar of universal humanity set against the racist national-particularism of the defeated fascist states'.[15] Such a universalism, McCorry notes, extends the category of 'the human' outwards via political formations such as the Universal Declaration of Human Rights in 1948, but establishes the positive content of this category only through the maintenance of its excluded remainder—in this case 'the nonhuman in general, and nonhuman animals in particular'.[16] Noting the prevalence of such a universalism beyond the immediate postwar period, Shukin shows that that problematic formation of the 'family of man' can just as easily become the 'family of animals', extending the kinds of 'colonial kinship taxonomies' visible in Edward Steichen's 1955 exhibition *The Family of Man* to nonhuman animals.[17] Such a logic is visible in Coughlan's depiction of the rhesus monkeys and the 'domesticated' virus: the threat of globalised interspecies intimacy is neutralised by the article's depiction of both monkey and virus as existing in the recognisable category of domestic companion. The role of universalism in narratives of viral threat thus centres around the space beyond the circle of supposedly infinite inclusion—a space that, while itself maintained by the universalist politics that requires its existence in order to secure the category of the human, threatens to erupt into this category from its position of exclusion. In the texts that this chapter reads, this force appears as an undefined biological 'life' that cannot be co-opted into the categories that anthropocentric universalism depends upon.

Alongside the threat of the biological, narratives of viral invasion centre around ideas of how cultural life defines what it means to be properly human. In depicting versions of the cold war trope of brainwashing, Burroughs, Finney, and Matheson are concerned less with the

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[15] Seán McCorry, 'Speculative Humanisms: Postwar Universalism and the Question of the Animal', in *The Palgrave Handbook of Animals and Literature* ed. by Susan McHugh, Robert McKay and John Miller (Cham: Palgrave Macmillan, 2021), pp. 459-473 (p. 459).
[16] *Ibid*., p. 460.
[17] Shukin, *Animal Capital*, p. 196.

'red scare' than they are with a more general sense of individuality threatened by a mass-cultural existence. The phrase 'mass-culture' describes the idea that, as expressed by Theodor Adorno and Max Horkheimer in their *Dialectic of Enlightenment*, individuals under the throes of the culture industry can signify 'only those attributes by which he can replace everybody else: he is interchangeable, a copy'.[18] While Adorno and Horkheimer's targets are the increasingly commodified mediums of film and television, the notion that cultural freedom is under threat at midcentury conceals another aptly paranoid resonance. As Frances Stonor Saunders shows in her study *The Cultural Cold War*, between 1950 and 1967 the CIA-coordinated 'Congress for Cultural Freedom' sought to guide from afar the cultural production in thirty-five countries away from a 'lingering fascination with Marxism and Communism towards a view more accommodating of "the American way"'.[19] The form of liberal enlightenment endorsed by the Congress centred around the ideal of 'free and democratic cultural expression': a notion which is both central to ideas about the human at the mid-century, and ironic in its covert endorsement through state-sanctioned cultural warfare.[20]

In seeking to show how the ideas of universal life and cultural freedom interlink, my analysis turns now to Jack Finney's novel *The Body Snatchers*. Finney's novel remains committed to the model of proper humanity that this section has outlined, depicting an alien invasion that infects the inhabitants of a small town with a proliferating sameness; a loss of individuality that mirrors in equal parts the trope of viral communism and the anxiety that mass culture may be undermining the intellectual free spirit of postwar humanism. In this commitment, Finney's novel thematises the horror of its viral threat in a vision of proliferating life that exceeds the boundaries concealed within postwar political universalism, depicting an

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[18] Theodor Adorno and Max Horkheimer, 'The Culture Industry: Enlightenment as Mass Deception' in *Dialectic of Enlightenment* (New York: Continuum, 1993), p. 14.
[19] Frances Stonor Saunders, *The Cultural Cold War: The CIA and the World of Arts and Letters* (New York: The New Press, 2013), p. 1.
[20] *Ibid.*, pp. 3-4.

eruption of an indistinct biological excess that draws uncanny parallels between human and animal life. In posing a danger to the properly human subject through its embodiment of pure biological process, Finney's body-snatching virus sows the seeds for the deconstruction of such a subject, showing the postwar human to be driven itself by precisely the forces of automatic and inanimate life that emblematise its own dissolution.

II. 'To live if it can': Immunity and Inanimation in Jack Finney's *The Body Snatchers*

The Body Snatchers is narrated from the perspective of medical doctor Miles Bennell, a born and raised citizen of Santa Mira, California. The rational base of Miles's world begins to dissolve when his old friend Becky Driscoll arrives with the information that her cousin Wilma is convinced that her Uncle Ira has been replaced by an imposter. Despite retaining the same appearance, mannerisms, and memories, Wilma maintains that her Uncle now lacks 'that special look […] way in back of the eyes' that signifies emotional response and his true, familiar self'.[21] As Finney's novel progresses, Miles and his companions realise that, far from representing mass delusion and a departure from rationality, Wilma's fears are well founded: Santa Mira has been overcome at 'dream-like speed' with a pandemic of replacement humans, grown within seed pods carried into Earth's atmosphere from outer space (p. viii). Each replacement is devoid of the ability to experience pleasure or emotion, possessing only the desire of the alien organism to survive and reproduce, spreading its contagion across the planet. What Dawn Keetley identifies as the defining tropes of plant horror, or the genre concerned with the fear of 'vegetal nature—its untameability, its pointless excess, its uncontrollable growth', is articulated in *Body Snatchers* through the language of the technological.[22] While

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[21] Jack Finney, *The Body Snatchers* (London: Gollancz, 2010), p. 15. All subsequent references will appear in the text.
[22] Dawn Keetley, 'Introduction: Six Theses on Plant Horror; or, Why Are Plants Horrifying?', in *Plant Horror: Approaches to the Monstrous Vegetal in Fiction and Film* ed. by Dawn Keetley and Angela Tenga (London: Palgrave Macmillan, 2016), pp. 1-30 (p. 1).

the difference between human and alien replicant is difficult to discern, the horror of *Body Snatchers* occurs in the common material language of information shared between both: as the character Dr Budlong reveals to Miles later in the narrative, the pods 'are completely evolved life; they have the ability to reform and reconstitute themselves into perfect duplication, cell for living cell, of any life form they may encounter in whatever conditions that life has suited itself for' (p. 179).

Finney's concern with the horror of the 'vegetal' repeats the anxiety found throughout sf film in the 1950s with the abject materiality of cellular life. In Christian Nyby's *The Thing From Another World* (1951), an alien form of life preserved cryogenically in the Antarctic terrorises a group of scientists. Unlike John Carpenter's remake *The Thing* (1982), which depicts a gruesome manipulation of human corporeality, Nyby's film situates its horror in the invisibility of anything undeniably 'alien' about this newly discovered life, depicting 'the Thing' as taking the form of a straightforwardly human body. It is only when this body is examined under a microscope that the fears of Nyby's characters are justified: as the doctor examining the specimen attests, the body shows signs of 'vegetable life [which] underwent an evolution similar to that of our own, animal life'.[23] In Irvin S. Yeaworth Jr.'s *The Blob* (1958), the object of fear is an amplified expression of pure materiality: an alien slime that arrives on a meteor and gets bigger with every human body it assimilates. While Yeaworth Jr.'s monster differs from Nyby's in its embodiment of absolute formlessness, the root of the horror it instils is the same: a proliferation of life that uncannily mirrors the human's own corporeality.

The destruction and dissolution of human selfhood enacted by the pods thus transcends any purely biological interpretation within Finney's narrative. The threat posed by the alien invasion of *Body Snatchers* oscillates between signifying an attack on an immaterial, properly human form of subjectivity and a universal biological vulnerability shared across the

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[23] *The Thing From Another World*, dir. by Christian Nyby (RKO Radio Pictures, 1951).

'community' of the human. This is best illustrated through Miles's continual references, throughout the novel, towards some fundamental human 'nature' that appears to be sapped from the town as the pod people proliferate. While the replicants share only the basest function of vegetal life, described by Budlong as seeking only 'to *live if it can*', Miles locates an essential 'humanity' in 'the endless urge to change and improve that marks the human race'. Such an ideal is demonstrated in Miles's remarks on suburban life: 'you can't walk ten blocks on an ordinary street inhabited by human beings without seeing evidences of say, a garage being built, a new cement sidewalk being laid, a yard being spaded, a picture window being installed' (pp. 124-125). Properly human and political subjectivity is found, for Miles, in a sense of cultural freedom quintessential to an American midcentury governed by the cultural ideology explicated by Saunders: free, dynamic, creative, and supposedly unconstrained expression stands in opposition to the vegetative as dictating what it means to be human.

Miles himself evokes the cultural practices under Saunders's examination when he observes that 'if I were an artist, painting the way Etta Street seemed to me, walking along now with Becky, I think I'd distort the windows of the houses we passed' (p. 123). The aesthetic of distortion invoked here is reminiscent of art movements such as Abstract Expressionism, in which gestural and spontaneous painting styles are used in resistance to the repeated forms of mass culture and capitalist reproduction.[24] Indeed, Finney's alien virus actualises the infection of 'sameness' referenced by Adorno and Horkheimer, marking a mechanical cultural existence to which Miles represents a fervent counterpoint. In diagnosing the distorted reality that surrounds him, Miles embodies a creativity that exhibits a mastery over abstraction while retaining a clear rational basis in 'reality'. Just as Abstract Expressionism seemed to break from the mechanised processes of mass-culture towards something affect-driven, visceral, and

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[24] Nancy Jachec, '"The Space Between Art and Political Action": Abstract Expressionism and Ethical Choice in Postwar America 1945-1950', *Oxford Art Journal*, 14 (1991), 18-29, (p. 19).

essential, Miles's artistic vision sets him apart from the pure biology of Finney's invaders. But as Saunders shows, the radical break from artistic tradition marked by abstract art did not arise wholly independently as an expression of a particularly fertile cultural freedom in the United States; rather, the 'ecstatic' painting styles of artists like Jackson Pollock 'spoke to a specifically anti-Communist ideology, the ideology of freedom, of free enterprise', presenting the 'very antithesis to socialist realism'.[25] While the style emerged through no particular 'formal aesthetic common denominator' among a group of artists involved in left-wing politics—and therefore spoke to the values of universalism and democracy prevalent at postwar—Saunders argues that the subsequent CIA support given to the school presents an example of the 'sublime paradox' of government strategy during the cultural cold war: 'in order to promote an acceptance of art produced in (and vaunted as the expression of) democracy, the democratic process itself had to be circumvented'.[26]

The relevance of Saunders's argument to Finney's text can be outlined in a substitution of terms: while the United States government sought to promote democracy in ways that undermined it, Miles's artistic distortion of his surroundings attempts to bolster a proper humanity by engaging in a logic that works subliminally in Finney's novel to undermine it. In order to examine the implications of this argument, I want to first situate my discussion against the conceptions of community, immunity, and individuality found in the biopolitical theory of Roberto Esposito. The mass culture subtext of *Body Snatchers* signals the overarching biopolitical function of Finney's narrative: in their reproduction of absolute 'sameness', the pod people exemplify the split between the human's political, qualified life and its 'bare', animal, or corporeal existence. For Esposito, biopolitics hinges upon the sameness found within 'the dimension of *zōē*, which is to say life in its simple biological capacity *[tenuta]*,

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[25] Saunders, *The Cultural Cold War*, pp. 213-214.
[26] *Ibid*., p. 216.

more than it does to *bíos*, understood as "qualified life" or "form of life"'.[27] Far from relying

upon this distinction, however, Esposito goes on to identify that

> *Zōē* itself can only be defined problematically: what, assuming it is even conceivable, is an absolutely natural life? It's even more the case today, when the human body appears to be increasingly challenged and also literally traversed by technology *[tecnica]*. Politics penetrates directly in life and life becomes other from itself. Thus, if a natural life doesn't exist that isn't at the same time technological as well; if the relation between *bíos* and *zōē* needs by now (or has always needed) to include in it a third correlated term, *technē*—then how do we hypothesise an exclusive relation between politics and life?[28]

For Esposito, the introduction of *technē* into the dichotomy between political and natural life

necessitates the use of a different framework to map the functions of biopolitics: that of

communitas and *immunitas*. In an effort to define both terms, Esposito writes that: 'If

communitas is that relation, which in binding its members to an obligation of reciprocal

donation, jeopardises individual identity, *immunitas* is the condition of dispensation from such

an obligation and therefore the defence against the expropriating features of *communitas*'.[29]

Immunity, in this formulation, supports and reinforces the notion of community at the same

time as negating its fundamental principle of commonality. Esposito goes on to note that

> What is immunised, in brief, is the same community in a form that both preserves and negates it, or better, preserves it through the negation of its original horizon of sense. From this point of view, one might say that more than the defensive apparatus superimposed on the community, immunisation is its internal mechanism *[ingranaggio]:* the fold that in some way separates community from itself, sheltering it from an unbearable excess.[30]

The excess that marks 'the original horizon of sense' for community, and therefore its most

essential principle, for Esposito is negated by the immunitary mechanism in order to protect

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[27] Roberto Esposito, *Bíos: Biopolitics and Philosophy* (Minneapolis: University of Minnesota Press, 2008), p. 14.
[28] *Ibid.*, p. 15.
[29] *Ibid.*, p. 50.
[30] *Ibid.*, p. 52.

community from itself; or, in other words, in order to negate or reduce 'its power to expand'.[31] As something which threatens the constitution and maintenance of individual identity, community here constitutes a force of sameness comparable to the technological trappings of mass culture and the biological reproductions of Finney's pod people. As with Esposito's analysis of the immunitary paradigm of biopolitics, which protects against the infinite extension of the boundaries of community to any and all regardless of preexisting boundaries, the endless proliferation of the viral force of *Body Snatchers* marks an unfolding of inclusion that must be suppressed and cut short through a violent immune reaction. The ending of Finney's tale epitomises such a logic of immunity, depicting Miles and Becky's burning of the thousands of pods growing in fields surrounding the town.

Rather than simply affirming the violent putting-to-death of the invading outsider as achieving a reaffirmation of a political humanist subjectivity, however, I want to suggest that *Body Snatchers* retains the seed of a logic which complicates this well-trodden formula. What Esposito describes as immunisation's role in protecting 'community from itself' points, in this instance, towards the underlying anxiety throughout *Body Snatchers* that the bio-technological excess of the pod people may represent something that already exists deep within the human itself. In order to characterise this anti-humanist and (auto)immune subtext to *Body Snatchers*, my analysis turns now to a characterisation of Finney's alien virus as an emblem of the drive, in the psychoanalytic sense of the term—the inhuman and machinic force of excess originating from the unknown space of the unconscious. The viral biopolitics of *Body Snatchers*, according to this logic, describes something inanimate and lifeless at the heart of liberal humanist subjectivity; a force that, in operating from within, separates the human from its own self-image as the apotheosis of the dynamic freedoms valorised by the postwar universalist model.

In *Beyond the Pleasure Principle*, Freud expands the theory of the drives that populate

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[31] *Ibid*, p. 46.

his depiction of the unconscious. Moving away from his focus on the drives associated with pleasure and sexuality, Freud develops a vision of the unconscious governed by a drive which embodies 'the final goal of all organic [life]':

> It would be counter to the conservative nature of instinct if the goal of life were a state never hitherto reached. It must rather be an ancient starting point, which the living being left long ago, and to which it harks back again by all the circuitous paths of development. If we may assume as an experience admitting of no exception that everything living dies from causes within itself, and returns to the inorganic, we can only say "*The goal of all life is death*", and, casting back, *"The inanimate was there before the animate"*.[32]

The death drive, as Freud outlines it here, marks an inescapable movement within the psyche towards a primordial vision of the inanimate which represents both a form of 'original' state, and the ultimate horizon for all forms of organic life. Enacted at the very limits of scientific knowledge, self-admittedly for Freud, the death drive marks a fundamentally contradictory logic within the already nebulous space of the unconscious: rather than representing an inescapable end point that the pleasure-seeking drives eventually fail to avert, the death drive is itself presented as a force vying for dominance within the psyche. For David Wills, the will to return to a lifeless state marks a logic of automatism in Freud's conception of the development of life: 'life is born as the automatism of wanting to repeat the unborn experience', Wills notes, 'to repeat the inanimate experience of which is somehow has a memory'.[33] The 'memory' of nonlife that exists within the organism means that fundamental to the functioning of the death drive, for Wills, is the dual existence of something animate and inanimate within the organism: 'what we call life begins as a rupture vis-à-vis itself, an interruption of inanimate by an animate that has somehow lain inert, or inanimate, within the inanimate'.[34] Freud's death

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[32] Sigmund Freud, *Beyond the Pleasure Principle* trans. and ed. by James Strachey (New York: Norton, 1961), p. 32.
[33] David Wills, *Inanimation: Theories of Inorganic Life* (Minneapolis: University of Minnesota Press, 2016), p. 74.
[34] *Ibid*., p. 69.

instinct, in this sense, works to categorise life as composed, paradoxically, of something other to itself: something other to life, or nonlife.

The contagion of *Body Snatchers* in many ways externalises the battle between the drives outlined by Freud in *Beyond the Pleasure Principle*. The uncontrollable, abject growth of the pod people is contradicted somewhat by their primarily vegetative characteristics. When Miles first encounters a pod person growing in the basement of a friend's house, he describes the replicant's face as 'formless, characterless. It wasn't really a face; not yet. There was no *life* to it, it wasn't marked by experience; that's the only way I can explain it' (p. 33). The horror of this moment exists in the misrecognition experienced by Miles upon encountering the pod person: what first appears to be a dead body soon reveals itself to be a growing, not-yet-animated version of Miles's friend. The combination of what Freud describes as both origin and horizon of human experience proves all the more abhorrent when Miles encounters the doppelgänger of his romantic interest, Becky. Miles compares the 'thing', decidedly objectified, to a partially developed photograph: 'Then, underneath that colourless fluid, the image began to reveal itself—dimly and vaguely—yet unmistakably recognisable just the same. This thing, too, lying on its back on that dusty shelf in the feeble orange glow of my flashlight, was an unfinished, underdeveloped, vague, and indefinite Becky Driscoll' (p. 56). Miles goes on to survey the double's facial features with methodical and probing care, noting the likeness of skin, bone structure, cheekbone, and chin, as well as 'nearly the same full, ripe, and—this was horrible—good-looking mouth', before dwelling, finally, on the eyes: 'They were almost, but not quite—not yet—as large as Becky's. They were not quite the same shape, or precisely the same shade—but getting there. The *expression* of those eyes, though…' (p. 57).

The erotics of Miles's observations, in this passage, reflect the logic of subjectivity found in the psychoanalysis of Jacques Lacan and Slavoj Žižek, concerned with both the drive

(the impulse which circles and yet never accesses the object of desire) and the Thing (the nonsubstance at the heart of subjectivity). Developing Freud's logic of automatism, Lacan writes of the drive as an 'enclosed structure, following a course that returns, and of which nothing else ensures the consistency except the object, as something that must be circumvented'.[35] Becky's replicant, as product of the unconstrained viral force plaguing Santa Mira, is subject to Miles's voyeuristic gaze which, as Lacan would have it, forms the very subject who performs the act of looking: 'the subject is not there in the sense of seeing, at the level of the scopic drive. He is there as pervert and he is situated only at the culmination of the loop. […] The object, here, is the gaze—the gaze that is the subject, which attains it, which hits the bull's eye in target-shooting'.[36] While Miles here assumes the role of the surveying eye, Becky-as-object becomes the mouth; described in violent gendered-erotic terms as 'ripe' and 'horrible' as part of a sexual fantasy which circles its object of inaccessible yet purely conceived disgust and enjoyment.

At the same time that Miles sees Becky-as-mouth, moreover, he describes Becky-as-thing; a monstrous figure which is abjectly recognisable and yet indescribably other. Žižek describes 'the Thing', a central principle in Lacan's vision of subject formation, as 'what "is in me more than myself": the double is "myself", yet […] conceived under another modality, under the modality of the other, sublime, ethereal body, a pure substance of enjoyment exempted for the circuit of generation and corruption'.[37] Crucially, further to this, Žižek argues that

> The ambiguity of the postmodern relationship to the Thing pertains to the fact that the Thing is not simply a foreign body, an intruder which disturbs the harmony of the social bond: precisely as such, the Thing is what "holds together" the social edifice by means

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[35] Jacques Lacan, *The Four Fundamental Concepts of Psychoanalysis* ed. by Jacques-Alain Miller, trans. by Alan Sheridan (New York: Norton, 1998), p. 181.
[36] *Ibid.*, p. 182.
[37] Slavoj Žižek, *Enjoy Your Symptom: Jacques Lacan in Hollywood and out* (New York: Routledge, 1992), p. 125.

of guaranteeing its fantastic consistency.[38]

The monstrous familiarity found in the replicant marks, according to this psychoanalytic logic, the emptiness at the heart of the human's own subjectivity. The distinct *lack* of subjectivity that Miles attributes to the pod person, as he gazes upon her 'horribly parodied and diluted' eyes, thus here represents a void at the centre of Miles's own individuality; the drive that causes Miles to fixate on the replicant as an abjectly eroticised object signals the presence of the nothingness of his own identity. Indeed, the starkest moment of horror within this passage comes when Miles realises, finally, that 'the flesh I was staring at, and the bone underneath, had been reforming themselves in only the hours and minutes that had so far passed of this night' (p. 57). The biological excess of the pod people—their literal power to expand—here presents itself as the very drive that circles the monstrous Thing as the ultimate signifier of non-identity. The danger presented by the replicants lies not in their invasion of a supposedly safe and sealed community, but in the exposure, through their very existence, of the borderless excess of community itself.

In his analysis of Don Siegel's film adaptation *Invasion of the Body Snatchers* (1956), Neil Badmington analyses a scene similar to the one I have just examined, in which Miles encounters Becky's replicant and faces a moment of uncertainty: 'In a canted reverse shot, Miles stands with the weapon raised. A subsequent close-up provides a clearer view of Becky's face. The film cuts back to a close-up of Miles: the pitchfork is still raised but an anguished expression now crosses his features'.[39] Instead of killing Becky's double, as he appears to first intend, Miles instead 'moves forward to his own replica and, with scant hesitation, stakes the body'.[40] Badmington (along Lacanian lines) reads Miles's desire for Becky as a moment in

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[38] *Ibid*., p. 123.
[39] Neil Badmington, 'Pod almighty!; or, humanism, posthumanism, and the strange case of Invasion of the Body Snatchers', *Textual Practice*, 15 (2001), 5-22, (p. 9).
[40] *Ibid.*, p. 9.

which the humanism of the film is challenged: 'to be human is to desire, to possess emotions, but to desire is to trouble the sacred distinction between the human and the inhuman. Miles loves Becky, but Miles also appears to love an alien legume'.[41] This reading draws attention to a point of tension within the function of drive and desire in Finney's story that I would like to highlight. While Miles's desire for the inhuman seemingly complicates the human reality at the centre of the narrative, this moment of 'posthumanism' risks ignoring the ways in which desire is culturally determined.[42] Along similar lines, in their analysis of Jonathan Demme's *Silence of the Lambs*, Cary Wolfe and Jonathan Elmer warn of the dangers of psychoanalysis reproducing 'certain enabling, but problematic, assumptions about the specificity of the human in relation to its ostensibly "natural" origins'.[43] These assumptions play out in Finney's novel, in simple terms, according to a misogynist cultural logic; the strange and gendered erotics of Miles's examination of the replicant lying on the table simply reproducing the sexual objectification he applies to women, human or replicant, throughout the novel. Nowhere is this more apparent than in the novel's opening pages, in which Miles admires Becky's 'fine, beautifully fleshed skeleton' as she enters his office, before performing a close to identical surveying of her facial features to that his future self performs on Becky's replicant: 'I saw it was the same nice face, the bones prominent and well-shaped under the skin; […] the same full, good-looking mouth' (pp. 3-4).

What this specific example of culturally and socially produced hierarchy shows, I want to suggest, is a commitment throughout Finney's novel to dominant cultural narratives both *despite* and *through* the enactment of their material or psychic dissolution. The inhuman realisation brought about by the pod people—that Miles and his friends are simply flesh and

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41 *Ibid.*, p. 9.
42 *Ibid.*, p. 9.
43 Cary Wolfe and Jonathan Elmer, 'Subject to Sacrifice: Ideology, Psychoanalysis, and the Discourse of Species in Jonathan Demme's *The Silence of the Lambs*', in Cary Wolfe, *Animal Rites: American Culture, the Discourse of Species and Posthumanist Theory* (Chicago: University of Chicago Press, 2003), pp. 97-121 (p. 108).

bone, and able to be reconstituted without their 'humanity'—becomes instrumentalised by the heteronormative, gendered logic which is already applied to bodies as a cultural norm. Miles's human immunity is asserted, in other words, through the masking of his internal bio-technological *inanimation* with the external technological *animation* of cultural gender norms. The properly human in *Body Snatchers* is found not in the immaterial and ontologically stable 'humanity' referenced throughout the narrative, but in the interaction between these two technologies: the static and inanimate centre to the human, eerily reflected in the pod people, is rendered legible through the technology of categorisation found in misogynist gender roles. The viral biopolitics of *Body Snatchers* is thus a process of mediation between life and death, animation and inanimation, within the production of a human identity tied paradoxically to its own internal automatism.

III. Language, Information, and Fleshly Inhumanism in William Burroughs

Reading *The Body Snatchers* between Esposito, Freud, and Lacan highlights the ways in which Finney's novel channels fear of the biological into a psychic and cultural framework that recuperates meaning just as the untamed excess of the pod people threatens its dissolution. As biological life without form, the pod people function not as threatening invaders, but rather as reflections of a biological community that Finney's characters must immunise themselves against, channelling the biological into recognisable formations and maintaining biopolitical hierarchies. But the horror of Finney's tale also lies in the fact that, as doubles of human subjects bereft of emotional complexity and a mastery of language, the pod people nevertheless threaten to render this ideal of the properly human indistinguishable from its inhuman counterpart. While Finney presents the mechanical and automatised aspects of his alien replicants as clearly discernible through the lens of Miles's rationality, the creeping fear that language may not by itself secure the human's exceptionalism and individuality pervades

throughout the novel. In this section, I want to situate this anxiety within a discussion of viral 'information'—a term popularised by the advent of cybernetics in the 1950s and 1960s and adopted during the same period in the life sciences. While often equated with a humanist conception of language, information also extended the limits of communication beyond the boundaries of the human, prompting cultural representations of viral exchange that situate the human in conversation with a more-than-human frame of reference.

Observing the importance of the developing language of information to the study of viruses, Wald notes that

> the technical meaning of information remained at the conceptual core even of the most popular usages [in the 1950s] and helped to produce a conceptual shift in ideas about contagion, communication, and social interaction. The thinking that would eventually lead to an understanding of viruses as "among the most primitive means of *information transfer*" was consistent with that technical meaning, but more mainstream representations of viral information produced the image of the body as a communication system that viruses could hijack, corrupting the information crucial to its healthy functioning.[44]

For Wald, a central theorist of this imaginary is William Burroughs, a 'scion whose family name was associated with the late-nineteenth-century invention of the adding machine', and whose work renders information central to its 'understanding of all social interactions'.[45] In depicting the human as part of a viral system of information transfer, Burroughs theorises language as a mechanism of total control; an alien organism that, akin to Finney's pod virus, saps the individuality of its unwitting hosts, rendering the human ironically restrained by the very thing that secures its own exceptionalism. As Wald suggests, Burroughs's work across the cut-up trilogy—comprising *The Soft Machine* (1961), *The Ticket That Exploded* (1962), and *Nova Express* (1964)—seeks to disrupt the 'conventional reading practices' that leads to this operation of control, empowering readers to examine the ways in which they receive and

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[44] Wald, *Contagious*, p. 182.
[45] *Ibid*., p. 184.

process information and scrambling the codes that interpellate the human subject from within.[46]

But reading Burroughs's conception of viral information through the lens of species reveals a paradox within his theory of control: that in resisting the structures of power contained within everyday forms of language, Burroughs enacts a new kind of mastery over language that produces its own mode of transcendent humanism. After examining Burroughs's construction of language as a form of information, I argue that his association of control with an original automatism coded as animal reveals a latent anthropocentrism across the cut-up novels.

In *The Ticket That Exploded*, Burroughs outlines the idea of the 'word virus' that recurs throughout the trilogy:

> The flu virus may once have been a healthy lung cell. It is now a parasitic organism that invades and damages the lungs. The word may once have been a healthy neural cell. It is now a parasitic organism that invades and damages the central nervous system. Modern man has lost the option of silence. Try halting your sub-vocal speech. Try to achieve even ten seconds of inner silence. You will encounter a resisting organism that *forces you to talk*.[47]

This description showcases a number of intersecting discourses collected around the emblem of the virus in Burroughs's fiction. In the most basic sense, Burroughs seeks to capture the uncanny inversion of cellular function performed by viral disease. In doing so, he highlights the potential for such disease to make the human body abject and other to itself: 'the realisation that something as familiar to you as the movement of your intestines the sound of your breathing the beating of your heart is also alien and hostile', Burroughs writes, 'does make one feel a bit insecure at first' (*TTE*, p. 39). This insecurity, however, is not limited for Burroughs to the exclusive realm of the body. Imagining language as a viral 'organism' grafted to the nervous system, Burroughs theorises a system of control imperceptible in its infiltration of the

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[46] *Ibid*., p. 187.
[47] William S. Burroughs, *The Ticket That Exploded* (London: Fourth Estate, 2010), p. 39. All subsequent references will appear in the text.

human mind (*TTE*, p. 38). As well as separating the human from its own corporeal existence, the idea of the word virus calls into question the human's position as the absolute subject of history: 'what we call history is the history of the word. In the beginning of *that* history was the word' (*TTE*, p. 39). Human identity, for Burroughs, comes about through a parasitic symbiosis between the ideological content of language and its unwitting, fleshy host.

By using the idea of a subversive force taking control from within, Burroughs references contemporary anxieties surrounding the infiltration of malignant political forces into the world of liberal democracy. The image of the parasite works as an emblem for this paranoid politics, evoking the spectre of mind control as a stand in for the supposed threat posed by communism to the freedoms of liberalism. Yet Burroughs's notion of the word virus is not only parasitic, but symbiotic, working in tandem with its host in a relationship of mutual co-implication. Burroughs's target here is not communism, but instead the very culture that imagines itself the apotheosis of 'freedom'; as Adam Piette argues, Burroughs is concerned with a regular existence in which 'books, texts, and ideology invade the minds and occupy neural space by replicating their sequences within the individual's grey matter'.[48] The language of invasion, subversion and hostile takeover thus satirically replicates the very control that Burroughs imagines, enacting a false dichotomy between political authoritarianism and humane liberal democracy. The symbiotic nature of the language virus, as Scott Bukatman writes, functions precisely through this 'false consciousness of cohesion, democratic order, and freedom', with the subject of Burroughs's fiction depicted as a 'carrier' of a 'pseudo-reality' that is impossible to disentangle from their own hopes, desires, and misconceptions of free will.[49] Against this regime of control—and in parody of its own usage of the image of the

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[48] Adam Piette, *The Literary Cold War: 1945 to Vietnam* (Edinburgh: Edinburgh University Press, 2009), p. 110.

[49] Scott Bukatman, *Terminal Identity: The Virtual Subject in Post-Modern Science Fiction* (Durham: Duke University Press, 1993), p. 76.

invading viral other—Burroughs deploys the cut-up method as a mode of resisting language's parasitic hold over the human, breaking the meanings of language's usual modes of sense and uncovering the secret codes that exist beneath. As Bukatman notes, this method for Burroughs 'represents an immunisation against the media-virus: a strengthening of the host organism against the infectious agent'.[50]

In this regard, we can identify a point of tension within Burroughs's own imaginary: in order to resist the viral culture that he identifies, Burroughs must theorise a new way of mastering language that produces new kinds of meaning—and therefore new forms of control. As Oliver Harris notes, 'Burroughs resists power to the extent that he also exercises it, understands power so well precisely because he has always worked from its deep insides'.[51] Burroughs's conception of immunity involves no clear separation between the cut-up subject and the power it wishes to resist, but rather a deep complicity between the two; a cooperative arrangement that must perpetuate language's viral hold in order to enact the stylistics of resistance that Burroughs imagines. This sense of inter-implication can be traced to the scientific discussions on the nature of 'life' that inform Burroughs's viral imagination. Piette writes that Burroughs's fiction can be read 'as a metaphorical substantiation of the Cold War links between nuclear energy and genetic research, involving a pseudo-genetic crossing over of literary and science-cultural codes'.[52] Such a crossing has its roots in the techno-scientific advancements which, in the 1950s, began to be used in the tasks of mapping human identity on a microscopic scale. The significant year here is 1953, when James Watson presented the first model of the DNA double helix at a symposium on viruses at the Cold Spring Harbour Laboratory in New York. This meeting, retroactively described by the laboratory as 'mythic',

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[50] *Ibid.*, p. 78.
[51] Oliver Harris, 'Can You See a Virus? The Queer Cold War of William Burroughs', *Journal of American Studies*, 33 (1999), 243-266, (p. 244).
[52] Piette, *The Literary Cold War*, p. 115.

marked the beginning of widespread acceptance of the validity of the DNA 'code' as the primary building blocks that underpin all forms of organic life.[53] In his reflective volume *DNA*, Watson describes the discovery as bringing 'the Enlightenment's revolution in materialistic thinking into the cell', as well as ending a 'debate as old as the human species':

> Does life have some magical, mystical essence, or is it, like any chemical reaction carried out in a science class, the product of normal physical and chemical processes? Is there something divine at the heart of a cell that brings it to life? The double helix answered that question with a definitive No.[54]

Watson's observations showcase an essential aspect of the DNA discovery that feeds into Burroughs's imagination: that 'life', far from some immaterial vital principle, is instead reducible to coded structures that can be read like a language. As Eugene Thacker writes, Watson and Francis Crick made sense of DNA through the emerging science of systems biology, which tapped into the 'postwar "buzz" around surrounding cybernetics and the information sciences' to conceptualise molecular biology as concerned primarily with 'coding'.[55]

Though based on an inaccuracy—Thacker notes that Crick and Watson's engagement with cybernetics 'was explicitly content-based and qualitative', while founder of the discipline Norbert Wiener's work was primarily quantitative—the alignment of DNA with systems theory contributed to a decentring of human existence, presenting the building blocks of life as part of relational processes with no absolute essence.[56] For Judith Roof, this aspect of DNA's inception contains an essential irony: 'while our idea of DNA centres the human as the agent of knowledge and the discoverer and decoder of a code that unfolds an orderly structure', Roof

[53] '1953: Viruses, Vol. XVIII', *Cold Spring Harbor Symposia on Quantitative Biology*, 2019 <symposium.cshlp.org/site/misc/topic18.xhtml> [accessed January 2019].
[54] James Watson, *DNA* (London: Arrow Books, 2004), p. xii.
[55] Eugene Thacker, *Biomedia* (Minneapolis: University of Minnesota Press, 2004), p. 146.
[56] *Ibid.*, p. 146.

notes, 'DNA's pervasiveness also threatens to decentre humanity as either central or biologically special, making people mere vessels for the perpetuation of a chemical that is a common denominator among species through history'.[57] Roof's study paints a picture of tension between the scientific humanist conception of DNA as a 'neat, binary, symmetrical, permanent, comforting, apparently coherent mechanism' that solidifies human identity on a microscopic scale, and the notion that this coherent picture is but one arbitrary iteration of a code that theoretically extends far beyond the human's own boundaries.[58] Much like the parallel discussions in virology and immunology between a bounded human body and an immunity that renders these boundaries necessarily porous, the idea of DNA as a coded language both grounded and destabilised conceptions of human identity.

Roof's analysis hinges upon her interpretation of DNA according to the logic of poststructuralist linguistics. In providing structure to human identity, DNA also showcases the dependence of this identity upon its own iterability—a term that Roof, paraphrasing Jacques Derrida, summarises as 'the ability to restate without repeating, since every utterance occurs in a different context'.[59] Language, in other words, exists only in 'coincidence with meaning', in a framework that looks beyond structure towards 'more systemic understandings of iterated instances'.[60] In outlining his cut-up writing praxis via what he describes as the tape recorder technique, Burroughs demonstrates his own privileging of context over structure. Hinting first at the idea that DNA and language contain subliminal yet stable meanings that are revealed when speech is sped up, played backwards, or spliced, Burroughs goes on to search for new kinds of meaning in nonhuman contexts:

> you can carry this experiment further using as your original recording material that contains no words animal noises for instance record a trough of slopping hogs the

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[57] Judith Roof, *The Poetics of DNA* (Minneapolis: University of Minnesota Press, 2007), p. 32.
[58] *Ibid.*, p. 32.
[59] *Ibid.*, p. 55.
[60] *Ibid.*, p. 55.

barking of dogs go to the zoo and record the bellowing of Guy the gorilla the big cats growling over their meat goats and monkeys now run the animals backwards speed up slow down and inch the animals and see if any clear words emerge see what the animals have to say see how the animals react to playback of processed tape (*TTE*, p. 160)

The meaning produced by language is coincident with the circumstances of any single utterance, with the semblance of structural truth dissolving for Burroughs upon his forensic disassembly of regular patterns of sense. While Burroughs's own technique of writing emphasises this argument, the reference to animal noises showcases a conception of language as already operating beyond the realm of the human, with human meaning functioning according to a logic of contingency, depicted as but one form of articulation that is always subject to re-iteration. Cutting up language draws our attention to the more-than-human attributes that already exist beneath the surface of perception. Resisting the control exerted by the language virus, Burroughs writes, begins with observing the extra-linguistic attributes of conversation—'you can study and analyse every pause and inflection'—that signify moments of potential outside the meaning confined to the words being spoken (*TTE*, p. 159).

Throughout the trilogy, Burroughs presents the vectors of meaning that occur otherwise to language's predestined trajectory as taking animal forms. In *The Soft Machine*, the primal origins of the language virus are depicted as a 'muttering sickness' that infects a group of apes.[61] Depicted first as viscous, gelatinous 'ape-forms' that seem to merge with their swamp environment, Burroughs writes the onset of the 'talk sickness' as giving the creatures shape:

> We waded into the warm mud-water. hair and ape flesh off in screaming strips. stood naked human bodies covered with phosphorescent green jelly. soft tentative flesh cut with ape wounds. fingers and tongues rubbing off the jelly-cover. body melting pleasure-sounds in the warm mud. till the sun went and a blue wind of silence touched human faces and hair. when we came out of the mud we had names (*SM*, p. 127).

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[61] William Burroughs, *The Soft Machine* (London: Flamingo, 1992), p. 127. All subsequent references will appear in the text.

Burroughs first depicts the creatures as forming a biological collectivity in which the boundaries between selves are blurred, followed by a dawning self-recognition brought about by the word sickness: 'dumb animal eyes on "me" brought the sickness from white time caves' (*SM*, p. 127). Subsequently, Burroughs depicts the virus as bestowing names upon the apes: 'the sound bubbling in the blood, quivering our throats and swap we had names for each other' (*SM*, p. 127). But far from a civilising force, naming induces a carnivorous hunger in the animals, who now live under the influence of the 'white worm-thing inside': 'I knew the thing inside me would always find animals to feed my mouth meat' (*SM*, p. 128). As well as turning the infected apes against those who do not succumb—'and some did not eat the flesh', Burroughs writes, 'and died because they could not live with the thing inside'—the virus also turns its hosts inwards upon their own biological selves: 'saw animals chase us with spears and woke eating my own hand and the blood in my mouth made me spit up a bitter green juice' (*SM*, p. 128). In addition to producing what Burroughs presents as a necessary violence towards those still coded as animal, the humanising language virus also induces a violent relationship with the human's own biological life. In this scenario, naming functions as a carving of flesh into new categories of being; a violent rending of the self into the mould cast by language's supposedly immutable structures.

In this passage, the indistinction of pure biological process—which for Finney is a trope used to emblematise the control exerted by the pod virus—marks a counterpoint to control's violent delineation of fleshly form. For Burroughs, the arbitrary separation between the categories of human and animal produced through the act of naming entails a necessary violence, with the devouring excess of the virus here denoting the practice of meat-eating as something essential and proper to the category of the human. The next section of the chapter will examine a similar thematics at work in Matheson's novel. But first, I want to examine how Burroughs's depiction of nonhuman life does not stop at his vision of a primal state before the

language virus assumes its hold; rather, as well as being associated with a sublime and formless state of biological indistinction, animals are used by Burroughs to thematise the automatic aspects of human life that render it vulnerable to control. In *Nova Express*, viral control is associated with the Insect People of Minraud: aliens who live in 'metal cities controlled by The Elders who are heads in bottles', and whose society forms an 'intricate bureaucracy wired to the control brains'.[62] As well as being associated with an exterior source of alien control, the insectile functions for Burroughs as a reflection of the human's own nervous system; wired into the control system of information exchange, the virus communicates with the human's pre-existing autonomic systems, the addictive junk of language 'serving insect pleasures of the spine' and tracing 'fossils of orgasm' that tap into the human's evolutionary heritage (*SM*, p. 28).[63] In *Naked Lunch* (1959), the spine appears itself as a giant centipede controlling the human from within: 'the Man wriggles…His flesh turns to viscid, transparent jelly that drifts away in green mist, unveiling a monster black centipede'.[64] In depicting the human's physiology of control as an insectile inner being, Burroughs differentiates his own cut-up practice from an automatic animality to which he views the human as susceptible.

While the idea of an internal automatism works in Finney's novel to undermine the values of liberal humanism from within, for Burroughs the idea of an insectile cybernetic language machine serves to unwittingly reinforce such a humanism. In seeking to resist the

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[62] William S. Burroughs, *Nova Express* (London: Penguin, 2014), p. 71.
[63] Burroughs's interest in the spine mirrors the work of J. G. Ballard, on whom my next chapter focuses. Associating the spine equally with the human's evolutionary past and its verticalised, technological futures, Ballard's spinal imaginary paints an ambiguous picture of the evolutionary impulses serving narratives of Promethean mastery over technology. Burroughs, meanwhile, associates the spine with the control systems that his writing praxis seeks to resist. Thomas Moynihan writes that in corresponding with Ballard, Burroughs 'commended as "most interesting" the British author's "concept of a lost sacral brain". Burroughs, who was also fascinated with the loops between "inner space" and "outer space", himself saw the vertebral column as a writhing inner bone-centipede. Nerves, along with all other control systems were his sworn enemy. He imagined a surgical procedure to abbreviate a patient's body to nothing but an unappendiculated "spinal column", thereby creating a chilopodic monstrosity'. See Thomas Moynihan, *Spinal Catastrophism: A Secret History* (Falmouth: Urbanomic, 2019), p. 103.
[64] William S. Burroughs, *Naked Lunch* (London: Penguin, 2015), p. 87.

hold of language over the nervous system, Burroughs mirrors what Roof describes as the paradoxical association between humanism and the discovery of DNA: as the decoder of the control mechanisms of language, the cut-up writer assumes a position of agency against the automatic, insectile way of being that he has escaped from. In this regard, it is difficult not to read Burroughs as himself the embodiment of the 'free thinking' subject that Finney makes his protagonist, perfectly modelling the idealised postwar individual in his scrutinisation of language's subliminal influences. While the random nature of the cut-up practice functions ostensibly as a divestment of control, assembling decontextualised chunks of text-material into perverse amalgamations that push at the boundaries of sense, it is precisely Burroughs's location of subliminal meaning in the material—in this case, an original automaticity to the human—that reintroduces the operation of mastery into his project. In this regard, the cut-up technique functions ultimately as a way of performing humanity according to a traditional, Cartesian formula that sees human life as ontologically separate from animal-machines.

While Burroughs remains indebted to the logics of control that he evocatively diagnoses, his fiction nevertheless associates viral infection with a discourse of species, depicting the language virus as producing a dynamic and shifting set of meanings across human and animal bodies. In the final section of the chapter, I argue that Matheson's novel *I Am Legend* offers a fuller development of the ideas expressed by Burroughs in *The Soft Machine*, associating the devouring expansion of viral infection with the impulse, necessary to the properly human, to consume meat. While Burroughs associates meat consumption with primal man's turning against his own animal self, Matheson's novel situates its depiction of meat eating within a wider exploration of sovereignty, individuality, and (auto)immunity that elucidates the biopolitical field of inclusion and exclusion cast by the framework of postwar universalism.

IV. Sovereignty, Autoimmunity, and Kinship in Richard Matheson's *I Am Legend*

In *The Vampire Lectures*, Laurence Rickels argues that

> By the eighteenth century vampirism had become synonymous with contagious disease. Circulation was the newly discovered order of the day. With it came notions of contagion and quarantine that would in time set up passport controls between states but led right away to the move to segregate what was dead from the living.[65]

The vampire myth, for Rickels, is premised historically upon a spatial separation of the living and the dead. Fears of viral contagion and increasing biopolitical structures of hygiene fed into an adjacent fear concerning the blurring of boundaries between life and death: by the end of the nineteenth century, Rickels notes, 'the last will and testament regularly packed the proviso that the body not be buried until the heart had been pierced. With the dread of premature burial one could no longer be certain that the dead *were* dead or dead *enough*'.[66] Richard Matheson's *I Am Legend* transports this well historicised myth into a cold war context. Told from the perspective of Robert Neville, the last remaining survivor of a pandemic that transforms earth's population into hordes of undead, Matheson's novel troubles the boundaries between life and non-life that this chapter has argued structure the constitution of human identity in the mid-century viral imagination. As Laura Diehl observes, 'Matheson writes Neville's immunity […] as the root cause of his demise. His desire to retreat to some original state of purity increasingly becomes a symptom of his own disease'.[67] Indeed, the ending of *I Am Legend* actualises the dissolving of the boundary between life and death that structures the originary vampire myth: Neville discovers that he is now 'other' to a new regime of normalcy established by the community of living dead, and is put to death as a last remnant of a 'humanity' confined to the

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[65] Laurence A. Rickels, *The Vampire Lectures* (Minneapolis: University of Minnesota Press, 1999), p. 18.

[66] *Ibid.*, p. 22.

[67] Laura Diehl, 'American Germ Culture: Richard Matheson, Octavia Butler, and the (Political) Science of Individuality', *Cultural Critique*, 85 (2013), 84-121, (p. 103).

pages of history.

Matheson's novel transports the context of contagion from the trappings of communism and mass-culture into the realm of nuclear annihilation. Published the same year as John Foster Dulles's declaration of America's 'massive retaliatory power' against the Soviet Union, the desolate world of *I Am Legend* evokes nuclear catastrophe while maintaining a subtext of nuclear testing as possible explanation for the world-ending pandemic.[68] Just as nuclear defence endangers the very populations that it purports to protect, Matheson depicts Neville's immunity as a dual figure of protection and endangerment, defining the conditions for his embodiment of the sovereign human individual and at the same time undermining the consistency of such an identity. But rather than focusing on the nuclear contexts of the novel, I want to illustrate how Matheson's viral apocalypse engages with a discourse of species that depicts human sovereignty and animality as caught in a relationship of mutual co-implication, with immunity at once denoting the kind of bounded individuality expressed in Martin's image of the 'body at war' and at the same time a contaminated, porous relationship with a teeming nonhuman outside.

Just like Finney and Burroughs, then, Matheson depicts human identity as infused with elements of the not-human, using the trope of viral infection to undermine the humanist mythology of an immaterial difference separating human and animal life. But Matheson's novel differs from both other authors in its treatment of immunity as a multispecies concept, denoting multiple and varied ways of relating to both the animality within—and nonhuman animals outside—the boundaries of the human. Focusing on the interlocking themes of kinship and sovereignty, I argue that in undermining the schema of human individuality, *I Am Legend* depicts a biopower that itself depends upon fluid and shifting categories of species difference,

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[68] John Foster Dulles, 'The Evolution of Foreign Policy', *Department of State Bulletin*, 30 (1954), 107-110, (p. 108).

for which rubrics of kinship and companionship are co-determined with the sovereign right to kill. In blurring the boundaries between living and dead, Matheson also depicts a biopolitical merging of the two positions; a sovereignty that, in its own co-implication with an animality that undermines it, produces living death as a discursive category applied to any who fall outside the immunitary frame.

In his article 'Necropolitics', Achille Mbembe outlines a theoretical framework that links the state of living death to the fundamental questions of biopolitics set out by Foucault. For Mbembe, Foucault's formulation of biopower 'appears to function through dividing people into those who must live and those who must die. Operating on the basis of a split between the living and the dead, such a power defines itself in relation to a biological field—which it takes control of and vests itself in'.[69] The categories and subdivisions that result from the constitution of the human according to the criterion of species manifest for Foucault, as for Mbembe, along racial lines: 'in Foucault's terms, racism is above all a technology aimed at permitting the exercise of biopower, "that old sovereign right of death"'.[70] As a technology of classification, however, race for Mbembe functions in a more complex way than simply delineating who must live and who must die. Engaging with Georges Bataille, Mbembe notes that

> For Bataille, death reveals the human subject's animal side, which he refers to moreover as the subject's "natural being". "For man to reveal himself in the end, he has to die, but he will have to do so while alive—by looking at himself ceasing to exist", he adds. In other words, the human subject has to be fully alive at the very moment of dying, to be aware of his or her death, to live with the impression of actually dying. Death itself must become awareness of the self at the very time that it does away with the conscious being.[71]

Far from representing the remainder to biopolitical designations of those who are killable, Mbembe inserts death into the ongoingness of biopolitical subject formation: 'necropolitics',

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[69] Achille Mbembe, 'Necropolitics', *Public Culture*, 15 (2003), 11-40, (p. 17).
[70] *Ibid*., p. 17.
[71] *Ibid*., p. 38.

in this sense, notates a subject formation premised on the maintenance of a state of living death that declares its subject both killable and always already undead. Mbembe's introduction of death into the logic of biopolitics thus describes, as well as the multifaceted production of death in life found in colonial technologies of race, an ontological problem relating to proper separation between life and death, healthy and sick, and human and nonhuman. As my reading will go on to suggest, the state of living death constructed in *I Am Legend* cuts across the boundaries between the properly human and the nonhuman to indicate a shifting and discursive biopolitics of species that mediates the line between life and death. What appears at first to be a stable separation between the human and its outside, for Matheson, becomes lost in the aporetic logic of necrosis directed both inwards, towards the 'animal' residing within the human, and outwards towards the nonhuman world.

Matheson's vampire apocalypse appears to function, on first reading, according to a more stable system of separation between the inside and outside. Neville's embodiment of the immune individual follows a similar logic to that laid out by Esposito under the rubric of 'the paradigm of immunisation'. Individualism, in this account, functions firstly 'as the immunitary ideologemme through which modern sovereignty implements the protection of life'.[72] In other words, for Esposito, the creation of 'the individual', as the bounded subject of sovereignty's regulation and protection of life, serves as one of the most fundamental ways in which biopolitics guards against the excesses of community via immunitary protection. Esposito goes on to argue that

> Individual literally means this: to make indivisible, united in oneself, by the same line that divides one from everything else. The individual appears protected from the negative border that makes him himself and not other (more than from the positive power of the sovereign). One might come to affirm that sovereignty, in the final analysis, is nothing other than the artificial vacuum created around every individual— the negative of the relation or the negative relation that exists between unrelated

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[72] Esposito, *Bíos*, pp. 60-61.

entities.[73]

For Esposito, sovereignty functions as the force behind the production of an 'artificial individualisation', protecting life via constructed notions of security, property, and liberty.[74] Each of these constructions negates the formation of community that Esposito associates with the burgeoning, expansive view of life left to its own devices, instead forming divisions between entities based upon their collective rights and protection *as individuals*. In keeping with the tradition of thought outlined by Esposito, Matheson constructs Neville as the individual *par excellence*. Neville's very existence post-apocalypse, and his embodiment of the figure of the 'last man', means that the artificial vacuum identified by Esposito is written into the narrative structure of *I Am Legend*. Moreover, Neville's immunity to the disease, brought about by a bite from a vampire bat years previously, ensures that despite the trials to which he exposes his body, paired with the danger from the feral vampires which circle his house every night, Neville remains protected from the virus which poses the ultimate threat to his health.

On top of his isolation, the 'artificial vacuum' of sovereignty is maintained for Neville through an active pursuit of a scientifically grounded classification of the vampire virus. Diehl describes this science, which mirrors Miles's categorising impulse in *Body Snatchers*, as an 'eminently penetrative practice whose discoveries literally kill';[75] Neville eventually discovers the secret of the bacteria, dubbed *vampiris*, through patrolling the houses in his neighbourhood by day, killing vampires in a variety of experimental ways as they sleep. In his work *The War Against Animals*, Dinesh Wadiwel expands Esposito's theorisation of sovereignty and the individual in a way pertinent to this systematic violence. For Wadiwel, the biopolitics of

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[73] *Ibid.*, p. 61.
[74] *Ibid.*, p. 61.
[75] Diehl, 'American Germ Culture', p. 104.

immunity notates a process whereby 'the human seeks to "immunise" itself from animals through material and symbolic violences'.[76] The vacuum surrounding the individual necessitates, for Wadiwel, a form of hierarchised difference:

> our war on animals is characterised by a relation where human freedom is premised upon the unfreedom of non-human animals. Esposito provides a way to describe the precise rationality of this form of domination. This is not simply a matter of utilitarian use for human pleasure; on the contrary, it seems to go deeper than this. Human freedom is constructed as a negative relation that seeks its reassurance, its *insurance*, from the unfreedom of animals.[77]

Neville's scientific endeavour certainly provides such insurance in the maintenance of his individuality. Through the process of eliminating the myth surrounding the vampire—in Matheson's world, aversion to the cross is experienced only by those vampires who were devout Christians before their infection—Neville can identify the bacillus as his true and singular enemy. 'For now', he muses, 'that prowling, vulpine ghost was as much a tool of the germ as the living innocents who were originally afflicted. It was the germ that was the villain. The germ that hid behind obscuring veils of legend and superstition'.[78]

As Matheson's use of 'vulpine' suggests, the sense of reason that accompanies Neville's identification of the virus translates into an adoption of the model of human subjectivity that Wadiwel identifies. As well as fox-like in their occupation of the city streets at night, the infected appear to Neville as 'white-faced men prowling around his house, looking ceaselessly for a way to get in at him. Some of them, probably, crouching on their haunches like dogs, eyes glittering at the house, teeth slowly grating together' (p. 10). Here, animality serves as a measure of monstrosity, functioning through a discourse of species which, in Wolfe's words, at once declares 'the ethical acceptability of the systematic "noncriminal

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[76] Dinesh Wadiwel, *The War against Animals* (Leiden: Brill, 2015), p. 129.
[77] *Ibid*., pp. 137-138.
[78] Richard Matheson, *I Am Legend* (London: Gollancz, 2006). All subsequent references will appear in the text.

putting to death" of animals' and at the same time 'can be used to mark *any* social other' through a discursive application of 'animality'.[79] The fact that the vampires are here described as 'men' and 'like dogs', as well as producing an uncanny sense of subjectivity with their glittering eyes reminiscent of Finney's pod people, signals that Matheson's version of the monstrous serves dual purposes: the vampires at once stand for a tragic loss of humanity while also remaining necessarily killable in their animality.

While the liminal placement of the vampires somewhere between the human and the animal justifies Neville's project of scientific slaughter, as Matheson's novel progresses it becomes clear that even in his embodiment of the sovereign individual, Neville himself is not exempt from the dynamic and shifting discourse of species. As the final two examples from Matheson's text that I examine suggest, however, these digressions away from Neville's humanity themselves paradoxically feed into the latent sense of the 'properly human' in *I Am Legend*. My first example relates directly to Wadiwel's leading object of concern: the industrial slaughtering of animals for food. After making a particularly successful breakthrough in his categorisation of the germ, Neville 'discovered that he was ravenous. He got a steak from the freezer, and while it was broiling he took a fast shower. […] The steak he finished to the bone, and he even chewed on that' (pp. 78-79). The particularly carnivorous manner with which Neville consumes the steak here ties into a process of animalisation linked to Neville's deteriorating mental state in his isolation: soon after this moment, Neville breaks down and declares 'I'm an animal! […] I'm a *dumb, stupid* animal and I'm going to drink!' (p. 82).

In this moment of elevated catharsis, Matheson's use of the term 'animal' describes a specific kind of vulnerability experienced by Neville: his progress as detective-bateriologist is momentarily suspended as he descends into a frenzied destruction of his surroundings. In *The*

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[79] Cary Wolfe, *Animal Rites: American Culture, the Discourse of Species and Posthumanist Theory* (Chicago: University of Chicago Press, 2003), p. 7.

Beast and the Sovereign, Derrida outlines what he sees as a paradoxical co-determination between the figures of beast and sovereign, located in the way both represent positions outside the regular function of the law. In this scene, Neville is haunted by an animality that appears diametrically opposed to his individuated humanity, and yet at the same time shares with sovereignty an equivalent positioning outside of the law. Neville's eating of the steak reproduces what Derrida describes as this 'profound and essential ontological copula' in which 'the beast becomes the sovereign who becomes the beast'.[80] In the first instance, this occurs according to Derrida's location of sovereignty in the

> […] mouth, teeth, tongue, and the violent rush to bite, engulf, swallow the other, to take the other into oneself too, to kill it or mourn it. Might sovereignty be devouring?[81]

Matheson's use of the term 'ravenous' places Neville within the schema here outlined by Derrida: the consumption of the steak is an act at once animalised, or bestialised, and absolutely sovereign in incorporation of the 'other' into Neville's self through the act of devouring. While the microscopic focus on the term 'bone' in *Body Snatchers* notates the horror of the human's replicability from its most core material components outwards, here 'bone' describes the opposite process of Neville's act of consuming *inwards* to the utmost excess. This excess is emphasised, moreover, in Matheson's use of the term 'even': not only does Neville finish the steak to the bone; *he even chews on that*. The effect of this clause, considering Derrida's observations, is to emphasise that far from being a single act that straightforwardly produces meaning, meat-eating can be performed to varying degrees as part of the policing of symbolic boundaries. In this instance, the absolute degree to which Neville devours the meat is that of the sovereign-beast: a state of exception premised upon a necessary relish in the eating of flesh.

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[80] Jacques Derrida, *The Beast and the Sovereign: Volume I* ed. by Michel Lisse, Marie-Louise Mallet, and Ginette Michaud, trans. by Geoffrey Bennington (Chicago: Chicago University Press, 2009), p. 18.
[81] *Ibid*., p. 23.

The particular focus given by Matheson to Neville's carnivorous hunger reflects the role often played by meat-eating in popular representations of infection at midcentury. In a *Life* feature published the same year as *I Am Legend*, readers are encouraged to eat meat in an effort to bolster the body's ability to 'fight back' against infection; meat is responsible, the advert claims, 'for helping you ward off "the colds you didn't catch"'.[82] Represented as assuming the role of a raincoat that wards off infection from a child body's outer limits, meat is associated here with a bounded and sovereign human subjectivity, policing the negative boundaries essential to the ongoing existence of the individual. But far from reproducing this straightforward association between meat and individuality, Matheson constructs Neville's ingestion of flesh as evidencing his dual embodiment of both beast and sovereign; a logic which, as Derrida writes, involves an act of mourning as one mode of taking 'the other into oneself'.[83] This complex affective supplement to the notion of sovereignty plays out in *I Am Legend* when one day a dog arrives at Neville's house. Overcome with shock and emotion at the sight of another living creature, Neville calls out in the hope of gaining the dog's attention, 'everything lost' suddenly in his need to catch and look after the animal (p. 84). Unable to find the 'brown and white, breedless', and 'gaunt' dog, Neville proceeds over multiple days to leave food outside his house, ever worrying about the newly unthinkable eventuality: 'what if he went out the next morning and found the dog's body on the lawn and knew that he was responsible for its death? I couldn't take that, he thought miserably. I'll blow out my brains if that happens, I swear I will' (pp. 84-85). Neville's insulated individuality becomes complicated by the simple yet profound sense of kinship felt between him and the dog during this lengthy passage of Matheson's novel. As well as 'the feeling of warmth and normality it gave him to see the dog slurping up the milk and eating the hamburger', Neville experiences long

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[82] 'Changeable Weather Ahead! Meat—and how it helps you resist infections', *Life*, 4 October 1954, p. 113.
[83] *Ibid*., p. 23.

abandoned feelings of compassion and empathy:

> He forced himself to think of what the dog must have gone through. The endless nights of grovelling in the blackness, hidden God knew where, its gaunt chest labouring in the night while all around its shivering form the vampires walked. The foraging for food and water, the struggle for life in a world without masters, housed in a body that man had made dependent on himself (pp. 89-90).

This example of cross-species empathy complicates Neville's bounded human individuality: the flow of affect that takes place between him and the dog suddenly becomes instrumental in the continuation of Neville's very existence. Closer inspection of Neville's speculation about the dog's experience, however, alters the nature of this relational bond. The concern for the dog's supposedly inevitable 'struggle for life in a world without masters' reproduces a certain commitment to sovereignty as a precondition for their 'kinship': the dog's life is only conceivable to Neville in its relation to a necessarily human 'master'. As Esposito would put it, the excess of life left to its own devices—the dog's ongoing existence in a literally post-human world—is curtailed by the immunitary structure which protects the individual from the dangers of purely conceived community. In this instance, this biopolitical law dictates that instead of being recognised as a valid 'form of life' in and of itself, the dog must be viewed as part of the immunised vision of cross-species community which here falls under the term 'companionship'. The dog's death from the infection soon after Neville coaxes it into his house is thus tragic precisely because of the loss of the benefits, for Neville, of this anthropocentric mythology.

The loss of this particular vision of the human as co-shaped by its companion species thus sits comfortably alongside Neville's slaughter of the vampires and carnivorous consumption of animal flesh. Along similar lines, Wadiwel identifies an emerging trend within animal studies towards considerations of the complex, entangled and co-dependent relationships between human and nonhuman animals over contextual arguments which apply

(Figure 2)

'a normative view to human utilisation and slaughter'.[84] Relationality and kinship, in other words, here bolster the biopolitical framework which delineates who is necessarily put to death. Likewise, the end of Matheson's novel marks a moment of annihilation which, while ostensibly dislocating the human subject which has so far been triumphantly preserved in Neville, in reality establishes Neville's death as the ultimate signifier for the universalisation of this subject into an indefinite future. Nicola Bowring observes that with the assertion of 'I *am* legend', Neville defines 'the concept of legend as his new, inhuman, powerless identity, as a mythical figure rather than an individual, narrat*ive* rather than narrat*or*'.[85] While it is true that Neville himself loses his powerful, material immunity in death, his admission of himself as 'a new terror born in death, a new superstition entering the unassailable fortress of forever' establishes a concrete humanist futurity which defines Matheson's version of the end of the world (p. 161). Indeed, just as Neville upheld a structure whereby all vampires were subject to sacrifice, the new regime, as one of its members describes, delineates vampires brought back from the dead as necessarily killable: 'we can't allow the dead to exist beside the living. Their brains are impaired, they exist only for one purpose. They *have* to be destroyed' (p. 157). Despite Neville's becoming-other, then, Matheson's 'end of the world' describes a continuation of the biopolitical logic whereby those coded as other are necessarily put to death in the maintenance of symbolic and material boundaries.

In its depiction of a viral biopolitics dictated by the violent operation of species difference, Matheson's novel showcases a logic that emerges across the texts that the chapter has traced: that despite the viral narrative's undermining of the systems of meaning that produce the human subject, the ontological exclusivity of such a subject prevails. For Finney, the undermining of the properly human found in the biological excess of the pod people is

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[84] Wadiwel, *The War against Animals*, p. 7.
[85] Nicola Bowring, 'Richard Matheson's I Am Legend: Colonisation and Adaption', *Adaption*, 8 (2015), 130-144, (p. 138).

rerouted into recognisable gender formations, stabilising the human in the operation of its eroticised optics across human and alien replicant. In Burroughs, meanwhile, we find a perverse dismantling of human identity in the cut-up method that nevertheless re-enshrines its own form of mastery; a dismantling of species-sense into an amalgam of disembodied parts that are studied for their subliminal meanings and reassembled by the writer in a reassertion of agency against the forces of control. Not only found in cultural texts, this logic is repeated across representations of findings in immunology and the study of DNA, with the porosity of the human's external boundaries and the coding of genetic identity decentring the subject only to reassert its essential consistency. In this regard, the viral narratives of midcentury precipitate a logic that the thesis will continue to trace throughout several further points of intersection between science and culture during the cold war. As signalled by Burroughs's cybernetic imaginary, the conception of the human as taking part in systems of communication that blur the lines between animal and machine serves to undermine traditional humanist ways of knowing, demonstrating attributes such as agency and free will—once mainstays of the humanist self-image—to be phenomena distributed within a multispecies-cyborg conception of relational worlds. The following chapter will turn to an examination of the apocalyptic worlds of J. G. Ballard, whose fiction destabilises the human's projection of itself into the future, depicting instead an involuntary, animal heritage that erupts from within. The relational humanity depicted by Ballard—and that returns throughout the thesis—both challenges humanist norms and provides the conditions for new biopolitical formations that mark a continuation, and intensification, of humanist rubrics of exclusion.

Chapter Two

Nuclear Futures and Geological Life: J. G. Ballard's Lively Inhumanisms

Introduction

In a 1970 interview with Lynn Barber, J. G. Ballard summarises the relationship between futurity, science, and American identity that informs his fiction:

> One could say that the moon landing was the death knell of the future as a moral authority. No one thinks that the future is going to be a better place—most people think it's going to be a worse place. The moral authority of science was colossal in the 1930s. […] But the idea that science was building a bigger and better world ended with Hiroshima and Eniwetok. Now people feel that science may not bring a better world, but a nightmare. Dr Barnard may really be Dr Moreau. Now people are frightened of science and they're frightened of the future. They no longer feel that because something's going to happen tomorrow it's going to be better than today. […] So the idea of America is dead, I think, because America was built on the assumption that tomorrow was a better day. The American Dream is the American Nightmare now.[1]

Taking aim at the optimistic projections of scientific humanism in the postwar period, Ballard envisions scientific progress as an apocalyptic force, inverting the notion that the technological developments of the mid-twentieth century secure hopeful futures for a Britain and United States that see themselves as forging a world beyond the atrocities of the Second World War. Such an attitude structures Ballard's fiction from the 1970s, with novels such as *Crash* (1973) and *Concrete Island* (1974) depicting violent futures that infuse the technological-everyday. But Ballard's formation of the 'American Nightmare' also permeates his novels and short stories from the early to mid-1960s; a period in his career defined by apocalypse narratives that are legible from a contemporary critical perspective as early examples of climate-fiction. In these texts, Ballard depicts different versions of the 'end of the world' brought about by

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[1] J. G. Ballard, '1970: Lynn Barber. Sci-fi Seer', in *Extreme Metaphors: Interviews with J. G. Ballard 1967-2008* ed. by Simon Sellars and Dan O'Hara (London: Fourth Estate, 2012), pp. 22-26 (p. 24).

inhuman environmental processes. In one regard, these apocalyptic narratives undermine Ballard's later comments on technology: instead of depicting nuclear war or any other kind of anthropogenic catastrophe, Ballard focuses repeatedly on environmental changes that have no apparent connection to human ways of life; inhuman cataclysms that produce radically new environments within which the human must place itself anew. But in another sense, Ballard's ecological disasters function as surrealist reflections of a contemporary world defined by its own developing inhumanisms. Rather than attributing to technology a clear relationship with future disaster, Ballard depicts worlds in which disaster is already distributed between worlds that exist both for and despite the human.

In arguing that Ballard's writing from the 1960s exhibits such a mode of contemporary apocalypticism, the chapter reads his work through the lens of vital materialism: a theoretical field that remodels humanist conceptions of agency as taking place within networks of in- and nonhuman actors. But rather than simply providing a framework through which to view Ballard's work, vital materialism provides a language for describing what I argue is Ballard's own unique imaginary: an inhumanism that combines the depiction of material agencies with a biopolitics of matter and mattering. Ballard's apocalyptic worlds, in other words, illustrate how matter is interwoven with processes of subjectification, depicting catastrophic scenarios in which the upheaval of material systems produces new forms of biopolitical exclusions.

The first section of the chapter provides a context for this enquiry across the locations of popular environmentalism, nuclear science, and ecosystem theory in the 1960s. The section argues that between these locations, a vitally material imagination appears based around a co-determinate (and sometimes complicit) relationship between ideas about ecological relationships and toxic harms. As well as providing a backdrop for Ballard's depictions of lively matter, I argue that this context feeds into the biopolitical significance of his fiction, with the flattened ontological space created by this vitally material imaginary creating space for new

kinds of biopolitical violence. The next section reads Ballard's story 'The Terminal Beach' (1964) alongside the simultaneous context of nuclear futurism; I argue that the material figure of the bunker in this story serves to localise the competing temporalities of nuclear science. The final two sections develop this argument with reference to another material figure that merges with the bunker in Ballard's story: the fossil. In tracing Ballard's fossil imaginary through *The Drowned World* (1962), *The Drought* (1965), and 'Now Wakes the Sea' (1967), the section reads fossils as agents in a recalibrated form of multispecies ethics that characterises Ballard's generative visions of apocalypse. Finally, the chapter argues that fossilisation functions simultaneously for Ballard as a material-biopolitical process. Supported by the work of Katherine Yusoff and Mel Y. Chen, this final section theorises a form of geological life depicted by Ballard, whereby categories of species difference and colonial status are interwoven with the material flows of the geological.

I. Strategic Materialisms: Lively Matter, Species Difference, and the Cold War

In her book *Vibrant Matter*, Jane Bennett draws our attention to 'the extent to which human being and thinghood overlap, the extent to which the us and the it slip-slide into each other'.[2] Outlining what she terms as 'thing-power', Bennett theorises a vibrant materiality that locates the affective potential of the inanimate 'thing' not simply in the properties and potentials ascribed by human processes of meaning-making, but in the ability of 'things' to interact with the world in a way that proceeds without any sense of the human.[3] Bennett emphasises that thing-power allows for a picture to be painted of a 'knotted world of vibrant matter', in which 'to harm one section of the web may very well be to harm oneself. Such an enlightened or

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[2] Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham: Duke University Press, 2010), p. 4.
[3] *Ibid*., p. 2.

expanded notion of self-interest *is good for humans*'.[4] Additionally, though, the human's implication within a complicated web of in- and non-human actors muddies the waters of what can be straightforwardly declared as 'human': 'we *are* vital materiality and we are surrounded by it'.[5] The uncanny commonality located here between humans and things brings to light a space between what can be thought as the cultural production of the 'properly' human—brought about via relationships with language, speech and technology, as well as a host of other avatars—and the material constitution of the human animal as inhuman, coded molecular structure or vulnerable, permeable flesh. With violence directed towards the nonhuman world so frequently attributed to a homogenous *anthropos*, Bennett notes that an awareness of the material commonality shared between human, nonhuman, and thing should 'induce vital materialists to treat nonhumans—animals plants, earth, even artefacts and commodities—more carefully, more strategically, more ecologically'.[6]

Bennett's theory has been influential in the field of new materialism, which at a broad level seeks to understand how material 'actants' exert forms of agency that cannot be reduced to traditional anthropocentric and humanist understandings.[7] But Bennett's description of the task of vital materialists—to treat nonhuman actants more 'strategically'—contains a seed of meaning that links her theory to a wider history of vital materialist thinking. In this section, I attempt to trace an outline of the part of this history that takes place between the actions of the United States security state and a growing public environmental consciousness in the 1950s and 1960s. The point in using Bennett's phrasing to frame this enquiry is straightforward: in this period, developing awareness of toxic dangers—as well as the strategic institutional forces that both cause and conceal these dangers—bring into stark relief the interrelationality between

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[4] *Ibid.*, p. 13.
[5] *Ibid.*, p. 14.
[6] *Ibid.*, pp. 17-18.
[7] *Ibid.*, p. 3.

the worlds of human life and material 'things'. I argue that this imaginary feeds into the de-anthropocentric work that Ballard produces in the early 1960s, contributing to his construction of worlds in which the human is decentred and situated as part of nonhuman networks of agency. But while Ballard's work is usefully legible through the contemporary theoretical rubric set out by Bennett, I want to show how his fiction at the same time theorises an alternative model of vital materialism informed by the context of cold war environmentalism. In Ballard's apocalyptic worlds, objects exhibit peculiar and unexpected forms of agency, activating drives and desires that proliferate from within the human as an inheritance from its nonhuman evolutionary heritage. As a result, Ballard's depictions of the end of the world precipitate a reorganising of ontological categories based on a new, inhuman norm; a flattening of the boundaries between the properly human and the material actants that exert agency both through and despite the human. But Ballard's vitally materialist imaginary also depicts a fluid, discursive logic of species difference that persists through this flattened ontological field. Rather than focussing on flattened networks of interrelation brought about by a definition of material 'actants', the examples I give here illustrate how the cold war military-industrial complex produces configurations of matter which in turn produce biopolitical processes of subjectification.

Perhaps the most important text in the production of this imaginary is Rachel Carson's *Silent Spring*, published the same year as Ballard's *The Drowned World*. Detailing the widespread damage wrought by a chemical industry that had seen unprecedented growth in the postwar period, Carson's book emblematises the growth of a popular environmental consciousness in the 1960s. As Sarah Daw argues, in seeking to emphasise the scale of the damage wrought by chemical agents, Carson employs 'her contemporary society's prevailing presentation of Nature as othered and conquered, as well as drawing on recognisable American

literary traditions'.[8] This is most visible in the first lines of Carson's work, in which environmental damage is metaphorised as a 'strange blight' creeping over an American pastoral idyll, with the Romantic purity of nature threatened by the onset of technological modernity. While this description appears to reproduce the categories of 'human' and 'nature' as ontologically distinct, Daw argues instead that Carson's literary descriptions mark a 'strategic' engagement with her popular audience.[9] Indeed, far from reproducing an idea of nature as separate from the human, *Silent Spring* mobilises ideas of ecological harm in order to emphasise the complex co-constitution between the two. As well as illustrating that the creeping darkness described in her first chapter is a direct reflection of the human's own actions, Carson presents chemical toxicity as ubiquitous, writing that 'the central problem of our age has [...] become the contamination of man's total environment'.[10] Far from a problem concerning an external nature that must be managed more effectively, Carson's emphasis is on the globalised biomobility of chemicals: 'They have been found in fish in remote mountain lakes, in earthworms burrowing in soil, in the eggs of birds—and in man himself'.[11]

For Carson, there is no 'outside' to the all-encompassing contamination that she reads as defining the postwar period. 'To find a diet free from DDT and related chemicals', Carson writes, 'it seems one must go to a remote and primitive land, still lacking the amenities of civilisation'.[12] Rather than fetishising non-Western spaces as somehow pure and untouched, Carson's target here is a 'civilisation' defined as an emblem of technological mastery, and constructed as immune to the dangers of its own creation through an artificial separation between human life and nature. As Derek Woods argues, this aspect of Carson's argument revolves around a logic of autoimmunity: 'we introduced the chemical tide in order to protect

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[8] Sarah Daw, *Writing Nature in Cold War American Literature* (Edinburgh: Edinburgh University Press, 2018), p. 13.
[9] *Ibid.*, p. 13.
[10] Rachel Carson, *Silent Spring* (Boston: Mariner Books, 2002), p. 7.
[11] *Ibid.*, p. 13.
[12] *Ibid.*, p. 178.

ourselves against pests and infectious dangers', Woods writes, 'but the means of immunity loop back to become autoimmune'.[13] The protective function of chemicals hinges upon an imagined boundary between the object of immune security and its threatening outside; Carson's point is to show that with no such monolithic boundary in existence, chemical immunity is always already autoimmune, turning back against the same body it is designed to protect.

As well as marking a central irony within Carson's argument, Woods's interpretation helps to establish why it might be useful to view *Silent Spring* through the lens of vital materialism. Understood as forming an immunitary logic, the chemical defence systems analysed by Carson signify an imagined kind of purity, with the world of the human protected from a particular realm of life—diseases, pests, and weeds—that are deemed threatening. Such a perspective reproduces the virological mode of immunity examined in the previous chapter, in which the distinction between the human body and its dangerous outside is maintained. In deconstructing this mythology, Carson's text disavows narratives that view modernity as a pure and coherent process, instead arguing that contamination and complicity function as central features of technological progress. As humans are rendered at risk from toxic actants, the relationship between the two becomes horizontalised, and as Bennett writes, our attention is drawn 'sideways, away from an ontologically ranked Great Chain of Being and toward a greater appreciation of the complex entanglements of humans and nonhumans'.[14] Carson illustrates this process—the movement from immune to autoimmune, purity to complicity, hierarchical to horizontal—as a form of disenchantment:

> The world of systemic insecticides is a weird world, surpassing the imaginings of the brothers Grimm—perhaps most closely akin to the cartoon world of Charles Addams. It is a world where the enchanted forest of the fairy-tales has become the poisonous

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[13] Derek Woods, 'Corporate Chemistry: A Biopolitics of Environment in Rachel Carson's *Silent Spring* and Richard Powers's *Gain*', *American Literary History*, 29 (2017), 72-99, (p. 77).
[14] Bennett, *Vibrant Matter*, p. 112.

forest in which an insect that chews a leaf or sucks the sap of a plant is doomed. It is a world where a flea bites a dog, and dies because the dog's blood has been made poisonous, where an insect may die from vapours emanating from a plant it has never touched, where a bee may carry poisonous nectar back to its hive and presently produce poisonous honey.[15]

The world described here by Carson is infused with the logic of autoimmunity described by Woods, with the dangers of pesticide misuse represented as a fairy-tale fantasy of life turned against itself. But the passage also suggests that Carson's depiction of modernity's self-defeating impulses plays a role in making ecological relations legible. In articulating a way of thinking that moves beyond the illusion of a nature separate from human life, Carson follows the movement of toxicity from leaf to insect, dog to flea, and bee to honey. As well as being the figure of autoimmune danger, the toxin is also the marker of a relationality previously obscured by a fantastical depiction of the human's relationship with nature; a key to understanding the ecological vision of interconnection that, for Carson, is an essential part of resisting the harms of chemical modernity.

The importance of this vitally materialist aspect of *Silent Spring*—the fact that tracing the movements of chemical actants proves essential to the book's ecological vision—ties Carson's work to a wider history of complicity between ecological ideas and the harms that these ideas are used to diagnose. While Carson uses the ubiquity of chemical toxicity to outline ecological relations, hinting at an ironic relation of necessity between the two, researchers in radiation ecology produced work throughout the 1950s and 1960s that was linked directly to the interests of the security state. Joel B. Hagan's book *An Entangled Bank* is an essential text that traces this history. Following the careers of ecologists Eugene and Howard Odum, Hagan argues that atomic energy and ecosystem science developed concurrently, with nuclear science providing 'ecologists with an exciting new set of tools, techniques, and research

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[15] Carson, *Silent Spring*, pp. 32-33.

opportunities'.[16] The context of this dual development was a transforming relationship in the postwar world between academic science and the government of the United States: as Hagan writes, for scientific planners, the uncertainties of the cold war meant that 'military strength, economic growth, and human welfare seemed to depend upon [the] new partnership between the state and the scientific community'.[17] Born out of this partnership was the Atomic Energy Commission (AEC)—an agency designed to sever the association between nuclear science and the military, and a central organ of Eisenhower's Atoms for Peace program, which sought to install atomic energy as a vehicle for hopeful (rather than apocalyptic) futures in the public imagination. In 1954, the AEC employed the Odums to conduct an ecological survey of Enewetak atoll, part of the Marshall Islands in the Pacific and site of atmospheric nuclear testing since 1948. The Odums' study was a 'landmark in ecological research', providing a foundational account of symbiotic relationships in a self-regulating ecosystem.[18] But the study also heralded a new 'golden age' for funding in the life sciences, with the AEC sponsoring programs at universities across the United States.[19] Not only confined to a relation of sponsorship, the AEC provided ecologists with new tools and techniques, including radioactive tracers, which functioned as a 'means for quantifying the movement of materials and energy through the ecosystem'.[20] While such techniques provided clear insight into the damages wrought by the radiation left over from atmospheric testing, they also served a function purportedly separate from cold war politics, allowing systems of energy transfer such as food chains to become legible to the ecologist.[21] As Hagan observes, in Eugene Odum's popular textbook *Fundamentals of Ecology*, the scientist assessed the relation between his field and the

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[16] Joel B. Hagan, *An Entangled Bank: The Origins of Ecosystem Ecology* (New Brunswick: Rutgers University Press, 1992), p. 100.
[17] *Ibid.*, p. 107.
[18] *Ibid.*, p. 105.
[19] *Ibid.*, p. 108.
[20] *Ibid.*, p. 114.
[21] *Ibid.*, p. 114.

world of atomic energy as a necessary partnership: 'Man's opportunity to learn more about environmental processes through the use of radioactive tracers balances the possible troubles he may have with environmental contamination'.[22]

Elizabeth DeLoughrey describes the relationship between atomic energy and ecosystem science as one of irony, highlighting the remarkable fact that 'the discipline so associated with the preservation of nonhuman nature arose from its militarised destruction'.[23] As well as ironic, the Odums' study at Enewetak showcases a relation of complicity whereby the space of possibility for ecological thinking is carved out by institutional forces that are subsequently able to deploy these new epistemic practices strategically. This point is well illustrated by the AEC's Project Sunshine, a 'body-snatching program' which sought to investigate the presence of strontium-90 in the bodies of humans, plants, and animals around the globe via the collection of human remains without consent.[24] DeLoughrey notes that the program illustrated that children 'who drank milk between the years 1955 and 1965 demonstrate higher levels of strontium-90 in their bones due to the atmospheric nuclear tests of that era'; by tracing the vitally material agency of the isotope, the AEC was made aware of the global ubiquity of nuclear contamination, with atmospheric testing having produced constitutive impurity at a planetary scale.[25] Understood in Bennett's terms, radiation created 'an ontological field without any unequivocal demarcations between human, animal, vegetable, or mineral', fostering instead a sense of terrestrial being heralded by nuclear modernity.[26] But the global narrative—the sense that radiation marks a point of no return, a decisive cut in planetary time—also fed into the strategic position taken by the AEC: as DeLoughrey observes, reports from the project were outwardly optimistic, the name 'sunshine' connoting 'new concepts of an illuminated

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[22] Eugene P. Odum, *Fundamentals of Ecology*, quoted in Hagan, *An Entangled Bank*, p. 117.

[23] Elizabeth M. DeLoughrey, *Allegories of the Anthropocene* (Durham: Duke University Press, 2019), p. 70.

[24] *Ibid*., p. 75.

[25] *Ibid*., p. 222.

[26] Bennett, *Vibrant Matter*, pp. 116-117.

globalisation, an era in which one mapped the world through the trace of militarised radiation'.[27] The sense of an ontological flattening between sites of accumulated toxicity was precisely the political function of the AEC, concealing nuclear danger within narratives of global progress and scientific prowess in energy and ecology.

The context of nuclear materialism feeds into the work that Ballard produces in the early 1960s, marking his apocalyptic worlds as products of a new ontological order between humans and material things. In many regards, Ballard repurposes the radical possibilities contained within the narratives of 'liquid sunshine' that DeLoughrey analyses, rewriting the ontological flattening performed by technoscientific power into a space of ethical possibility for multispecies relations.[28] But before outlining how this works for Ballard, it will first be necessary to frame the strategic materialism of the nuclear state as a question of biopolitics. In his depiction of nuclear modernity's vital materialities, Ballard's focus is not on how radiation and toxicity penetrate all bodies, but rather how the ontological status of particular bodies is produced according to material flows that are crystallised into biopolitical categories of species difference.

The background context for this reading can be found in both examples that this section has so far examined. As Woods argues, Carson should be read as much as a biopolitical theorist as she is an ecological writer: 'concepts of nature matter less' to Carson's biopolitics of environment, Woods notes, 'than how it can be used to influence populations of proper and improper life'.[29] Carson's biopolitical thinking stems in the first instance from her problematisation of the categories of life used to justify the widespread use of pesticides. While chemicals play a major role in 'man's war against nature', this war functions through the killing of 'insects, weeds, rodents, and other organisms described in the modern vernacular as

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[27] DeLoughrey, *Allegories of the Anthropocene*, p. 76.
[28] *Ibid.*, p. 74.
[29] Woods, 'Corporate Chemistry', p. 74.

"pests"'.[30] The violence that Carson depicts as proliferating throughout networks of connection thus begins with a biopolitical designation of status; a space opened in which 'pests' are rendered killable in the protection of the proper life of the human. While Woods differentiates this aspect of Carson's work from her perspectives on relationship between nature and technology, noting that 'pest' and 'weed' are 'biopolitical terms rather than ontological categories or species distinctions', I would suggest that the two questions are more intimately intertwined.[31] In describing an ontological state of constitutive impurity, Carson simultaneously depicts a biopolitical field in which the central ambivalence of impurity—the fact that chemicals know no bounds between locations and bodies—allows for the mediation of toxic exposures according to biopolitical logics of inclusion and exclusion. Carson's critique of the 'vernacular' of pesticide use is an example of this dynamic logic: 'as the habit of killing grows', she writes, 'birds are more and more finding themselves a direct target of poisons rather than an incidental one'.[32] Chemical ubiquity provides the conditions for an ever expanding logic of control through eradication, with the declaration of certain species as 'pests' viewed as a favourable strategy to altered agricultural practices.[33] At the same time, the ecological mindset epitomised by Carson's depiction of chemical ubiquity was itself co-opted into further institutional projects of concealment. In an advert published by the Dow Chemical Company in 1966, a pair of snowy egrets are depicted as emblems of ecological responsibility, inquisitively watching on as 'the men in the swamp […] test a new insecticide that would kill the mosquitoes without harming the higher forms of animal life'.[34] As a clear example of a post-*Silent Spring* public strategy, the advert hinges upon the proper life of the individual animal, foregrounding the danger of pesticides as a way of dispelling fears of indiscriminate

[30] Carson, *Silent Spring*, p. 6.
[31] Woods, 'Corporate Chemistry', p. 78.
[32] Carson, *Silent Spring*, p. 126.
[33] *Ibid*., p. 126.
[34] 'Snowy Egrets Watched the Men in the Marsh', *Science History Institute*, [n.d.] <https://digital.sciencehistory.org/works/cc08hg50x> [accessed 3 May 2021].

harm, and justifying instead the biopolitical qualification of whatever species is deemed subject to control.

(Figure 1)

The ecological aesthetic mobilised by the Dow advert repeats the ambivalent coexistence of discourses of ecological life and biopolitical death in the research agenda of the AEC. Indeed, just as radiation gave key insight for the Odums into the function of ecosystems, animal subjects were used eight years earlier in 1946 to judge the effects of atomic radiation on living bodies during Operation Crossroads, a series of nuclear detonations at Bikini Atoll that prefigured the tests carried out on Enewetak in subsequent years. The purpose of these tests was to determine the effects of nuclear blasts, as well as indirect radiation exposure, on the bodies of goats, pigs, mice, guinea pigs and rats; reporting in the *Washington Post* likened the tests to an 'atomic ark', depicting a goat still 'fit and frisky despite exposure to radioactivity'.[35] Animal subjects were used elsewhere in atmospheric testing programs, and most notably in Operation Plumbbob, which consisted of thirty nuclear detonations carried out in Nevada in 1957. As Joseph Masco writes, the operation involved placing pigs in various proximities to the nuclear blasts, exposing one group 'to radiation effects while creating shrapnel injuries in others, of the kind soldiers might experience in a nuclear strike'.[36] The modelling of potential human injury through the bodies of pigs, Masco argues, suggests that the 'body of the Cold Warrior, increasingly rendered as cyborg in the cockpit of planes and other military machines, was thus prefigured by the vaporised, mutilated, and traumatised animal body'.[37] But the knowledge of the dangers of radiation—and the deliberate obscuring of this knowledge in the maintenance of the AEC's public image—also prefigured the ecological research funded by the AEC. The knowledge practices built around following the movements of material forces as a measure of nonhuman relationalities shared an epistemic lineage with the sacrificial violence of atmospheric testing.

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[35] 'Abord the Atomic Ark…', *Washington Post*, September 25 1946.
[36] Joseph Masco, *The Nuclear Borderlands: The Manhattan Project in Post–Cold War New Mexico* (Princeton: Princeton University Press, 2006), p. 309.
[37] *Ibid*., pp. 310-311.

The examples I have examined in this section show that the chemical toxicities of the cold war military-industrial complex are legible on two separate levels. The first, a view that focuses on ecological interconnection via an emphasis on toxic ubiquity, showcases pesticide misuse and nuclear radiation as proliferating harm throughout complex networks of humans and nonhumans. But as well as engaging ecological and vital material registers of analysis, the idea of constitutive impurity—and the work of ontological flattening that this idea achieves— also feeds into a second level centring around a biopolitics of species difference. Ballard's end of the world narratives engage both of these levels simultaneously, depicting a radical flattening of difference between humans, animals, and things that also functions to highlight the discursive nature of these categories; humanity, animality, and thinghood become categories that shift and change based on particular biopolitical formations. The following section of the chapter examines how Ballard enacts such a logic through his engagement with the idea of nuclear futurism in his short story 'The Terminal Beach'. Depicting nuclear science as dislodging the human's place in time and orienting it towards unknowable futures, Ballard's story constructs the island of Enewetak as a place caught within the imperceptible temporalities of the material detritus of war. As well as being the site at which ecosystem science converged with the interests of the nuclear state, Ballard's Enewetak evokes an inhuman temporality in which the modelled futures of the cold war converge with the geological remnants of the human's animal heritage.

II. Nuclear Futurism in 'The Terminal Beach'

In *Bunker Archaeology*, Paul Virilio documents the weird forms and fictions of the bunkers which, in the postwar 1950s, line the French coast as a remnant of the WWII German defensive apparatus. Encountering these architectural objects functions, for Virilio, as a confrontation with a new logic of warfare that presupposes the spatial politics of the cold war: 'the

blockhouse […] comes from the era that put an end to the strategic notion of "forward" and "rear" (vanguard and rearguard) and began the new one of "above" and "below", in which burial would be accomplished definitively, and the Earth nothing more than an immense glacis exposed to nuclear fire'.[38] The apocalyptic threat of the nuclear, as reflected in the bunker's ability to shield its inhabitant beneath thick layers of concrete, produces a converging sense of the bunker's material and mythic significance: the bunker is at once the remains of a defensive system out of use, and an artefact of a desolate landscape appearing as if post-apocalypse. Virilio sums this up when he describes the 'crushing feeling' that the inhabitant of the bunker is subjected to: 'slowed down in his physical activity but attentive, over the catastrophic probabilities of his environment, the visitor in this perilous place is beset with a singular heaviness; in fact he is already in the grips of that cadaveric rigidity from which the shelter was designed to protect him'.[39] The structure is at once protective and prison-like, confining the subject within a kind of living-death in which the threat of annihilation is a permanent condition of existence.

As object markers of this vision of total war, Virilio's bunkers signify a biopolitical logic that crosses between Foucault's notion of the power to 'make live' and Mbembe's formulation of the 'necropolitical' as the state in which 'vast populations are subjected to conditions of life conferring upon them the status of *living dead*'.[40] As Luke Bennett suggests, the simultaneous production of protection and subjection found in the bunker signals the ways in which the 'cold war' is itself produced as an ongoing fear of annihilation as opposed to a traditional war or 'event':

> Widespread fear of sustained aerial bombardment in "the next war" drove the quest for military, civilian and political shelter below ground. The Cold War, and anxiety about nuclear Armageddon, only served to accentuate (and sublimate) a fear of danger from

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[38] Paul Virilio, *Bunker Archaeology* (New York: Princeton Architectural Press, 1994), p. 46.
[39] *Ibid.*, pp. 15-16.
[40] Achille Mbembe, 'Necropolitics', *Public Culture*, 15 (2003), 11-40, (p. 40).

"above" and urge on the drive underground, as one young boy put it when interviewed in the USA in the early 1950s, "please mother, can't we go some place where there isn't any sky?"[41]

The cold war is here conceptualised as a movement underground: the threat of apocalypse in the guise of falling bombs is countered by the premature burial of the nuclear subject beneath the earth's surface. The 'singular heaviness' of this concrete survival-tomb—described further by Virilio as tightly enclothing the subject, undermining 'corporal mobility'—has the effect of imbricating the human within a material and spatial system of defence in which the concrete of the bunker functions as a kind of transhuman exoskeleton.[42] Far from reserved to the desolate settings and material architectures depicted in Virilio's photography, this logic extends throughout technoscientific and political implementations of 'deterrence' in the 1950s and 1960s. In her study on RAND corporation nuclear strategist Herman Kahn, Sharon Ghamari-Tabrizi observes that 'however much people gawked at atomic tests in movie newsreels and on television, atomic weapons and war were remote from the workaday world—immense, secret, and infernal, too cosmic for the prosaic stuff of life'.[43] Based in a form of absolute uncertainty, the nuclear threat was nonetheless addressed with systematic simulations testing at RAND. A major aspect of this approach, expanded in Kahn's book *On Thermonuclear War*, was the modelling of American life systems after a nuclear attack: Ghamari-Tabrizi notes that 'Kahn's study paid special attention to the production, processing, storage, and distribution of food. […] Expressing a systems orientation toward the economic totality, he suggested that national food stocks be inventoried and updated so that postwar distribution patterns could be studied'.[44] This mode of civil defence futurology required the collapsing of catastrophic futures

[41] Luke Bennett, '*The Bunker*: Metaphor, materiality and management', *Culture and Organisation,* 17 (2011), 155-173, (p. 158).
[42] Virilio, *Bunker Archaeology,* p. 15.
[43] Sharon Ghamari-Tabrizi, *The Worlds of Herman Kahn: The Intuitive Science of Thermonuclear War* (Cambridge: Harvard University Press, 2005), p. 85.
[44] *Ibid.*, p. 200.

into the present, and called for the implementation of biopolitical measures to ensure the health and ongoingness of society after a nuclear war. The cold war subject was constituted at RAND through the 'inventive vitality' of systems thinking as a mode of humanist science, which sought to distinguish rational truths and potential futures against the diffuse and inconceivable 'unknown unknown' of nuclear catastrophe.[45]

Thinking about nuclear war as constituting a form of 'thinking about the unthinkable', draws a separation between two competing temporalities present within the nuclear imaginary. On the one hand, as John Beck writes,

> The invention of nuclear weapons made a decisive cut into time. […] An automated missile launch could bring the world to an end in an instant, radically stopping time, but the uncertainty as to when that instant might come prolonged the seeming inevitability of its occurrence for an indeterminate amount of time. Just as the discovery of fossils recalibrated the measurement of Earth's past, revealing the planet to be older, and human life less significant, than had once been thought, so too did nuclear weapons deepen an understanding of futurity precisely by foreclosing on its inevitability.[46]

The nuclear apocalyptic imaginary is concerned, as Beck observes, with a recalibration of human identity according to the inhuman temporalities of the material world. The threat of annihilation, in this mode of thinking, aligns human life with the image of the fossil: dead, stratified, and marking but one stage in the incomprehensible depths of geological time. This impetus to view the human as if from a deep, post-apocalyptic future is countered, on the other hand, by the systems thinking—performed at institutions like RAND—designed to map out, predict, and direct the outcomes of multiple possible futures. Beck notes that this kind of futures research was born out of a 'contradiction in an attempt to deploy scientific rationality, in a sense, against itself: the methods used to invent the end of the world were to be used to calculate

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[45] *Ibid.*, p. 7.
[46] John Beck, 'The Future: RAND, Brand and Dangerous to Know', in *Cold War Legacies: Systems, Theory, Aesthetics* ed. by John Beck and Ryan Bishop (Edinburgh: Edinburgh University Press, 2016), pp. 35-50 (p. 36).

ways to save it'.[47] Nuclear and systems science, in other words, created an irreconcilable problem for traditional humanist rationality: by trying to avert the end of the world, scientists only intensified the notion that the 'absolute unknown' remained a palpable reality or possibility. While systems thinking embodied the kind of scientific rationality proper to humanism, it also served to displace the human within an infinite number of potential futures, introducing temporal uncertainty into the structure of cold war subjectivity.

In an interview with Janick Storm published in 1968, Ballard outlines a conception of the relationship between literature and science that moves towards complicating the established generic norms of SF:

> Modern American science fiction of the 1940s and 1950s is a popular literature of technology. […] The science fiction written in those days came out of all this optimism that science was going to remake the world. Then came Hiroshima and Auschwitz, and the image of science completely changed. People became very suspicious of science, but SF didn't change. You still found this optimistic literature […] In the 1950s during the testing of the H-bomb you could see that science was getting to be something much closer to magic. […] Science now, in fact, is the largest producer of fiction.[48]

The mode of techno-utopianism that Ballard references here—the literature of space exploration, aliens, and new worlds—offers a useful image against which to situate the narrative of 'The Terminal Beach'. Set on a deserted island in Enewetak atoll, Ballard's fragmented narrative follows protagonist Traven's experience of the 'synthetic' and 'man-made' landscape of the island as a 'state of mind' as he processes the overarching trauma written into the fabric of the testing site alongside the trauma of losing his wife and child in a car accident.[49] Enewetak functions, in Ballard's narrative, as the post-apocalyptic remainder of what Derrida terms the 'economy of speed' for which 'a gap of a few seconds may decide,

[47] *Ibid.*, p. 36.

[48] J. G. Ballard, '1968: Jannick Storm. An Interview with J. G. Ballard', in *Extreme Metaphors: Interviews with J. G. Ballard 1967-2008* ed. by Simon Sellars and Dan O'Hara (London: Fourth Estate, 2012), pp. 14-22 (pp. 15-16).

[49] J. G. Ballard, 'The Terminal Beach', in J. G. Ballard, *The Complete Short Stories Volume Two* (London: Fourth Estate, 2014), pp. 29-51 (pp. 30-31). All subsequent references will appear in the text.

irreversibly, the fate of what is still now and then called humanity—plus the fate of a few other species'.[50] The 'magic' of nuclear science is reflected, in this sense, in the convergence of competing temporal visions within Ballard's narrative: the story begins with a description that 'at night, as he lay asleep on the floor of the ruined bunker, Traven heard the waves breaking along the shore of the lagoon, like the sounds of giant aircraft warming up at the ends of their runways' (p. 29). The sound of military technologies in preparation for war is merged in these lines with the sound of the 'natural' world, and this is something repeated throughout Ballard's narrative: military-technological modernity is depicted, in the negative space of Enewetak, as entangled in the slow movements and processes of nature. While Ballard notes that the 'wilderness of weapons aisles, towers and blockhouses ruled out any attempt to return [the island] to its natural state', the atoll nevertheless is depicted as having become a geological marker of the nuclear epoch: 'the series of weapons tests had fused the sand in layers, and the pseudo-geological strata condensed the brief epochs, microseconds in duration, of thermonuclear time' (pp. 31-33). As the site of the competing temporalities of technological futurity and deep history, Ballard's Enewetak becomes a location for the production of fictions about the human's relationship to its own place in time.

As a material relic of the cold war, the island participates in a nuclear imaginary described by Derrida as 'fabulously textual'.[51] Nuclear weaponry, Derrida notes, 'depends, more than any weaponry in the past, it seems, upon structures of information and communication, structures of language, including non-vocalisable language, structures of codes and graphic decoding'.[52] Networks of defence and the rhetoric of strategy produces, for Derrida, a textuality that encircles the fact that nuclear war has not yet taken place. This non-

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[50] Jacques Derrida, 'No Apocalypse, Not Now (Full Speed Ahead, Seven Missiles, Seven Missives), *Diacritics*, 14 (1984), 20-31, (p. 20).
[51] *Ibid*., p. 23.
[52] *Ibid*., p. 23.

event, discursively produced as absolute 'apocalypse' and simulated by systems thinkers, is produced in Ballard's story as a mythology of the future:

> The desolation and emptiness of the island, and the absence of any local fauna, were emphasised by the huge sculptural forms of the target basins set into its surface. Separated from each other by narrow isthmuses, the lakes stretched away along the curve of the atoll. On either side, sometimes shaded by the few palms that had gained a precarious purchase in the cracked cement, were roadways, camera towers and isolated blockhouses, together forming a continuous concrete cap upon the island, a functional, megalithic architecture as grey and minatory (and apparently as ancient, in its projection into, and from, time future) as any of Assyria and Babylon (p. 32).

Ballard here emphasises the 'functional' nature of the island's architecture: the synthetic landscape, described as possessing 'all the associations of a vast system of derelict concrete motorways', resembles a city of the future lacking a centralised form of organisation in favour of a diffuse and distributed spatial order (p. 31). In this sense, Ballard's Enewetak reflects Scott Bukatman's characterisation of the postmodern city as a 'paraspace', in which the 'absence of coordinates and boundaries, combined with a paradoxical depthlessness, creates a space that is no space, no place'.[53] In this mode of urban futurism, the subject is not constituted according to a set of external coordinates, and neither is the outer landscape conceived as purely psychic projection: the city is linked to the condition of subjectivity precisely through a 'usurpation of subjectivity by the urban configuration'.[54] Traven attributes such a vision of subjectivity to the cold war epoch that he christens the 'Pre-Third', characterised by 'moral and psychological inversions': 'if primitive man felt the need to assimilate events in the external world to his own psyche', Ballard writes, 'twentieth century man had reversed this process; by this Cartesian yardstick, the island at least *existed*, in a sense true of few other places' (p. 31). Against the simulatedness of the outside world, the island provides Traven with a sense of tangible

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[53] Scott Bukatman, *Terminal Identity: The Virtual Subject in Postmodern Science Fiction* (Durham: Duke University Press, 1993), p. 169.
[54] *Ibid*., p. 169.

materiality that affirms his own physical identity while interrupting processes of straightforward subject formation. Possessing a 'unique vitality', this material environment appears to Traven as a series of ciphers that resist meaning, yet pull him towards an identification with the 'cryptic alphabet' and imperceptible signification of Enewetak's landscape (pp. 29-32).

As a piece of fiction concerned with the construction of 'human' identity, 'The Terminal Beach' thus mobilises multiple intersecting discourses of the more-than-human to emphasise the instability created by the weird 'magic' of nuclear science. Traven is caught, on the one hand, in a relationship with the technological that sees him assume the perspective of a forward-facing, rocket-propelled and future-oriented cold war subject. Ballard writes that 'if the autonomic system was dominated by the past, Traven sensed, the cerebro-spinal reached towards the future', in addition to describing Traven's emaciation as 'stripping away the superfluities of the flesh, reveal[ing] an inner sinewy toughness, an economy and directness of movement' (pp. 33-39). This physical embodiment of technological speed reflects what David Wills, in his book *Dorsality*, describes as an 'originary technology' that 'inhabits the back of the human' as a kind of unassimilable otherness.[55] The dorsal, for Wills, names an original state of imbrication with technology that functions as a condition for the formation of the human subject. This 'technological origin' can be found, in the first instance, in the human's upright stance and bipedality:

> The anthropoid "chooses" to give itself the prospect of tools and at the same time turns its back in a radical way on whatever is behind it. We know how it abandons the animal, refines the senses by downgrading smell and hearing, and reconfigures the knowable other within a frontal visual perspective, prioritising a certain version of the *fore-seen* or *fore-seeable*. What is produced by that anthropoid, the technologies of tool use on the one hand, and language on the other, is henceforth presumed to occur within that frontal visual perspective of the knowable. That occurs in spite of the emphasis given, in terms of those technologies, to the surprise of discovery and invention. Such

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[55] David Wills, *Dorsality: Thinking Back through Technology and Politics* (Minneapolis: University of Minnesota Press, 2008), p. 12.

discovery and invention are henceforth and consistently understood as being ahead, around the corner, or on the horizon of forward progression.[56]

Written into ideologies of technological progress, for Wills, is a privileging of a knowable future that overwrites the principle of contingency in favour of programmability. Instead of neatly functioning according to this rational criterion, however, Wills maintains that the formation of subjectivity appears as if from elsewhere—from behind, and therefore from somewhere imperceptible to the forward-facing human.[57] By figuring Traven's relationship to the landscape of Enewetak through the image of the spine, Ballard plays into a similar logic. While Traven himself is driven by this machine in the back, producing what Wills describes as an 'erectile relation to the earth', Ballard extends this image to the outer world: 'the landscape is coded. / Entry points into the future=Levels in a spinal landscape=zones of significant time' (p. 40).[58] The island, read according to Wills's theory, becomes an uncanny reflection of the subject that is animated—and erected—as able to perceive only that which lies ahead in a forever advancing technological teleology. But even while its technological architecture points to a future that can be modelled and foreseen, Ballard's Enewetak remains unreadable, the landscape a 'cryptic alphabet' of 'strange ciphers' that refuse to give away the meaning that Traven seeks within them (p. 29).

In centring the figure of the spine within his conception of 'dorsality', Wills outlines an ethics that begins with the ultimate paradox of the human's figuration as a technological being. While serving as an image of the human's erectile relation to the earth, the spine also

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[56] *Ibid*., pp. 8-9.
[57] Wills elucidates this point further in relation to Louis Althusser's construction of the scene of interpellation in 'Ideology and Ideological State Apparatuses'. For Althusser, the subject is constituted through a call from an officer of the law: the subject hears the hail, turns, and is interpellated as subject. While Althusser's model describes a vision of ideology that appears all-encompassing and inescapable, Wills notes that Althusser's 'individual is hailed not by something or someone visible, identifiable, or familiar, approaching from in front, but by an impersonal, unseen, and threatening voice calling from behind'. The principles of contingency and unknowability are thus written into the operation of the law, subverting and undermining it from within. See Wills, *Dorsality*, p. 36.
[58] *Ibid*., p. 17.

functions for Wills as a site at which this monolith can be deconstructed, structuring the movement of turning back that Wills associates with an unexpected smell, voice, or touch that dislodges the human from its forward orientation and brings to the fore the more-than-human faculties that exist beneath (and behind).[59] The physiological symbol of human forward facing futurity, in other words, can also be the site of its critique, signifying a space outside of human phenomenological perception that remains unforeseeable, yet exerts bearing over the human's own upright articulation. Read accordingly, Ballard's depiction of Enewetak as suspended within a temporal uncertainty signals a similarly dorsal ethics, reconfiguring the wasteland of nuclear futurity as a site at which narratives of progress give way to considerations of the human's enmeshment within more-than-human worlds. In order to outline this ethics, it will be necessary first to situate Ballard's spinal imaginary within a broader discussion of his interest in discourses of life, evolution, and the libidinal drives of the unconscious. As well as structuring the world of nuclear futurism, the spine functions for Ballard as a fossilised remnant of the human's evolutionary heritage; a figure of collapsed temporality that draws the human back towards its own nonhuman origins even as it structures the human's vertical and surveying gaze over nonhuman life. It is towards a consideration of the Ballardian fossil that I now turn.

III. Libidinal Apocalypse: Theorising the Ballardian Fossil

The collapsed temporalities of 'The Terminal Beach' follow a trend visible throughout Ballard's apocalypse fiction linking events in the 'outer' world to what he describes as 'inner space': 'the dream worlds, synthetic landscapes and plasticity of visual forms invented by the writer of fantasy', Ballard writes, 'are external equivalents of the inner world of his psyche, and because these symbols take their impetus from the most formative and confused periods

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[59] *Ibid*., p. 12.

of our lives they are often time-sculptures of terrifying ambiguity'.[60] Across Ballard's eco-disaster novels, apocalypse is depicted as an externalisation of the human's libidinal drives and desires; a reconfiguration of the material world in the image of an 'internal landscape of tomorrow that is a transmuted image of the past'.[61] As we have seen, 'The Terminal Beach' depicts this 'landscape of tomorrow' according to the simulated futures of nuclear science. Before returning to this story in the final section of the chapter, I want to explore how the latter part of Ballard's statement—apocalypse as a 'transmuted image of the past'—names a form of multispecies ethics that extends throughout his writing during the 1960s.

A recurring material figure for this process of transmutation is that of the fossil. Tied to the unveiling of life's untold stories, the fossil usually signifies the logics of classification and order associated with the history of life. For Ballard, however, the fossil functions as an agent of transformation, enveloping the human within the vast evolutionary temporalities of its own pre-history; a material trace of an animal past that untethers the human from the civilising bounds of the ego. This is not to suggest, however, that the fossil works for Ballard as a figure of disorder. Speaking in an interview published in 1984, Ballard rallies against the perception that his fiction is 'defeatist, pessimistic, entropic', and allied ultimately to death. 'It's a misreading', he notes, 'to assume that because my work is populated by abandoned hotels, drained swimming pools, empty nightclubs, deserted airfields and the like, I am celebrating the run-down of a previous psychological and social order'.[62] Rather, these images of the end of life harbour a sense of affirmation for Ballard: 'Death as the end of self, yes!'[63] Following the logic implicit within Ballard's remarks, I want to suggest that fossils function in his novels and

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[60] J. G. Ballard, 'Time, Memory and Inner Space', in J. G. Ballard, *The Drowned World* (London: Fourth Estate, 2014), pp. 183-185 (p. 184).

[61] *Ibid*., p. 184.

[62] J. G. Ballard, '1984: Peter Rønnov-Jessen. Against Entropy', in *Extreme Metaphors: Selected Interviews with J. G. Ballard, 1967-2008* ed. by Simon Sellars and Dan O'Hara (London: Fourth Estate, 2012), pp. 199-211 (p. 206).

[63] *Ibid*., p. 207.

short stories to unsettle the relationship between 'order' and 'life', situating the human instead as part of a vital milieu that refuses to conform to the teleological futures of technological modernity. Just as the bunker works as a material embodiment of the paradoxes of defensive futurity, the fossil emblematises an anthropocentric history of life that falters upon its encounter by Ballard's characters; a trace of an animal past that decentres the human's placement in time. In this regard, the Ballardian fossil is informed by the vitally materialist contexts outlined in the first section of this chapter, acting in Ballard's stories to flatten the ontological distinctions between humans, animals, and the material world. As we will see, just as the development of ecological forms of knowledge at Enewetak existed in complicity with the biopolitical violence of nuclear testing, the destabilising function of the fossil also models for Ballard a kind of power that crosses from the biological into a manipulation of geological matter and mattering. The final section of the chapter will focus on this question of biopolitics; my intention first is to illustrate how Ballard writes the fossil as a figure of multispecies becoming.

An essential part of this process for Ballard is perverse sense of possibility opened up by the 'end of the world'. Ballard's visions of apocalypse—always enacted through 'natural' forces, both unpredictable and inhuman—invoke questions associated with contemporary discourse on the Anthropocene: how can the human comprehend itself as an actor on a geological scale? How can we imagine a geological subjectivity that reconciles the impersonal, unknowable, and inhuman with the idea of the human? As well as viewing Ballard's fiction through this lens, however, I want to suggest that his work sets out an alternative imaginary for the human's geological condition obscured by critical perspectives of the Anthropocene. For, while the human is central to Ballard's visions of apocalypse, the ethical stakes of this 'event' do not concern the universal sense of culpability that contemporary accounts of anthropogenic climate change instil; nor does Ballard's fiction concern itself with the maintenance, reconstruction, or redemption of a universal conception of 'life' at the end of the world. Rather,

by characterising the end of the world with a sense of affirmative potential, Ballard throws into question the terms by which the concept of life is rendered meaningful (and for whom). Apocalypse, in this narrative mode, functions as a revelatory unveiling of the drives and desires that gesture beyond the world of the human from within.

Despite its association with the "outer" apocalypse, the fossil image recurs throughout Ballard's oeuvre as something internal to the human. In *The Drought*, the impersonal nature of the approaching disaster is depicted as an erosion of self. The novel details a catastrophe in which global water supplies have dwindled due to the formation of a 'mono-molecular film' over the surface of the world's oceans generated by industrial wastes.[64] While ostensibly anthropogenic, Ballard illustrates this toxic event as having greater significance for the individual psyche over any notion of a universally culpable humanity. Early in the text, we are introduced to protagonist Ransom via a houseboat filled with 'talismans' of personal memory: a family photograph, an image of Yves Tanguy's painting *Jours de Lenteur* (1937), and a limestone paperweight 'he had cut from a chalk cliff as a child, the fossil shells embedded in its surface bearing a quantum of Jurassic time like a jewel' (p. 11). Instead of centring his identity, Ballard notes that these items free Ransom 'from the tiresome repetitions of everyday life' (p. 11). The fossil, taken together with Tanguy's representation of 'smooth, pebble-like objects, drained of all associations', situates Ransom's subjectivity at the threshold of the personal and impersonal, the eroded forms of Tanguy's artwork heralding an amnesia of association in which objects previously imbued with meaning lose their shape and form (p. 11).

In a world in which life has been altered inexplicably by the unexpected agency of the toxin, the visual language of surrealism helps Ballard articulate a fundamental shift in the relationship between human life and the inanimate. As the last vestiges of an identity defined

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[64] J. G. Ballard, *The Drought* (London: Harper Perennial, 2008), p. 36. All subsequent references will appear in the text.

by material possessions, Ransom's houseboat presages Ballard's more direct engagement with consumerist cultures in his urban disaster novels from the 1970s. For Jeannette Baxter, the significance of surrealist aesthetics to Ballard's work lies precisely 'in their ability to penetrate the sub-texts of the consumer landscape and to expose the network of unconscious energies and insidious psychologies at work within it'.[65] In his reference to Tanguy, Ballard suggests that such a process reveals an unexpected geological agency harboured within the items of the everyday.[66] Depicting forms that invoke the spectres of recognisable objects, the painting portrays geologisation as unlocking latent potentials and unexpected desires within such objects.

As markers of personal memory immortalized by the encroaching desert, Ransom's belongings are future fossils that protect him from 'the processes and vacuums of time', his memories 'isolated and quantified, like the fragments of archaic minerals sealed behind class cases in museums of geology' (p. 12). The image of humanity preserved via the geological transformation brought about by the drought, however, is a memorialised form without essence: Ballard writes of the river, once a moderator 'between all animate and inanimate objects', as carrying Ransom 'forward into zones of time future where the unresolved residues of the past would appear smoothed and rounded, muffled by the detritus of time' (pp. 9-186). The objects of past humanity, far from providing a blueprint of a species legible in geological

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[65] Jeannette Baxter, *J. G. Ballard's Surrealist Imagination* (Farnham: Ashgate, 2009), p. 4.

[66] In his book *Footprints*, David Farrier theorises the notion of the 'future fossil'—a name for the material remnants of the human's ways of life that will be immortalised in the fossil archive, including plastic bottles and cities. As a mode of diagnosing how the human's presence has been written into the earth's fabric, perceiving future fossils is a speculative process that involves imagining the human's lived, material present as a 'trace fossil' legible 'to our most distant successors'. In one regard, the process of speculating such a future observer encapsulates the project of the Anthropocene, conjuring a geological lexicon in which the totality of present humanity is legible within the fabric of geological history. Of course, such a project obscures for any future observer the biopolitical formations and capitalist hierarchies that dictate the uneven levels of geomorphic force exerted by the supposedly universal anthropos. But Farrier avoids such a universalising attitude by aligning the legibility of the future fossil, like Ballard, with a fundamental unknowability. The trace fossil, he writes, is an 'accidental memory', signalling a reality that is always necessarily 'beyond our knowing'. See David Farrier, *Footprints: In Search of Future Fossils* (London: Fourth Estate, 2020), pp. 4-11.

time, materialise instead with the 'barest residue of identity', the cars lining city streets appearing to Ransom as 'idealised images of themselves, the essences of their own geometry' (p. 188). Inhabiting this fossilised landscape functions for Ballard's characters as an immersion within this totally decentred state, an embodiment of disequilibrium that sees cultural signs dissipated and excavated of meaning. This scene exemplifies what Jean Baudrillard describes as the 'evaporation of meaning' that occurs in the American desert—a space in which the 'immemorial abyss of slowness that shows itself in erosion and geology' holds the key to the 'future catastrophe of the social'.[67] Likewise, Ballard's landscapes harbour textual objects severed from their systems of signification, immortalised precisely through the process of their erasure.

Not only oriented towards the future, the motif of fossilisation—simultaneously entropic and enclosing, dissipating the definition of objects while hardening their external material form—extends for Ballard into the deep history of human origins. The discovery of Cro-Magnon skeletons in the short story 'Now Wakes the Sea' serves as a moment of potentiality in which the established epistemologies of human history are rendered subject to alteration through a new addition to the geological archive. Instead of addressing this discovery head on, however, Ballard's focus is on protagonist Mason, who keeps as a personal asset a fossil mollusc that brings him 'unlimited pleasure, a bottomless cornucopia of image and reverie'.[68] Mason's mediations with the fossil produce dreams that distort his position in time, transporting him back to the ancient inland sea that once existed beneath his home. These oneiric episodes blur the boundary between inner and outer worlds, and take precedence in Ballard's narrative over the 'real' discovery of the skeletons. The structure of Ballard's story thus draws attention to what Sarah Bezan describes as the fossil's definitional reliance on the

[67] Jean Baudrillard, *America* (London: Verso, 2010), p. 5.
[68] J. G. Ballard, 'Now Wakes the Sea', in *The Complete Short Stories: Volume One* (London: Fourth Estate, 2014), pp. 641-652 (pp. 642-643). All subsequent references will appear in the text.

'human observer—trowel and chisel in hand': even while holding the potential to break open existing frameworks of knowledge and recalibrate human history, the very existence of such frameworks, along with their capacity for being reimagined, is something that always necessarily exists before the moment of discovery.[69] As well as emphasising the provisional quality of the categorising gaze, Ballard's narrative achieves a recasting of the conversation's register towards questions of ontology. In other words, what is at stake in the story is not the human's construction of knowledge, but rather the human's constructedness itself within and through the geological. Blurring the boundary between internal and external realities, Mason's dreams function at once as an 'unconscious apocalypse' and as a transformation of material reality, the sea returning each night to submerge the unwitting town as Mason watches on (p. 644). At the hinge of Ballard's narrative, Mason, on one such night-time excursion, falls into the shaft sunk into the chalk cliff; it is revealed the following day that he himself is the discovered relic, the dreams having brought into being a material embodiment of the identity buried deep within.

In this story, Ballard writes the fossil as not only produced by, but as itself acting upon its observer, bringing about a confrontation with the human's own constitution within the thingness of geology. Transforming the distanced gaze of the observer into an uncanny repetition of the Lacanian mirror stage, Ballard imagines a reflection of the self as visible within and through the inert and the inanimate, a geologic familiarity that introduces a kernel of uncertainty into the human's own sense of ontological consistency. Rather than the product of a trace that makes the human legible within geological time, this familiarity proceeds from a sense of recognition that eludes straightforward categories of being and thinking the human, instead situating within the human a core that resists representation.

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[69] Sarah Bezan, 'The Anterior Animal: Derrida, Deep Time, and the Immersive Vision of Paleoartist Julius Csotonyi', in *Seeing Animals After Derrida* ed. by Sarah Bezan and James Tink (Lanham: Lexington Books, 2018), pp. 65-87 (p. 72).

These ideas are developed further in *The Drowned World*, a novel which enacts this conversation between psychoanalytic and evolutionary logics at the manifest level of its narrative. Depicting an apocalypse in which solar flares have raised planetary temperatures and flooded all major urban centres in Europe, the novel takes place in an inundated London populated by an abundance of mutated plant and animal life. This life, as a counterpart to the inanimate future of *The Drought*, enacts a moving backwards in time towards a vital reinstatement of Triassic-era lifeforms. Engaging the image of the future fossil in its depiction of a city visible only through its exoskeleton, the 'white-faced buildings of the twentieth century' represented in stark contrast to the 'nightmare world of competing organic forms' below, Ballard's novel also imagines the human as itself a legible fossil that can provide the key to understanding the environmental changes underway.[70] The character of Bodkin—a doctor working with Ballard's protagonist Kerans on studying the changing climate—theorises the awakening of 'the oldest memories on Earth, the time-codes carried in every chromosome and gene' by the geological changes underway (p. 43). Marking a movement down the spinal column into the human's 'neuronic past', these planetary changes function for Bodkin as a new 'zone of transit' through which the human can become anew, both through and with a dynamic and relational vision of nonhuman-oriented life (p. 44). While centred on the human's biological inheritance, Ballard's awareness of nonhuman life is not reducible to human concerns but rather gestures towards a new order entirely: 'as their seats in the one-time boardrooms indicated, the reptiles had taken over the city. Once again they were the dominant forms of life' (p. 18).

For Ballard, the spine is an internal fossil that provides the key to human origins while also highlighting the paradoxes of the human's geologic condition. Noting the prevalence of

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[70] J. G. Ballard, *The Drowned World* (London: Fourth Estate), pp. 10-19. All subsequent references will appear in the text.

spinal columns throughout Ballard's fiction, Thomas Moynihan writes that for Ballard, the spine and central nervous system (CNS) function as instruments of 'time travel', the 'vertically ascending series of vertebrae [becoming] transliterated as the linear ordering of time, from past to future'.[71] As a result, the spine rearranges the grammatical construction of the human as existing in time in favour of considering the human as always-already distributed, inhabiting and embodying multiple points in an evolutionary lineage made vertical in the back: 'if time is emitted by CNS-architecture, then there are other possible receptivity profiles, other workable organisations of time'.[72] Considering the spine as internal fossil opens up new modes of thought in which the term 'forms of life', usually rendered in the geological imaginary as static inscriptions pointing towards particular points in time, becomes a descriptor for the potentiality of life to assume multiple and varied forms. In so doing, Ballard's spinal imaginary enacts something akin to what Elizabeth Grosz describes as life's 'unity': 'not a unity in the sense that all living beings are affiliated (genetically, morphologically, eco-systemically) but in the sense that all of life is equally pushed—from its originary emergence from the "prebiotic soup" of chemical elements through to the vastly variable forms of life that have existed and exist today—by a temporal, or evolutionary, impetus to vary itself'.[73] The spinal marks an agency that proliferates from within and surpasses the limits of the subject, implicating the human within relational networks that exceed temporal and ontological boundaries.

With the spinal thematics of *The Drowned World*, Ballard constructs what first appears as an affirmative picture of the human's enmeshment within life's multiple and heterogeneous processes. Describing this 'radically new environment' early in the novel as a place in which 'old categories of thought would merely be an encumbrance', Kerans experiences the

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[71] Thomas Moynihan, *Spinal Catastrophism: A Secret History* (Falmouth: Urbanomic, 2019), pp. 78-79.
[72] *Ibid*., p. 79.
[73] Elizabeth Grosz, *Becoming Undone: Darwinian Reflections on Life, Politics and Art* (Durham: Duke University Press, 2011), p. 33.

impossibility of categorising the environmental changes underway, instead more ambiguously sensing 'the terrible stench of the water-line, the sweet compacted smells of dead vegetation and rotting animal carcasses' (pp. 13-14). Ballard's world is experienced as olfactory, a sensory profusion of extra-human processes of rot and decay experienced through the human's own more-than-human faculties. In this sense, this new environment resists the epistemological gaze that would rationalise its vital profusion of death and life. As with 'Now Wakes the Sea', this model of experience is also articulated as a dream-logic: Kerans dreams of a lagoon filled with 'thousands of entwined snakes and eels, writhing together in frantic tangles' as well as a vision of his own becoming-molecular, 'the barriers which divided his own cells from the surrounding medium dissolving […] spreading outwards across the black thudding water' (p. 71). Dissipation across time functions as a breaking down of corporeal substance that is articulated as a form of (re)birth: the uterine space of the lake, while functioning as the site of dissolution for Kerans's self, also gives rise to a conception of life that extends beyond the horizon of thought.

IV. Contaminated Remains, Colonial Mattering, and the Geo-logics of Control

The fossil functions for Ballard as a trace that defines the conditions for its own erasure, the geological legibility of the human producing, paradoxically, the impossibility of such an identity. In situating the human within the chaotic and vital forces of the nonhuman world, Ballard articulates a version of apocalypse in which the 'end of the world', for the human, equates to an extension of the worlds documented and preserved in the spinal fossil archive. This is, in other words, a dismantling of the ego-structures of 'civilisation' that allow for the

human 'world' to be conceived in the singular. As a site associated with the unconscious,[74] and therefore the human's own animality, the spinal fossil marks the multiplicity of worlds that inform current articulations of human life.

Ballard's focus on the human's animal origins renders his fiction fertile ground for reimagining the ethical stakes of nonhuman life. And yet, rather than only engaging this affirmative mode, Ballard imagines the fossil as a site upon which the logics of biopolitical subjectification take place. I argue that we must read this nexus of geo- and biopower through the lens of desire. This is because, for Ballard, the libidinal forces that constitute the human's original animality also guide its particular formations—or stratifications—in the present. As Grosz argues, libidinal desire produces a 'plane of coherence' onto which chaos is divided, organised, and given form.[75] Indeed chaos, for Grosz, 'is not the absence of order but rather the fullness or plethora that, depending on its uneven speed, force, and intensity, is the condition both for any model or activity and for the undoing and transformation of such models or activities'.[76] The forces that Ballard depicts as bringing about the dissolution of identity function in Grosz's work as the generative affects behind human subjectivities, as well as producing the more-than-human impetus behind creativity and artistic expression.[77]

Reading Ballard according to Grosz's observations on chaos and art has two main implications. The first has to do with a general theory of biopolitical subjectivity: if we are to

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[74] Developing a philosophical genealogy of the spinal, Moynihan argues that the origins of Freud's conception of the unconscious begin with his interest in neuroanatomy, noting that 'Freud presages Ballardian neuronics when he diagnoses a schizoid analysand as existing within a "prehistoric landscape", perhaps "in the Jurassic", where "the great saurians are still running around" and "horsetails grow as high as palms"'. See Moynihan, *Spinal Catastrophism*, pp. 137-138.

[75] Elizabeth Grosz, *Chaos, Territory, Art: Deleuze and the Framing of the Earth* (New York: Columbia University Press, 2008), p. 4.

[76] *Ibid*., pp. 26-27.

[77] Ballard's references to surrealist painters throughout these texts show his interest in the aesthetic impulse as a direct expression of the transformative forces underway in the outer world. As well as the reference to Tanguy in *The Drought*, Ballard writes in *The Drowned World* of the 'dandified skeletons' in a 'spectral bone-like landscape' in a Delvaux piece, as well as the 'self-devouring phantasmagoric jungles' in a painting by Max Ernst. See Ballard, *The Drowned World*, p. 29. For a detailed study on Ballard and surrealism see Baxter, *J. G. Ballard's Surrealist Imagination.*

read identities as produced by forces of desire that give form to matter that is otherwise chaotic and entropic, then the biopolitical should be read as constituted not by immutable structures of control, but rather through flows of matter and mattering that are both coercive and participatory. As Gilles Deleuze writes, what was first articulated by Foucault as disciplinary logic has mutated in an increasingly digital society into a mode of control that is 'undulatory' and 'floating', depending on a conceptual language of information and 'data' to produce precarious subjectivities.[78] The second implication is that by situating his apocalypse as a product of the generative flows of the unconscious, Ballard portrays such a biopolitical logic as emanating from the relationship between the human and the geological. This is a mode of identity formation in which forms of life are established as forces and intensities, rather than solid ontological categories. While decentring the human, as we have seen, this logic allows Ballard to articulate processes whereby matter is shifted, arranged, and deployed into formations that reproduce the repressive ideologies of discipline in new and dynamic ways. As Yusoff notes, geology functions in such a process as a 'technology of matter', providing the material and conceptual languages by which flows can be stratified into particular formations.[79]

In *The Drowned World*, the generation of vital possibilities from the flux of the human's primordial origins is recast by the arrival of Strangman, a pirate and slave-owner who wants to drain the lagoon and plunder the riches that lie beneath. Rather than representing a counterpoint to the 'lumbar transfer' underway for Kerans, Strangman functions as a re-articulation of the very same process: upon his arrival at the lagoon, Kerans notes the increasing presence of a 'curiously large number of albino snakes and lizards […] appearing from the jungle as if attracted by his presence' (p. 99). Seeking to perform his own geological intervention by way of a dam that will uncover the city beneath, Strangman—described by Ballard as 'uncannily

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[78] Gilles Deleuze, 'Postscript on the Societies of Control', *October*, 59 (1992), 3-7, (pp. 5-6).
[79] Katherine Yusoff, *A Billion Black Anthropocenes or None* (Minneapolis: University of Minnesota Press, 2018), p. 14.

white'—brings about an activation of the outer material world in his own image, proliferating a whiteness that lays claim to its own strata, configuring the drowned city as part of a 'libidinal economy of geology' via a desire for its hidden treasures.[80] After the lagoon is drained, the fossilised city is revealed to Kerans in stark contrast to its previous vitality:

> Thick black mud, hissing faintly as its contained marine life expired in a slow deflation of air-bladders and buoyancy sacs, lay everywhere, over the ticket booths and the stairway to the mezzanine, across the walls and door-panels. No longer the velvet mantle he remembered from his descent, it was now a fragmenting cloak of rotting organic forms, like the vestments of the grave (p. 127).

The same thematics of vital excess that previously denoted a sloughing of human identity are here repurposed as death drive: as Strangman chides Kerans when he almost drowns on a trip below the depths, the question he should be asking is 'did I or did I not try to kill myself? (p. 112). In this moment of uncertainty, the will to 'return to the quiescence of the inorganic world' that Freud diagnoses in *Beyond the Pleasure Principle* exists as both a product of the human's organic recall and Strangman's racialised project of extraction and unearthing.[81] In much the same vein, this double articulation of organic memory and biopolitical subjectivity extends to the ending of Ballard's novel, in which Kerans travels alone into the uninhabitable south, 'a second Adam searching for the forgotten paradises of the reborn sun' (p. 175). Here, the ultimate wish-fulfilment of Kerans's journey down the spinal fossil simultaneously produces the trope of a smooth and empty space modelled and rendered meaningful by the colonial gaze.

By articulating the colonial mattering of his world as constituted through the chaotic, earthly, and vital, Ballard writes a form of biopower that operates through the maintenance of an indeterminate zone between life and death. That is, just as the forces of entropy that govern Ballard's worlds are at once vital and necrotic, so do the subjectivities in these texts slip and

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[80] *Ibid.*, p. 7.
[81] Sigmund Freud, *Beyond the Pleasure Principle* trans. and ed. by James Strachey (New York: Norton, 1961), p. 56.

slide between these two poles. 'Life', in this context, should be read as a discursive articulation of proximity to nonlife that is always subject to re-articulation. Desire shifts from its role in bringing about the human's dissolution towards an externalisation—in multiple and varied directions—of this death-impulse. Indeed, rather than describing a system that seeks only to 'restore an earlier state of things', as Freud writes, Ballard depicts a process that operates via particular grammars that situate subjects (and nonsubjects) at points on the scale between animacy and inanimacy.[82] Chen argues that 'animacy' is a principle that 'suggests there can be gradations of lifeliness', describing a biopolitical logic that is porous in its non-adherence to simplified binaries of human/animal and life/death.[83] Animacy, Chen notes, operates in both linguistic and material contexts, showing on the one hand how 'animality' can be produced as a grammatical effect of subject and object designations within language itself.[84] On the other hand, and simultaneously in Ballard's case, animacy describes the material formations within which toxic actants bring into being 'deathly subjects', animated as proximate to nonlife through their co-implication with dangerous substances.[85]

In what remains of this chapter, I return to an analysis of 'The Terminal Beach', reading Ballard's depiction of Enewetak as mobilising the fossil alongside animacy hierarchies of waste, toxicity, and animality to produce such a form of deathly life. I argue that this story presents US nuclear imperialism as the pinnacle of the human's mobilisation of the geological as a technology of matter. As Moynihan argues, the spine itself leads towards the 'terminal point' of the nuclear, the will to return to the inanimate repeated in 'the fact that the technoscientific power to redesign our world in our image is simultaneously the power to destroy it'.[86] The spine, in other words, is a figure of indeterminacy, pointing equally to a

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[82] *Ibid*., p. 56.
[83] Mel Y. Chen, *Animacies: Biopolitics, Racial Mattering, and Queer Affect* (Durham: Duke University Press, 2012), pp. 7-167.
[84] *Ibid*., p. 13.
[85] *Ibid*., p. 218.
[86] Moynihan, *Spinal Catastrophism*, pp. 111-154.

vertical, technological extension of life as it does to a return to the human's geological heritage. Ballard's depiction of geologic power in this sense eludes what Chen describes as the 'diagnostic promise of the categories of life and death', instead constituting animality in the space between these poles.[87]

By using the process of fossilisation to articulate this biopolitical condition, Ballard constructs Enewetak as a site of intersecting traumas brought about by the same process of geologic animation. Indeed, as Yusoff notes, the atoll plays a key role in the stratigraphic imagination of the Anthropocene, marking a site immortalised by the radionuclides that will remain present 'in sedimentary deposits for some 100,000 years into the future'.[88] Marking the fossil legibility of the human at species level, with strontium-90 detectable in every human body on the planet, atoll testing also functions according to a colonial territoriality, rendering Indigenous bodies in the Pacific Islands proximate to nuclear toxicity. Islanders from Rongelap and Utrok were exposed to immediate radiation from the Castle Bravo detonation in 1954, 'causing both immediate and lasting epidemiological legacies and toxic intimacies with leukaemia, neoplasms, and thyroid cancers'.[89] Not only exposed to the dangers of nuclear testing, the Marshallese 'were subjected to unconsented medical testing […] brought to Chicago for examination as specimens for experimentation in a human zoo'.[90] In their alignment with the deathly, Indigenous inhabitants of the Marshall Islands were both animalised—rendered, as Francis Hezel notes, as 'guinea pigs', and so subjected to the same sacrificial procedures as nonhuman test subjects killed across the US testing regime—and united with the geological, their bodies envisioned as sites through which the environmental impacts of nuclear toxicity could be read.[91]

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[87] Chen, *Animacies*, p. 193.
[88] Yusoff, *A Billion Black Anthropocenes*, p. 44.
[89] *Ibid*., p. 45.
[90] *Ibid*., p. 46.
[91] Francis X. Hezel, *Strangers in Their Own Land: A Century of Colonial Rule in the Caroline and Marshall Islands* (Honolulu: University of Hawai'i Press, 1995), p. 273.

The toxicity of Enewetak at first assumes the same form as the chaotic logics of the unconscious in *The Drowned World.* Here, the 'spinal landscape' is composed of ciphers that correspond to 'zones of significant time', unlocking for Traven a sense of possibility tied to the 'magic' of nuclear science: 'for me the hydrogen bomb was a symbol of absolute freedom' (pp. 31-43). As well as being mineralised into fossil layers, this molecular world of flowing matter is given form in the corpse of an anonymous Japanese man encountered by Traven. After noticing a fly feeding on the 'rich liqueurs' of the corpse, the following exchange ensues:

> YASUDA: […] Here among the blocks you at last find an image of yourself free of the hazards of time and space. This island is an ontological Garden of Eden, why seek to expel yourself into a world of quantal flux?
>
> TRAVEN: Excuse me (The fly has flown back to the corpse's face and sits in one of the dried-up orbits, giving the good doctor an expression of quizzical beadiness. Reaching forward, Traven entices it onto his palm. He examines it carefully) Well, yes, these bunkers may be ontological objects, but whether this is the ontological fly is doubtful. It's true that on this island it's the only fly, which is the next best thing (p. 49).

Traven's conversation with the dead man, set out as dialogue with stage direction, showcases Ballard's use of textual form as a mirroring of the geologic text of Enewetak. Defining a linguistic space in which the dead are animated in much the same way as the living, the conversation shows Traven's ontological security to be constituted via the animating properties of language, suspended between life and meaning, death and the dissolution of self. Far from a neutral space of chaos, entropy, and 'quantal flux', this textual space is one in which, as Chen writes, 'animacy hierarchies […] manipulate, affirm and shift the ontologies that matter the world'.[92] Instructed to kill the fly that had been 'lucky to retain its identity for so long'—an event that constitutes 'neither an end, or a beginning'—Traven is confronted with the scale of animacy that proceeds upwards, as if navigating the verticality of the spine, from the fly's

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[92] Chen, *Animacies*, p. 42.

abject animality through to Yasuda's position as a dehumanised and deathly subject of nuclear imperialism (p. 49). By delineating a textual zone between life and death, this passage distils the process at work across Ballard's fiction whereby subjects are produced via the material-discursive text of the geological. Enewetak serves as a strata of cold war technological modernity; a form of life dependent on the maintenance of states of deathly life among humans and animals.

Ballard's fossilised worlds, while mobilising the idea of the apocalyptic as a narrative trope for the 'end of the world', really orient themselves towards a catastrophic present in which the preservation of a singular human 'world' defines the conditions by which words that exceed the limits of human perception are experienced. As a structuring figure of Ballard's vitally material imagination, the fossil encompasses both the ethical possibilities of a flattened ontological field, and the manner in which such a flattened ontology sets the stage for shifting hierarchies of animacy. This process marks an externalisation—and biopolitical mobilisation—of the libidinal drives that at first complicate the human's relationship with a universal and anthropocentric conception of life. Rather than presenting a model for making disparate worlds comprehensible together, Ballard's fossil imaginaries trace a relationship between the geological and subject formation that is complex, differentiated, and variegated; the categories of human and animal are shown to be modifiers on a scale of liveliness that is always being re-articulated. In the following chapter, I turn to a different expression of the temporal politics of the cold war that inform Ballard's geological imaginary: that of extinction, risk, and media ecologies of future uncertainty. Just as Ballard's fiction depicts life as both untethered from its previous categories of sense and simultaneously subject to new categories of control, the texts I examine in the following chapter depict proper forms of life as mediated according to their status as 'at-risk' or endangered. But while Ballard's interpretation of ecological ideas during the 1960s centre around various expressions of the human's own

animality, the next chapter examines a model of the properly human that, through the 1960s and 1970s, came to depend upon a new conception of the human as always and necessarily in-relation with nonhuman worlds.

<center>**Chapter Three**</center>

<center>**Mediating Death and Life: Extinction and the Species Politics of Risk**</center>

Introduction

This chapter will examine the figure of extinction, as it develops throughout the 1960s and

1970s in American popular and literary culture, as a concept intimately tied to the cold war

worldview of risk, security, and management. Marking an interwoven conceptual history

between nuclear fears and discourses of conservation, the notion of extinction gives rise to new

ways of thinking about animals as populations to be managed and conserved, as well as objects

of knowledge to be catalogued and ordered according to various degrees of threat, or

'endangerment'. Extinction thus marks a way of thinking about the future that reproduces

strategies of RAND futurologists and the architects of the US security state, instrumentalising

the unknown future potential of catastrophe in order to model a stable and balanced present.

The discourses that the chapter examines in the 1960s and 1970s are prefigured by the rhetoric

of the International Union for Conservation of Nature (IUCN), an initiative established by the

United Nations Educational, Scientific, and Cultural Organisation (UNESCO) in 1948.

Pioneered by Julian Huxley, UNESCO's first Director General, the IUCN established

conservation as a vital force in the fostering of 'world citizenship': a cosmopolitan ideal that

depicted the planet as an interconnected, machinic whole.[1] An organisation that championed

the universalising discourses examined in my first chapter, UNESCO saw interconnection as

evidencing the next step in human evolution, while epitomising an idealised model of

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[1] Glenda Sluga, 'UNESCO and the (One) World of Julian Huxley', *Journal of World History*, 21 (2010),
393-418, (p. 393).

<center></center>

subjectivity in the present based around the white, human, imperial norm.[2] In a similar vein, the discourses of extinction that this chapter examines mobilise particular ideas about the future in order to model an ideal vision of an interconnected present. The rendering of nonhuman species as 'at risk', while representing an increased ecological awareness and movement towards recognising the 'rights' of animals in a legal context, also helps produce a particular kind of human subjectivity based in rationally analysing and protecting the natural world.

In tracing the development of a cold war extinction imaginary, the chapter argues that nuclear risk and the threat of species loss are conceptual fields that shape one another in the cultural imagination of the United States during the 1960s and 1970s. The human subject at stake in narratives of both nuclear extinction and species loss is capable of modelling and controlling the present based on the imagined existence of future risk. As Brian Massumi notes, the politics of risk depend upon the creation of a 'remainder of uncertainty, an unconsummated surplus of danger', which renders the present 'shadowed by a remaindered surplus of indeterminate potential for a next event running forward back to the future, self-renewing'.[3] The collapsing of time and operationalisation of uncertainty performed by the modelling of risk function, ultimately, as a means for the human subject to channel itself towards the future in new ways. As one aspect of future risk that produces this effect, species loss functions as an opportunity for the human to intensify its rational control over the present. The species politics of risk, then, is a name for the process whereby categories of species difference, including 'human', are securitised and frozen in the present precisely because of the uncertainty of their future.

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[2] *Ibid*., p. 397.
[3] Brian Massumi, 'The Future Birth of Affective Fact: The Political Ontology of Threat', in *The Affect Theory Reader* ed. by Melissa Gregg and Gregory J. Seigworth (Durham: Duke University Press, 2010), pp. 52-71 (p. 53).

In linking the co-production of species and risk in the American cold war consciousness, the chapter attends to the central question of media and mediation. As well as producing uncertainty as a central tenet of species identity, the politics of risk depends upon a sense of interconnection between human and nonhuman worlds. In his 1964 work *Understanding Media*, Marshall McLuhan notes that the advent of telecommunication produces what he terms the 'global village': 'our specialist and fragmented civilisation of centre-margin structure', McLuhan writes, 'is suddenly experiencing an instantaneous reassembling of all its mechanised bits into an organic whole'.[4] McLuhan's terminology gives insight into one of the contradictions this chapter will explore: the mediated reality of the global village depends on an image of a universal, enduring humanity even as this humanity is distributed across technological networks. The human subject of the global village is threatened, in other words, by another kind of uncertainty located in what McLuhan describes as media's mechanical assembly of the human from disparate parts into a homogenous whole. The logic of media allows for the mapping of a human subjectivity that is simultaneously constituted and distributed within global networks of communication.

As a logic that is intertwined with McLuhan's notion of the global village, the species politics of risk deploys an image of the human as a relational subject within a systemic planetary whole. In opposition to the modelling of the category 'human' as a universal, stable, and consistent position, the relational human describes a model of identity that functions through the instability of its own boundaries; just as the logics of immunity and vital material formations in the previous chapters describe strategic forms of mastery that instrumentalise the fluidity of human identity, the species politics of risk mobilises relationality in order to model proper versions of the human. The chapter will examine the construction of such a relationality

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[4] Marshall McLuhan, *Understanding Media: The Extensions of Man* (London: Routledge, 2001), p. 101.

across the doubled contexts of existential risk for humans (cold war security) and nonhuman animals (extinction). As ideas constituted by the dual development of the notion of global interconnection in both ecological and media-technological modes, the threats of nuclear armageddon and species loss mobilise the idea of a relational humanity in order to assert new formations of the human across multiple modalities. While the operation of uncertainty leads in many respects towards the control and management of life in the case of state security and conservation, the same operation of uncertainty also gives rise to different affective modalities, including love, enjoyment, monetisation, and eroticisation. In each of these instances, as Jody Berland argues, the nonhuman animal functions itself as the medium of communication through which the human is both securitised and positioned in various forms of affective relation to the nonhuman.[5]

The first part of the chapter examines the representation of extinction in Thomas Pynchon's novel *Gravity's Rainbow* (1973) as a way of framing some of the chapter's central concerns. In a satirical series of passages on the final days of the dodo, Pynchon depicts the concept of extinction as producing a sanctified image of Life that transcends the lives of individual animals lost. Pynchon's novel shows how such an immutable principle is produced as a simulacrum that conceals the control of life's molecular components—a process enacted in Pynchon's novel by the maintenance of risk as a permanent condition. The second section looks to popular representations of nuclear threat and species loss throughout the 1950s and 1960s in the United States. The section argues that in their often-concurrent articulation, the notions of extinction and nuclear risk are managed in the popular imaginary through a developing notion of interconnectivity with nonhuman worlds. The third part of the chapter examines two specific examples of this model of interconnection in Disney's early popular

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[5] Jody Berland, 'Animal and/as Medium: Symbolic Work in Communicative Regimes', *The Global South*, 3 (2009), 42-65.

wildlife documentaries, the educational 'True-Life Adventures', and the education program 'Man: A Course of Study' (MACOS). The Disney movies, which served a particular pedagogic purpose during the late 1960s and 1970s when they were adapted into educational shorts, enact a sense of interconnection that at once interpellate their audiences via the rubric of 'survival', while also fostering an alluring, fetishistic connection to the natural world. MACOS, meanwhile, sought to establish its students as global citizens capable of surviving in a hostile world defined by the threat of the nuclear. Developed by educational psychologist Jerome Bruner, MACOS was produced at the Education Development Centre of Newton, Massachusetts, and taught to fifth and sixth grade students in 1700 schools across the United States during the 1970s.[6] Through its incorporation of anthropological film depicting both human and nonhuman animals, MACOS sought to place its students *inside* the worlds being studied, fostering a model of identity that mobilised affect and uncertainty in order to produce meaningful human subjects.

Finally, the chapter turns to a reading of Philip K. Dick's novel *Dr. Bloodmoney, or How We Got Along After the Bomb* (1965). Dick's novel depicts an apocalypse that blurs the boundaries between fiction and reality, producing an irresolvable uncertainty surrounding the crossover between 'real' and mediated events. In centralising the role of the popular media formats of television and radio, Dick's novel depicts a space of interconnection in which the uncertainty of risk is expressed via the malleability of boundaries between human, animal, and machine. Reading *Dr. Bloodmoney* through the lens of Deleuze and Félix Guattari's concept of schizoanalysis, I argue that the novel models an idea of relational humanity—both in its ecological and technological articulations—that functions to sustain the dominant ideology of

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[6] George Weber, 'The Case against Man: A Course of Study', *The Phi Delta Kappan*, 57 (1975), 81-82, (p. 81).

universal humanism, making the human *more human* through the production of new kinds of relationship with the nonhuman world.

I. Extinction, Life, and Death-Transfigured

In Thomas Pynchon's *Gravity's Rainbow* (1973), the operation of technological death embodied throughout the novel by the figure of the V-2 rocket is given a historical counterpart in the story of Frans Van der Groov, ancestor of secret agent Katje Borgesius and prime actor in the systematic extinction of the dodo bird on the island of Mauritius in the seventeenth century. While the killing of the birds may be down to their embodiment of something 'ill-made to the point of Satanic intervention, so ugly as to embody argument against a Godly creation', Frans locates the will to wipe out the species not in the ugliness of the dodos but rather in their status as non-speaking animals: 'had we but found savages on this island, the bird's appearance might have then seemed to us no stranger than that of the wild turkey of North America. Alas, their tragedy is to be the dominant form of Life on Mauritius, but incapable of speech'.[7] Unable to process the idea that the birds are to be killed on the basis of their appearance, Frans imagines the dodos as having gained the 'Gift of Speech', transforming their extinction into a narrative of salvation: 'they are all brothers now, they and the humans who used to hunt them, brothers in Christ […] Sanctified now they will feed us, sanctified their remains and droppings fertilise our crops' (p. 131).

As willing participants in their own extinction, the dodos here help to usher in an idea of an 'earthly paradise restored' that is tied up itself with an American pastoral imaginary satirised by Pynchon's novel; a mythic ideal of Nature making whole a subjectivity that in reality is dissected and destabilised by the molecular logics of military-industrial-capitalism.

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[7] Thomas Pynchon, *Gravity's Rainbow* (London: Vintage, 2000), p. 130. All subsequent references will appear in the text.

By imagining the birds as possessing speech, and subsequently welcoming their own salvation in death, Frans repeats a process that Pynchon here requires of his readers: the dodo, the quintessential example of an extinct species in the Western imaginary, is itself necessarily imaginary, an aggregate of various cultural and historical ideas about extinction long severed from the material and lived realities they seek to represent. As Thom van Dooren notes, 'this bird, and this biological process, have become strangely synonymous': in this short section of Pynchon's novel, the dodo speaks from beyond the grave as a rhetorical embodiment of extinction, rendering this unimaginable figure knowable to the human.[8]

In Pynchon's passages on the dodo, a process of determined extermination—Frans observes that the barrel of his rifle 'made an axis as potent as Earth's own between himself and this victim'—is transformed into a preservation of Life: bestowed with 'the gift of rational discourse', the dodos acknowledge 'that only in His Word is eternal life to be found' (p. 131). The death of the dodo as a species is a process that transcends the lives of individuals lost and rather produces a sanctified and capitalised conception of Life—an eternal, immutable principle premised upon the interconnection of all those who embody it between the realms of life and death. The real dodos killed by Frans and his contemporaries are separated, in other words, from what Sarah Bezan describes as the 'simulacra' of the extinct animal.[9] To follow the logic outlined by Derrida, the dodos encountered by Frans cannot die precisely because 'one can put [them] to death without "killing" […] or murdering', in a biopolitical formation that holds the animal 'foreign to everything that defines sanctity'.[10] The extinct animal, though, acquires a condition of permanence antithetical to the animal that cannot be murdered: Frans's

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[8] Thom van Dooren, *Flight Ways: Life and Loss at the Edge of Extinction* (New York: Columbia University Press, 2014), p. 3.
[9] Sarah Bezan, 'Dodo Birds and the Anthropogenic Wonderlands of Harri Kallio', *Parallax*, 25 (2020), 427-445, (p. 427).
[10] Jacques Derrida, *The Animal that therefore I Am* trans. by David Wills, ed. by Marie-Louise Mallet (New York: Fordham University Press, 2008), p. 111.

myth of salvation signals a process whereby the dodo is reanimated, maintained in a spiritual immutability that extends infinitely beyond the 'event' of its extinction.

The story of the dodo serves for Pynchon as a precursor to the cold war logics that emerge, in *Gravity's Rainbow*, at the end of the Second World War. In one sense, Frans's justification of mechanised killing serves to parody the postwar liberal vision of human nature as an idealised combination of diversity, creativity, and progressive values: in describing the dodos as 'brothers' with the humans that drive them to extinction, Pynchon references the consensus in the 1950s and 1960s whereby, as Erika Milam summarises, 'American scientists […] largely believed that humans were instinctually cooperative'.[11] Welcoming the dodo into the 'family of man', in other words, showcases the limits to this so-called community, located precisely in the fact that the inclusion of the dodo does not negate the more fundamental division that sees the birds rendered killable in the pursuit of 'salvation' and 'eternal life'. In addition to this parody of postwar liberal inclusivity, Pynchon's section on the dodo helps to establish the broader theme of mediation between death and life in *Gravity's Rainbow*. Elsewhere in the novel, Pynchon reanimates the Weimar German industrialist Walther Rathenau, 'prophet and architect of the cartelised state', who sees war economy as a model for an authority based on the 'rational structure' of business (p. 195). Speaking from beyond the grave through medium Peter Sacha, Rathenau invokes the importance of extinct species to the 'life' of such a state:

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[11] Erika Lorraine Milam, *Creatures of Cain: The Hunt for Human Nature in Cold War America* (Princeton: Princeton University Press, 2019), p. 23.

> Consider coal and steel. There is a place where they meet. The interface between coal and steel is coal-tar. Imagine coal, down in the earth, dead black, no light, the very substance of death. Death ancient, prehistoric, species *we will never see again*. Growing older, blacker, deeper, in layers of perpetual night. Above ground, the steel rolls out fiery, bright. […]
>
> But this is all the impersonation of life. The real movement is not from death to any rebirth. It is from death to death-transfigured. The best you can do is to polymerise a few dead molecules. But polymerising is not resurrection (p. 197).

The molecular logics linking fossil fuels to the war-machine, Rathenau explains, produces an image of life in the free-floating, dynamic, and vital image of capital that is really a transmutation of death. More than just a commentary on the alliance between war and capital, though, Rathenau's proclamation, extracted via séance, showcases the mediated process through which this transformation of death into the semblance of Life takes place. Pynchon shows that the sanctified conception of Life—eternal, immutable, and connecting humans to one another in their shared embodiment of its principle—is a simulacrum produced by the mediation of death, the polymerisation of molecules producing not resurrection but rather the animation of the inanimate. Life is thus an illusion formed by a process of connecting, drawing together, and rendering coherent the constituent parts of a world of molecular flux. In this regard, Pynchon depicts a version of what Bruce Braun describes as the 'molecularisation of life'—a process that sees bodies understood 'less in terms of their intrinsic genetic essence', and more 'in terms of a global economy of exchange and circulation, where the body is thrown into a chaotic and unpredictable molecular world filled with emergent yet unspecifiable risks'.[12] Pynchon's phrase 'death-transfigured' describes a process akin to what Braun sees as the effects of molecularization: 'the physical mechanisms of "life"' are made 'available to political and economic calculation in new ways'.[13]

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[12] Bruce Braun, 'Biopolitics and the Molecularisation of Life', *Cultural Geographies*, 14 (2007), 6-28 (p. 7).

[13] *Ibid*., p. 14.

But more than an image of liveliness produced by the instrumentalisation of deathly materials, Pynchon's conception of Life functions via processes of mediation that introduce the semblance of narrative sequentiality to the complex molecular flows of the novel. Rathenau's séance represents a logic of animation that is repeated throughout the novel with reference to the medium of film; a technology that Pynchon depicts as materialising, rather than simply representing, the fantasies depicted between its moving images. As well as the *Schwarzkommando*, fictional rocket troops that subsequently emerge in the protean Zone of postwar Germany, we have Pynchon's vision of the 'creature feature' movie in octopus Grigori, the writhing beast that appears on a beach in southern France and attempts to abduct secret agent Katje. What appears as an event of pure chance is in fact a result of Grigori's Pavlovian conditioning, conducted via playing reels of film depicting Katje to the octopus, whose 'corrugated ooze' signifies a merging of the hard structures of secret control that underpin the novel with the flowing, liquid events of a narrative that resists straightforward interpretation (p. 222). Most significantly, the animating properties of film function for Pynchon to represent the networks of secret affinity that exist between different technologies, and in this case what Friedrich Kittler identifies as the coincidence between the history of the movie camera and the history of automatic weaponry.[14] Kittler argues that, because of the direct influence from the crank-machine gun to the development of chronophotography by Jules Janssen in 1874, the principle of the moving image shares a genealogy with technologies of 'mechanised death': 'what the machine gun annihilated the camera made immortal'.[15] Such a genealogy is visible in the structure of *Gravity's Rainbow*, which ends with the explosion of a rocket over the Orpheus Theatre in 1970: a transportation in time that, for Kittler, indicates just

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[14] Friedrich Kittler, *Gramophone, Film, Typewriter* trans. by Geoffrey Winthrop-Young and Michael Wutz (Stanford: Stanford University Press, 1999), p. 124.
[15] *Ibid*., p. 124.

'how interminably world wars go on'.[16] Pynchon's depiction of cinema functions thus not as a repetition of mechanised death, but rather its permanent suspension, the parabola of the V-2 marking a transhistorical extension of the possibility of annihilation through to the frozen states of suspense mediated by the threat of the nuclear.

Following Pynchon's linking of the thematics of extinction, Life, and the medium of film gives crucial insight into how the species politics of risk operates through the securitisation of both human and nonhuman populations. In what follows, I want to employ Pynchon's rationale—that Life, in its sacred, permanent, and universal form is produced through a process of mediating death—to the double threat of nuclear extinction and species loss. To slightly alter Rathenau's formula, the species politics of risk, across these two contexts, produces an image of Life that is the *possibility*-of-death transfigured, animating a relational and interconnected 'human' into new formations with nonhuman worlds. To do this, I will first turn to a brief outline of how risk developed as a structuring logic of the American cold war security state.

II. Nuclear Threat and the Securitisation of Wilderness

Most notably developed as a theoretical concept by the sociologist Ulrich Beck in his book *Risk Society* (1986), risk describes in the first instance a consciousness governed by an imagined future: in risk society, Beck notes, 'the past loses the power to determine the present. Its place is taken by the future, thus, something non-existent, invented, fictive as the "cause" of current experience and action'.[17] A reversing of the roles of cause and effect in a system, risk marks both a way of making the future legible, and a way of programming desirable futures. As Joseph Masco argues, a primary goal of the cold war security state was to 'both

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[16] *Ibid*., p. 127.
[17] Ulrich Beck, *Risk Society: Towards a New Modernity* (London: Sage Publications, 1992), p. 34.

normalise catastrophic danger and politically deploy an image of it', militarising the everyday existence of American citizens and recalibrating life based on the 'minute-to-minute possibility of nuclear warfare'.[18] Achieved through 'the largest domestic propaganda campaign to date in American history', this program of civil defence involved 'town meetings and education programs in every public school', as well as the saturation of television, film and radio with images of nuclear war.[19] In the civil defence movies that Masco analyses, created under the name Operation Cue, the effects of nuclear blasts on constructed suburban neighbourhoods, complete with mannequin nuclear families, were laid bare for the American public of the 1950s. At the same time as fostering a sense of anxiety and fear in the population, the program also sought to establish nuclear war 'as a state of mind that could be incorporated into one's normative reality': in addition to showcasing destruction, the movies also sought to demonstrate the role of planning and preparation in allowing life to flourish anew after an attack.[20] Future-based risk functioned as a tool for producing good citizens in the present, with insecurity on a personal level feeding into a greater structure of security at the symbolic and national level.

Masco's analysis illustrates that risk functioned in civil defence programs as a way of producing subjects secured and securitised precisely via a fundamental insecurity. While this was achieved in the 1950s through the utilisation of media-ecologies to militarise the domestic, the mediums themselves also carried a message of interconnection which, from the early 1960s, became central in the fostering of a public ecological consciousness. As Etienne Benson has documented, the late 1950s saw the development of radio telemetry as a crucial technology in the surveillance of wildlife, 'extend[ing] the range of man's observational powers' in order to

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[18] Joseph Masco, *The Theater of Operations: National Security Affect from the Cold War to the War on Terror* (Durham: Duke University Press, 2014), p. 49.
[19] *Ibid*., p. 50.
[20] *Ibid*., p. 60.

track populations of animals and enact conservation practices.[21] As well as opening up direct military applications—Benson notes that knowledge gained from wildlife tracking 'could potentially be used to improve navy technologies, including navigation and missile guidance systems'—radio tracking provided the means for an exacting and molecular biopolitics of conservation, allowing scientists to access data on animal movement and behaviour without the limitations of previous methods of observation.[22] Benson's study identifies two broad patterns relevant to our discussion, relating to a shift in scientific and public attitudes towards mediated animals between the late 1950s and the 1970s. The first, located in the early days of wildlife tracking technologies, is the potential for biopolitical management created by radio tracking. Developed in connection with national laboratories that were 'legacies of the Manhattan Project', and 'where ecosystems ecology and systems analysis were dominant', the early applications of these technologies viewed animal populations purely in terms of data that could be studied and predicted, allowing for a conservation practice based around simulation and programming.[23] Second, the development of these technologies through the 1960s interfaced, Benson shows, with a developing notion of 'wilderness' attributable to the environmentalist movement and concerned with a more symbolic, aesthetic, and holistic treatment of the 'natural' world. Produced as an effect of the securitising forces epitomised by radio tracking, notions of wilderness applied to spaces that were officially policed and yet publicly untouched. While ostensibly constructed as spaces dedicated to a better understanding of how to protect nonhuman life, this set-up also made wild places mediated zones for the projection of particular narratives about humanity and its relationship to the natural world.

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[21] Frank C. Craighead Jr. and John J. Craighead, 'Tracking Grizzly Bears', quoted in Etienne Benson, *Wired Wilderness: Technologies of Tracking and the Making of Modern Wildlife* (Baltimore: The Johns Hopkins University Press, 2010), p. 60.
[22] *Ibid*., p. 11.
[23] *Ibid*., p. 36.

The case of radio tracking showcases the multiple modalities of relating to animals opened up by the species politics of risk. As Benson suggests, the movement towards the maintenance of pristine natural enclaves was not a movement away from the biopolitics of radio telemetry, but rather a development of its operations: molecularised life, as well as presenting new possibilities for control, also allowed humans to participate in a symbolic identification with nonhuman worlds, as well as their fetishisation, economisation, and personalisation. In the domain of extinction, this is perhaps most visible in the development of the notion of 'endangerment' in the political sphere. Marking a shift in the language of security first rehearsed in the atomic imagination of the 1950s, legislation made use of cataloguing techniques found in radio tracking in order to provide a new sense of individuality to species deemed at-risk. In 1964 the Department of the Interior set up a Committee on Rare and Endangered Wildlife Species, which two years later published the first 'Redbook' containing sixty-two endangered species.[24] As Ursula Heise observes, Red Lists combine 'the usual biological and ecological information contained in general biodiversity databases' with the classification of species 'according to their risk of extinction'.[25] Reading the lists as both a scientific and narrative genre, Heise emphasises that this is far from the neutral and objective collection of information that the term 'database' signals: the Red List, for Heise, is a form of 'nature writing' that attempts to map and classify biological life 'as part and parcel of a battle of heroic scientists and conservationists against ignorant authorities and indifferent masses'.[26]

The databasing of endangered animals thus had the effect of directly implicating the human within the narrative of ecological risk: recognising extinction, as Heise observes, played into the conception of cultural massification which had been present since the 1950s, requiring

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[24] Ursula Heise, *Imagining Extinction: The Cultural Meanings of Endangered Species* (Chicago: University of Chicago Press, 2016), p. 92.
[25] *Ibid*., p. 68.
[26] *Ibid*., pp. 65-66.

an active, engaged, and individualised American subject to advocate for endangered species. This is an example of what Sarah Daw identifies as the carefully curated subjectivity of the 'scientific American', an idea fostered by popular media at midcentury that championed active participation in cutting edge developments in science and technology for the average American citizen.[27] While a sense of personal responsibility for species driven towards extinction played a role in this subjectivity, popular representations of this logic from the 1960s showcase responsibility as both centred and displaced within such discussions. In the November 1962 edition of *National Geographic,* published in the same month that the Cuban missile crisis solidified the threat of human extinction, an article by the Duke of Edinburgh details the creation of the World Wildlife Fund (WWF). The fund, Prince Philip writes, exists in order to 'conserve the world's rapidly diminishing wildlife of all kinds', but will only prove effective if humans 'don't destroy ourselves in the meantime'.[28] Bearing the title 'Man's Wildlife Heritage Faces Extinction', the article goes on to locate the problems leading to species loss in human population increase, excessive pest control measure, and 'status killers': those humans who, like Frans, succumb to the 'hysteria' of killing and go out on 'rampages where they'd presently be firing at anything'.[29] These killers, as presented by Prince Philip to his *National Geographic* readers, are American hunters of the golden eagle as well as 'Arabs [who] believe they must prove their manhood by killing an oryx so that they will inherit its legendary courage and virility'.[30] The animals killed, classified as 'badges of barbarity', find their counterpart in animals killed for (Western) sport: 'at least the sportsman is concerned that the source of his sport is not destroyed'.[31]

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[27] Sarah Daw, *Writing Nature in Cold War American Literature* (Edinburgh: Edinburgh University Press, 2018), p. 4.

[28] His Royal Highness The Prince Philip Duke of Edinburgh, 'Man's Wildlife Heritage Faces Extinction', *National Geographic*, 122 (1962), 700-703 (p. 700).

[29] Pynchon, *Gravity's Rainbow*, p. 129.

[30] Prince Philip, 'Man's Wildlife Heritage Faces Extinction', p. 701.

[31] *Ibid*., p. 702.

In this case, the values of conservation present an image of life as a particular kind of death transfigured: only animals killed in pursuit of proper conservation measures, or indeed for 'sport', can feed into a worldview in which human life is not threatened. 'The mistake so often made by the ill-informed and the sentimental', the article notes, 'is that they are quite unable to see the difference between controlled conservation and indiscriminate destruction'.[32] As well as establishing an image of the interconnected human as specifically associated with civilised whiteness—this is a 'wildlife heritage' reserved only for a particular *kind* of human, and a human privileged in its ability to ensure future killing rather than conducting killing in pursuit of some kind of 'legend'—the article showcases more broadly the multiple discursive possibilities for modes of relation fostered by the species politics of risk. In simple terms, risk provides the backdrop for a slew of new ways in which animals are rendered legible in narratives of human survival. For readers of *National Geographic*, this is represented as an opposition between wanton destruction and a diplomatic, reasoned model of biopolitical conservation: death transfigured into an interconnected life that includes the human.[33] A *New York Times* article from January 1966 further categorises the discussion in terms of economic interest. Entitled 'Man, the Endangered Species', and detailing a government report from Interior Secretary Stuart Udall on endangered nonhuman species, the article issues a very particular warning: 'if man refuses to follow wise conservation practices in controlling his

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[32] *Ibid*., p. 702.

[33] It is worth noting that while the logics at play here relate to a specific cosmology of risk and endangerment produced by the politics of the cold war, the model of conservation found in *National Geographic* is also operationalising Christian legacies of good stewardship that are centuries old. In his book *Dominion*, Matthew Scully writes that the 'catechism of the Catholic Church declares, for example, that "Animals are God's creatures. He surrounds them with his providential care. By their mere existence they bless him and give him glory. Thus men owe them kindness"'. Far from presenting a worthy framework of ethics for the protection of nonhuman life, the biblical narrative of stewardship for Scully admits 'easy and endless adaption', so that 'even the commonest gut-shooter may today call himself a "Christian sportsman" without fear of correction'. Describing the proper relationship between animals and a vision of man created in God's image, stewardship legitimates the use of animals for food and clothing, scientific experimentation, and all aspects of domestication, since these relationships contribute to 'caring for or saving human lives'. See Matthew Scully, *Dominion: The Power of Man, the Suffering of Animals, and the Call to Mercy* (New York: St. Martin's Griffin, 2002), pp. 15-16.

economic affairs, the ultimate victim may not be natural beauty or birds and fish but man himself'.[34] In declaring man to be the real victim in his own improper relationship with the natural world, the article repeats the sentiment expressed in Wallace Stegner's 'Wilderness Letter', written in 1960 to the Outdoor Recreation Resources Review Commission and used in the introduction of the Wilderness Act in 1964.[35] Stegner writes that Americans, 'more than many peoples', still have the chance to hold on to the natural world;

> for while we were demonstrating ourselves the most efficient and ruthless environment-busters in history, and slashing and burning and cutting our way through a wilderness continent, the wilderness was working on us. It remains in us as surely as Indian names remain on the land. If the abstract dream of human liberty and human dignity became, in America, something more than an abstract dream, mark it down at least partially to the fact that we were in subdued ways subdued by what we conquered. […] For an American, insofar as he is new and different at all, is a civilised man who has renewed himself in the wild.[36]

For Stegner, wilderness offers a power of renewal that counters the damage wrought to the human spirit, and to 'liberty', by the mechanised processes of technological modernity.[37] The 'economic affairs' referenced by the *NYT*, rather than relating to a specific model for the economisation of nature, conjure instead the vision of 'value' advanced by Stegner, linking the successful continuation of human life to a form of connection with an 'abstractly nonhuman' wild. [38] Such a connection, for Stegner, is antithetical to the 'vulgarity' of a technological culture that obscures the human's relationship with the essential dignity of the natural world.[39]

In the following section, I want to show how the ideal of interconnection found in Stegner's letter, so removed from the tainting influence of the technological, is a trope produced itself by the interplay between extinction, survival, and interconnection found in the

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[34] 'Man, the Endangered Species', *New York Times*, 26 January 1966.
[35] 'Wallace Stegner', *The Wilderness Society*, [n.d.] https://www.wilderness.org/articles/article/wallace-stegner [accessed 3 May 2021].
[36] *Ibid*.
[37] *Ibid*.
[38] *Ibid.*
[39] *Ibid.*

format of wildlife film. Here—and as we will see, in two examples of film designed specifically for use in an educational context—the idea of the human's connection to and implication within nonhuman worlds is a notion enacted and literalised via the medium of film. As mediated renditions of interconnectedness, animal films create what Jonathan Burt terms notions of 'livingness', producing an animal image that 'is never external, but is just as structuring and transformative as animals out there in the "world"'.[40] Such a conception of livingness functions through the pedagogic contexts of both of my examples to produce an active sense of co-implication between viewers and the subjects of their respective films, fostering a human subjectivity premised both on the *idea* of interconnection, and the *active production* of interconnection through the medium of film. My first example is Walt Disney's 'True-Life Adventures', a series of short films and features produced between 1948 and 1960 and adapted into educational shorts well into the 1970s. Second, I turn to the education course 'Man: A Course of Study' (MACOS), a program devoted to extending midcentury discussions on the nature of 'Man' into the classroom, and developing in the process a theory of interconnection that bridged the worlds between risk and education, producing via this assemblage a fundamental vision of what it means to be human.

III. Filming Interconnection: 'True-Life Adventures' and 'Man: A Course of Study'

The True-Life Adventures play a central role in the popularisation of wildlife film during midcentury in the United States. As Gregg Mitman argues, Disney's foray into the world of the nature documentary functioned primarily as the packaging of life as entertainment: employing the same techniques found in Disney's animated features, including boisterous musical scores and anthropomorphised animal characters, the True-Life Adventures imposed

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[40] Jonathan Burt, 'Derrida, Bergson, Deleuze, and Animal Film Imagery', *Configurations*, 14 (2006), 157-179, (p. 167).

narrative and personality onto the lives of the animals on screen.[41] The effect of this, as Mitman

observes, is an image of nature 'made to conform to the expectations and tastes found in the

constructed family ideals of 1950s American culture'.[42] Not only an imposition of family

values onto the intimate lives of animals, the films deployed a thematics of survival that places

them in conversation with the genre of nuclear public broadcasting. Mitman notes that the

'revolving globe and bold, authoritative music that opened *Seal Island* mimicked the dramatic

start of newsreels such as *The March of Time*', and the similarities between the two productions

go beyond this sense of the objective, commanding voice of the public service broadcast.[43]

Specifically, in the *March of Time* short 'Mid-Century: Half-Way to Where?', what Mark Greif

describes as 'the crisis of man' is articulated in a series of shots of American cities showcasing

the triumph of modern architecture and engineering, before a sudden juxtaposition leads to

images of bombed cities during WW2.[44] A voiceover reads:

> Beyond the dreams of his ancestors, modern man has moulded the earth to his liking.
> Proud of his vast creative ability he can boast of the grandeur of his achievement, and
> admire the scope of his own imagination. But that very knowledge which enables him
> to build is the knowledge which has taught him to destroy. And in the twentieth century
> man's capacity for destruction was demonstrated on a terrifying scale. Yet none can
> deny that man's progress in material things is today at its highest peak.[45]

The message communicated here in 1950 to audiences in American theatres illustrates some of

the core functions of risk: in order to assume technological prowess, and therefore a proper

humanity, progress must dice with the lingering threat of new destructive forces. And yet,

rather than fearful stasis, this danger gives rise to a dynamic and lively production of new ways

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[41] Gregg Mitman, *Reel Nature: America's Romance with Wildlife on Film* (Seattle: University of Washington Press, 1999), p. 119.

[42] *Ibid*., p. 111.

[43] *Ibid*., p. 110.

[44] Mark Greif, *The Age of the Crisis of Man: Thought and Fiction in America, 1933-1973* (Princeton: Princeton University Press, 2016).

[45] *Halfway to Where?* (BFI, 1950) <https://player.bfi.org.uk/free/film/watch-halfway-to-where-1950-online> [accessed 3 May 2021].

of life and an enthusiastic embracing of the new potentials of technology. In Disney's *Secrets of Life* (1956), a similar thematics is brought to the fore in a discussion of the adaptation and survival of nonhuman life in the face of extreme adversity. Alongside footage of a burning forest, the narrator emphasises an innate renewal that accompanies destruction: 'the secret ways of nature are often strange. Even the forest fire helps her with her planning. […] The knobcone pine waits for this moment of emergency to release its seeds, and in so doing helps replant the wilderness almost before the holocaust has passed'.[46]

Despite remaining couched in the language of a hidden, fundamental truth waiting to be discovered, the vision of 'nature' put forward in *Secrets of Life* centralises its own realisation through technology. Directed by James Algar, whose work on *Bambi* (1942) prefigured the attitudes towards hunting as a barbarous practice that we find in *National Geographic*, the film speaks of its own technological methods as participating in the interconnected world that it depicts. The 'secret technique[s] of survival' perfected by nature are only accessible, the film notes, 'through the development of new photographic techniques […] and through the skill and patience of many scientist-photographers'. The following sequences, which see the growth of various plants depicted in uncanny slow-motion to a revelatory soundtrack, function to place this visual technology centre stage in life's wondrous story: 'the modern camera', the narrator notes, 'can speed up the process of growing'. Instead of simply *capturing* what is going on outside the human's field of vision, technology is given the active role in itself producing nature's secrets of survival. Life is realised, in other words, not through the very fact of growth in itself but rather in growth's mediation; in the techno-aesthetics of a process previously illegible to the human. Film functions here not just as a means for visualising life, but as a

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[46] *Secrets of Life*, dir. by James Algar (Disney, 1956) <https://www.disneyplus.com/en-gb/movies/secrets-of-life/> [accessed 3 May 2021].

productive agent that connects the human to nonhuman worlds themselves presented as perfect models of survival.

Rather than a straightforward imposition of human coordinates onto nonhuman worlds, then, the True-Life Adventures see themselves as producing a genuine performance of relational humanity, centred around the idea that through encountering the nonhuman in an intimate format via the medium of film, American society might learn some valuable lessons from the lives of animals (albeit lessons articulated according to the social and gendered norms of the 1950s). As Derek Bousé argues, wildlife film entails 'an even greater potential for naturalising ideological values' than Hollywood productions, with the images presented to the audience 'subject to just as much manipulation, yet the claim to represent "the real" is explicit'.[47] Bousé emphasises that the 'use of formal artifice such as varying camera angles, continuity editing, montage editing, slow-motion, "impossible" close-ups, voice-over narration, dramatic or ethic music' and similar techniques ensures that all filmic representations of wildlife occur somewhere on a scale of simulation between mediated reality and total fabrication.[48] Bousé's point is illustrated again in *Secrets of Life* when, in a segment on the 'working day' of the honeybee, the camera assumes an insect's perspective, situating the frame as bee-vision as a shaky, hand-held camera flies at breakneck speeds through fields of flowers.[49] While this segment naturalises the image of the bee as a capitalist worker, this ideological anthropomorphism is counterposed with a literal assumption of a nonhuman perspective. While self-consciously mediated, this strategy speaks to an effort on behalf of the filmmakers to get closer to animals' experience of the world than had before been possible. Jack Couffer, a photographer on the series, writes in his book *Songs of Wild Laughter* that 'since no one *knows* what an animal thinks […] what an animal does must be interpreted—put

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[47] Derek Bousé, *Wildlife Films* (Philadelphia: University of Pennsylvania Press, 2000), p. 18.
[48] *Ibid*. p. 8.
[49] *Ibid*.

into human terms—for us to understand'.[50] The possibilities of film justified this admission of human projection by pushing the capacities of anthropomorphism even further, bringing about an image of life that is both nonhuman-oriented and accessible for the human to both connect with and participate within.

By foregrounding this vision of a mediated life, the True-Life Adventures established a model of human-animal relation that falls somewhere in-between the two competing discourses located by Benson in the radio tracking movement. That is: the intimacy fostered by film technology produced at one and the same time the semblance of a life meticulously and accurately *observed*, and a more mythologised Life within which the human can *participate*. In so doing, the films tapped into the overlapping discourses of extinction for humans and nonhumans, establishing mediated interconnection—across or despite—difference as a means for managing risk and uncertainty.

After Operation Cue established the extinction of the human as a permanent feature of the public imagination, in the 1960s an education programme entitled 'Man: A Course of Study' (MACOS) sought to mould the subjectivity of American children around ideas of the survival and loss of nonhuman species. Built around the same postwar ideals of inclusivity, diversity, and equality that Pynchon satirises, MACOS began with a direct statement of its central goals and questions: 'the first several days of Man: A Course of Study bring the child into the course by making him, his friends, the human species, the subject of lessons. […] Who am I? What makes me human? What makes man human?'[51] The course, spearheaded by educational psychologist Jerome Bruner, found the answers to these questions in the discipline of Anthropology, which as Milam observes 'promised a means by which students could come to appreciate the cultural patterns of communities vastly different from their own while

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[50] Jack Couffer, *Songs of Wild Laughter*, quoted in Mitman, *Reel Nature*, p. 120.
[51] 'Three Introductory Lessons', *(Hu)mans: A Course of Study*, [n.d.] < http://www.macosonline.org>
[accessed 3 May 2021].

recognising the fundamental equality of all peoples'.[52] In emphasising the notion of equality across cultures and species barriers, MACOS sought to secure the idea of an unmoving and universal human nature, irrespective of class and racial boundaries, at the same time as underlining the common trait of survival shared between human and nonhuman. Through studying the life cycles of salmon, herring gulls, and baboons, students were encouraged to reflect upon what it takes to continue living in an often hostile environment, in a way designed to secure their own future and 'assure the survival of the [human] species in the atomic and postatomic age'.[53]

One central strategy used by the course to link the themes of human and nonhuman extinction was the practice of observation. In illustrating the survival mechanisms used by animals, lessons made use of the conceptual language of cybernetics to describe processes of communication between organism and environment: survival, the course teaches, is dependent upon the transmission of 'information' to animals' sense organs, producing feedback loops that prompt behavioural change. This universal language of computation and communication is extended once more to the students themselves: through looking at photographs of other children observing the behaviour of animals, paired with photographs taken in the field by anthropologists, students were encouraged to conceptualise their own place in the emerging narrative of information transfer and survival. In this sense, Bruner's course taught its students a way of being human that revolved around the human's own implication in the survival mechanisms used by nonhuman animals, with ideas of information transfer, feedback, and behavioural change reflected in the students' own consideration of what it is to be 'human', and how the human species might continue to survive. While these early lessons emphasise aspects of the human's own animality, as MACOS progressed its focus turned towards defining

[52] Milam, *Creatures of Cain*, p. 76.
[53] John P. Ivens, 'One Kind of Human Being: MACOS, the Human Sciences, and Governmentality', *European Education*, 45 (2013), p. 19.

how and why the human is exceptional among species. In a booklet on baboon communication, students are reminded that the behaviours of the animals that they are studying amount to 'communication, not speech':

> Misunderstanding each other causes humans a lot of trouble. A baboon, on the other hand, always understands another baboon in the troop. A baboon's gestures, together with sounds, show whether a baboon is calm, excited, or uncertain about what is happening. A baboon has no way of pretending to be excited or calm about something. A baboon cannot lie. A baboon's body, its gestures, and its sounds echo its real responses to what is happening around it.[54]

As Milam notes, the depiction here of the baboons as capable only of 'automatic messages' reinforces both 'a vision of man as an animal' while also suggesting that baboons and humans possess 'distinct kinds of mind: one capable of mere communication, the other of complex language that could express the conceptual state of an individual, including deception'.[55] On top of suggesting that the human is above 'mere' communication, the categorisation of baboons as machine-like here designates the human subject fostered by MACOS as capable of more than 'mere' survival. As stated by a later course document, 'we can learn much about man by observing his behaviour, just as we learn about other animals by observation. But man is a symbolising creature, and we must inquire into the meaning of his behaviour if we are to understand humanness'.[56]

Through combining the language of 'information' with the message that the human is made unique by symbolisation, mythology, and deception, MACOS defined a new kind of human subject awakened to the threat of extinction—for both human and nonhuman—and at the same time prepared to model new methods of survival for the human species in the future.

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[54] 'Baboon Communication', *(Hu)mans: A Course of Study*, [n.d.] <http://www.macosonline.org> [accessed 3 May 2021].

[55] Milam, *Creatures of Cain*, p. 91.

[56] 'The Netsilik Eskimos at the Inland Camps', *(Hu)mans: A Course of Study*, [n.d.] <http://www.macosonline.org> [accessed 3 May 2021].

In so doing, MACOS delivered a model of human identity caught between two competing poles. On the one hand, as the studies in animal behaviour sought to emphasise, the human is depicted as existing at the utmost pinnacle of a graph of increasing complexity which, nevertheless, renders both human and nonhuman behaviour using the same language. The innate survival mechanisms used by other species can be modelled onto the human, in other words, in order to learn about how the human can perform an evolutionarily successful form of animality and continue to survive on the planet. On the other hand, MACOS injects a mystic, affect-driven kernel of exceptionalism into its narration of the human. As project director Peter B. Dow writes, the humanity at the core of the course hinges upon an understanding of 'what causes people to love and trust rather than to fear and hate each other'.[57] Just as the civil defence initiatives of the 1950s sought to manage subjectivity through the production of affects and emotions, MACOS based its idea of human identity in the capacity to experience love, understanding, and empathy across boundaries of difference. Rather than contradicting the course's simultaneous focus on the human's readability through the languages of information and behaviour, MACOS's emphasis on the human's supposedly unique ability for affective bonding played into a vision of the world as one understandable, systemic, and interdependent whole. As Dow notes, 'we may be headed for a time when human survival in a shrinking and interdependent world may depend upon a more sophisticated understanding of the principle of justice in human affairs and a deeper faith in the human capacity for communication irrespective of the historical barriers of race, creed, and national origin'.[58]

In utilising the concept of interdependence to justify the value of MACOS as a course in survival, Dow here outlines the role of an extinction imaginary in securing the identity of the human: I am human by virtue of recognising my place within an interdependent world. In

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[57] Peter B. Dow, 'MACOS: The Study of Human Behaviour as One Road to Survival', *The Phi Delta Kappan*, 57 (1975), 79-81, (p. 81).
[58] *Ibid*., p. 81.

seeking to enact this communication irrespective of barriers, the course sought to transform the ways in which information was transferred from teacher to student, empowering children to take a more active role in the production of knowledge in the classroom. The course materials—including 'sixteen films, four records, five filmstrips, three simulation games, fifty-four artefact cards, two wall-sized maps', and more—created an environment for students to fully inhabit the worlds being represented.[59] As the course moved beyond animal behaviour to focus on Netsilik culture, students were conceived of as ethnographers who, through participating themselves 'in the field' via carefully constructed film footage and simulation games, were able to closely observe differences in human cultural activity from a supposedly neutral standpoint. While forming the crux of MACOS's humanist message, this section of the course drew heavy criticism from conservative opponents of Bruner's project: as well as depicting practices that actively stood against what one commenter describes as 'traditional values', including depictions of polygamy, bestiality, and infanticide, the empowerment of students as producers of knowledge ultimately represented a loss of control over the development of children into properly American citizens.[60] The criticism of 'indoctrination' levelled against MACOS, forming the main point made in an article published alongside Dow's defence of the course in 1975, was undermined from the beginning by the course's very reason for being: how could it be possible to indoctrinate someone into humanity?[61] In situating the course's primary lesson in an identity that appeared irrefutably universal, Bruner and Dow offset the constructed nature of MACOS's ethnographic material by establishing the course as something to be experienced, and lived, rather than transmitted in a linear fashion from an authoritative figure of knowledge.

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[59] Peter B. Dow, 'Past as Prologue: The Legacy of Sputnik', *Social Studies*, 83 (1992), 164-171, (p. 169).

[60] *Through These Eyes*, dir. by Charles Laird (National Film Board of Canada, 2004).

[61] Weber, 'The Case against Man: A Course of Study', p. 82.

In placing such an emphasis on participation, MACOS enabled its students to experience first-hand its vision of interdependence through a direct confrontation with difference. While the aims of the course included a decentring of normative Western ideals of proper cultural practices, the focus on difference also translated directly into a thesis on survival: in order to adapt to a changing planet, students were taught that human behaviour was adaptable and could exceed the boundaries laid out by American society. Interviewed for the documentary *Through These Eyes*, released in 2004, Bruner underlines this imperative as resisting a tendency that he likens to a kind of deathly inertia: the conception of using another culture 'as a medium for making one more aware of one's own culture', Bruner remarks, hinges on an awareness without which 'there is moral and mental death'.[62] Participating in MACOS, and recognising the primacy of difference and interdependence, functions for Bruner as a reflection of life itself, and a life of which the human is but one participating member. In this way, MACOS precedes a turn towards life in philosophy which, as Claire Colebrook documents, seeks to dethrone a particular vision of man by explaining 'the emergence of human society through broader inhuman evolutionary imperatives'.[63] Part of a broader affective turn which seeks to 'subordinate knowledge to life and feeling, destroying any notion of mind as a computer', the trend that interests Colebrook performs something akin to MACOS's illustration of the human's place within a continuum of vitality, defining identity in terms of an ongoing relationality with the world instead of an immovable essence.[64] Indeed, in defining the

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[62] *Through These Eyes.*

[63] Claire Colebrook, 'The Once and Future Humans: Between Happiness and Extinction', in *Against Life* ed. by Alastair Hunt and Stephanie Youngblood (Evanston: Northwestern University Press, 2016), pp. 63-86 (p. 72).

[64] Colebrook is speaking here about the trend in contemporary posthumanist philosophy that centers on affect as a mode for challenging anthropocentric attitudes, without properly considering the implications for that which cannot be felt, experienced, or accessed by human thought. While MACOS is not an example of this—the course contains more straightforwardly anthropocentric ideas than those targeted by Colebrook—its focus on life as an affective and interdependent phenomenon makes Colebrook's argument useful for me here. See Colebrook, 'The Once and Future Humans', p. 65.

human's marked separation from the nonhuman at the same time as centring interconnection, MACOS defines the human, to use Colebrook's phrasing, as a 'bounded, self-maintaining organism [which] must also open itself to a certain unboundedness'.[65] Colebrook continues:

> The same balanced negotiation between self-enclosure and connectedness applies to the human species, which has at once always defined itself as separate—as not one being among others, but as *the* condition for all sense and self-definition—and yet as also completely connected to a life and world that it appreciates and fulfils.[66]

The ways in which philosophers think about 'life', for Colebrook, marks a trope that while gesturing to the more-than-human, in actual fact simply reaffirms a new kind of anthropocentrism: on this note, Colebrook writes, 'affect is crucial, as it at once promises to be a posthuman concept that lies beyond the man of reason, and yet is continually referred back to the body, life, emotion and feeling'.[67] Situating the human within 'a single domain of life' which includes 'machines, animals, and inorganic forces', in other words, serves to further separate the human from the world by rendering that world accessible to, constructed for, and connected to the human.[68]

Colebrook's analysis helps to illuminate how the model of interconnection developed by MACOS revolves around an anthropocentric ideal of life. The course's commitment to a simulated, immaterial, and essential vision of the human is illustrated further by its usage of anthropological film.[69] In a sequence that received particular attention from detractors of the project, the camera—always assuming the position of an idealised observer, supposedly invisible to the subjects it frames—witnesses a member of the Netsilik prepare a seal trap that

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[65] *Ibid.*, pp. 69-70.

[66] *Ibid.*, p 70.

[67] *Ibid.*, p. 70.

[68] *Ibid.*, p. 75.

[69] Accessing archival copies of the MACOS films was not possible during the coronavirus pandemic, and my analysis is therefore drawn from excerpts from the films depicted in Laird's documentary *Through These Eyes.* While long sequences from the course films are depicted here without interruption, this additional level of mediation should be noted.

sits beneath the surface of the sea ice. After depicting the man's careful preparation of the snare, the scene cuts to a wide shot, in which the man is situated within a desolate and snowy landscape. We return to a close-up of the Netsilik man, who speaks and then uses a spear to kill a seal and drag its body up onto the surface of the ice. The camera moves in to focus on the hole through which the seal is pulled, in which the water is saturated with red blood; the culmination of the scene occurs in the camera's lingering depiction of this image. Despite their differing contexts, it is helpful to view this sequence as performing a similar mode of relational humanity to that of the Disney wildlife films. According to the broad rationale of MACOS, the scene renders visible a cultural practice unfamiliar to its students, and invites critical assessment of its Western counterparts: why are the deaths of farmed animals in the United States hidden behind the walls of the slaughterhouse? How is it determined that animals can be killed in proper or improper ways? But this interpretation takes at face value the meaning that the film intends to communicate in its 'authentic' depiction of Netsilik culture. Bousé argues that, in the broader context of wildlife film, animal deaths are often

> stripped of contingency and made instead to occur in some "meaningful" way in which both life and death can be explained. Our own morbid curiosity about death and dying is also given a justification: in the context of a natural history film it is transmuted from a perverse fascination into an educational experience, and a sacred quest on the part of filmmakers to reveal unexplored truths by the "objective" medium of the camera.[70]

Rather than providing a window into a violent nature as an object of morbid curiosity for a public spectatorship, the MACOS film nevertheless situates animal death as the culmination of meaning in the sequence; the visceral death of the seal, visibly emphasised by the sharp contrast of blood on snow, connects students to an abstract figure of difference in the culture of the Netsilik that is subsequently resolved in the educational setting through the logic of shared humanity. The camera's observation of the scene, constructed as 'objective', engineers

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[70] Bousé, *Wildlife Films*, p. 181.

precisely the space of difference that abstract humanity arrives on the scene to fill. What is constructed at the level of the film's narrative as an encounter with a cultural practice positioned to denaturalise normative Western modes of thought functions instead to broaden the horizon of normativity—flattening boundaries between which meaning otherwise threatens to falter—via the figure of universal humanity. The participatory nature of the scene is emphasised in the course's supplementary material, which includes the board for a game 'Seal Hunt', on which students can plot 'total hungry days' against 'total seals caught' in a simulation of Netsilik ways of being. The Netsilik, in this instance, are made to function as the medium through which ideas about humanity are communicated; empty signifiers of difference filled by the affirmative content of interconnection that makes for a proper way of performing humanity.

Bruner and Dow's education program, considered in this light, produces a human contingent upon its own situatedness within a meaningful world in which difference is bridged by abstract humanity. By seeking to create a simulated immersion in the 'field' for its students, MACOS produced a feeling of participation in a lively world built upon a shared species identity free from the arbitrary confines of culture. In doing so, the course provided an affirmative message regarding the threat of extinction: by recognising its place within an interconnected world, the human would survive by virtue of its dynamic, creative, and vital adaptability. Turning now to an analysis of Dick's novel *Dr. Bloodmoney*, I want to further situate the relationship between human identity and survival as one defined by another term used by Colebrook: psychosis. Centring around the construction of reality according to the public dissemination of information, Dick's novel depicts the survival of human communities after an apocalyptic nuclear event. Rather than bringing about a confrontation with a world that has moved beyond the human, Dick's novel showcases the continuation of life produced as a site in which risk—or the imagined need for continuity and survival—produces a model of the

human that functions by virtue of its connection to nonhuman others through mediated informational and affective flows.

IV. Schizoanalysing the Human in *Dr. Bloodmoney*

In the remainder of this chapter, I turn to a writer who approaches the idea of an interconnected world through the lens of paranoia: Philip K. Dick. As Alexander Dunst notes, throughout his work Dick questions 'the boundaries between what we consider authentic and inauthentic, human or machine, what appears to be an object and what claims existence as a subject'.[71] While novels like *Do Androids Dream of Electric Sheep* (1968) enact such a project with direct reference to the ethical standing and agency of nonhuman animals, mobilising the figure of the android in order to question the human's position as the exclusive subject of ethics, elsewhere in Dick's oeuvre the indeterminacy of species difference is expressed through the broader mechanisms of mass media. This is the case in *Dr. Bloodmoney, or How we Got Along After the Bomb* (1965), a novel which, through its own specific imagining of nuclear conflict, depicts the ongoing survival of humans and animals post-apocalypse as produced via the continuation of an interconnected media landscape. In portraying the concurrent production of risk and resilience through the mediums of television and radio, Dick writes a nuclear war that exists itself in a zone of indeterminacy, a product of an entirely mediated reality in which the threat of annihilation merges with the reality of the material 'event' of apocalypse. In this context, the continuation of life is predicated on, and itself produced by, the maintenance of death's possibility.

Like Pynchon's depiction of a chaotic, molecularised life collated into a fantasy of a coherent and sanctified whole, Dick's novel shows the condition of risk to provide a

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[71] Alexander Dunst, 'Introduction: Third Reality—On the Persistence of Philip K. Dick', in *The World According to Philip K. Dick* ed. by Alexander Dunst and Stefan Schlensag (Basingstoke: Palgrave Macmillan, 2015), pp. 1-13 (pp. 1-2).

paradoxical sense of security through insecurity, ensuring the continuation of life in a post-apocalyptic world that is simultaneously constructed as always on the brink of apocalypse, forever suspended in the condition that precedes its own materialisation. But while Pynchon's focus is on the deathly logics that underpin this simulacrum of Life, Dick remains committed to an affirmative image of the interconnected human that persists through such a condition. In this regard, *Dr. Bloodmoney* repeats the cultural narrative found across the True-Life Adventures and MACOS's vision of educational anthropology: that something fundamentally human is to be found in technologically mediated interconnectivity.

While mediation functions as a force of vitality in the post-apocalyptic world of *Dr. Bloodmoney*, the interconnected world that persists is organised, as the logic of risk dictates, around a fundamental insecurity. Resulting in the expansion of the boundaries delineating human, animal, and machine, Dick expresses this insecurity in psychiatric terms, interconnection giving rise to a paranoiac subjectivity for which the anchoring qualities of individuality are lost against the backdrop of a proliferation of nonhuman-oriented life at the end of the world. The term I'm using to interpret Dick's particular version of interconnection—schizoanalysis—relates to the overt influence of anti-psychiatry on *Dr. Bloodmoney*, as well as to the mode of thought developed by Deleuze and Guattari in their book *Anti-Oedipus*. For the latter, schizoanalysis names in the first instance the observation of what they term desiring-production: 'all production is at once desiring-production and social production'.[72] Desiring-production proposes an ontological state of movement and flow based around the interaction of machines; identities are formed through processes of communication and connection, as a product of interacting forces. Thus, as Deleuze and Guattari write, in this process the 'subject itself is not at the centre, which is occupied by the machine, but on the periphery, with no fixed

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[72] Gilles Deleuze and Félix Guattari, *Anti-Oedipus: Capitalism and Schizophrenia* (London: Bloomsbury, 2015), p. 337.

identity, forever decentered, *defined* by the states through which it passes'.[73] The machines, as anatomised operations of identity that interact with one another, enact their movements upon the 'body without organs', the 'inscribing surface that arrogates to itself all the productive forces and all the organs of production', providing them with form and therefore with 'quasi cause by communicating the apparent movement (the fetish)'.[74] If the body without organs in question is 'human', in other words, the desiring-machines that make up the human both constitute this form—instructed by the 'fetish' of what it means to be human, in any given instance—and extend beyond it, interacting with other machines through and beyond the porous limits of the human.

In Dick's novel, it is through such a dynamic process of communication that the idea of the human is given a new kind of life post-apocalypse. In *Dr. Bloodmoney*, communication functions not as the massifying force that threatens something original and pure, as evidenced by the cultural texts in examined in my first chapter, but rather as the backdrop for new machinic assemblages, or *adaptions*, of what it means to be human. Dick's novel, in this regard, participates in the evolutionary discourses championed by UNESCO and Huxley, imagining an interconnected world as evidencing a new stage in the human's evolution. The discourses of survival and risk are put to work, in *Dr. Bloodmoney*, in order to stabilise an ongoing system of values that reproduce the UNESCO's values of 'world citizenship', declaring the human to be fundamentally resilient, capable of persisting at a basic level of community even when the superstructures of society are stripped away. Yet, at the same time as conveying this core humanist message (akin to those found in the apocalypse fiction of the 1950s), *Dr. Bloodmoney* embeds its image of an enduring humanity within a necessary insecurity. In an afterword written after the novel's first publication in 1964, Dick characterises his narrative as a

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[73] *Ibid*., p. 32.
[74] *Ibid*., p. 23.

predictive response to the possibility of nuclear war which upon rereading contains 'a basic accuracy'—

> an accuracy about human beings and their power to survive. Not survive as beasts, either, but as genuine humans doing genuinely human things. There are no supermen in this novel. There are no heroic deeds. There are some very poor predictions on my part, I must admit; but about the people themselves and their strength and tenacity and vitality… there I think I foresaw accurately. Because, of course, I was not predicting; I was only describing what I saw around me: the men and women and children and animals, the life of this planet that has been, is, and will be, no matter what happens.[75]

The idea of the 'genuinely human' expressed here by Dick is only made legible, at the end of this paragraph, through its relation to things that lie beyond the limits of the traditional human subject: children, animals, and planetary life more broadly. As N. Katherine Hayles notes, the human functions for Dick as something to be *enacted* rather than defined, a process that is rearticulated rather than a static category to be preserved.[76] In this sense, *Dr. Bloodmoney* is an example of the paradox of humanist cybernetics outlined in the introduction to the thesis, constructing a stable human subject articulated via an apparatus that undermines the ontological consistency of such a subject. The result, as Dick sees it, is an 'extremely hopeful novel' that offers an affirmative vision of what it means to be human linked to a broader sense of vitality and the ongoingness of life (a fact that, Hayles notes, differentiates the novel from Dick's other more pessimistic mid-60s novels).[77]

This paradox, which sees the human of *Dr. Bloodmoney* bolstered by a narrative that simultaneously decentres it, is expressed by Dick via the language of psychopathology. More specifically, Dick engages with a conception of schizophrenia which, as Dunst documents, marks a movement beginning in the 1960s away from the use of mental illness as a mode for

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[75] Philip K. Dick, 'Afterword' in *Dr. Bloodmoney, or How We Got Along After the Bomb* (London: Gollancz, 2013), p. 277, Kindle ebook.
[76] N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999), p. 163.
[77] *Ibid.*, p. 183.

criticising aspects of 1950s counterculture deemed threatening to conservative social conventions.[78] This reassessment of schizophrenia, mobilised by Dick broadly as an emancipatory force complicating the limits of a static and bounded selfhood, originates with the influence of anti-psychiatry, and specifically the writing of R. D. Laing, on Dick's work. Before Deleuze and Guattari's deployment of schizophrenia as an image of desiring-production, Laing theorised a psychiatric practice that centred the phenomenological experience of patients over the primacy of predetermined categories and pathologies. Dependent upon the analyst's drawing 'on his own psychotic possibilities', this practice also draws upon a cybernetic rubric that looks beyond the human: 'now, if you are sitting opposite me', Laing writes in *The Divided Self*, 'I can see you as another person like myself; without *you* changing or doing anything differently, I can now see you as a complex physical-chemical system, perhaps with its own idiosyncrasies but chemical none the less for that; seen this way you are no longer a person but an organism'.[79] This shift in perspective, for Laing, is a first step towards a relational practice that takes account of factors outside the rigid boundaries of something like 'personhood'. Instead of depending on such categories, Laing emphasises the importance of paying attention to levels of communication—the 'atomic, molecular, cellular, systemic or organismic'—that exist beyond the properly human.[80]

As we will see, Laing's conception of an anti-psychiatry informed by the posthuman potential of cybernetics both parallels and informs Dick's paradoxical construction of the human in *Dr. Bloodmoney*. As Roger Luckhurst observes, Dick himself maintained a complex relationship with the discourse of psychiatry, both rallying against the constrictive nature of medical diagnoses and depending on them, both personally and in his fiction, for a measure of

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[78] Alexander Dunst, *Madness in Cold War America* (New York: Routledge, 2017), p. 151.
[79] R. D. Laing, *The Divided Self* (London: Penguin, 2010), p. 21.
[80] *Ibid*., p. 22.

security.[81] I argue that a similar conflict is enacted, in *Dr. Bloodmoney*, through Dick's depiction of the interconnected human's persistence and survival via medias of risk. Just as the species politics of risk strengthens ontological categories of being through mobilising uncertainty, the cold war risk-machines of *Dr. Bloodmoney* enact what Deleuze and Guattari term the 'schizophrenic process'—eschewing medical pathologies and deterritorialising the human—before redirecting this energy back into a well-worn humanist territoriality.[82] Schizoanalysing the human of Dick's novel, in other words, showcases the uncertainty of risk as a condition for the maintenance of a properly human subject, constituted through a latently anthropocentric discourse of life that sees the classical humanist subject reconstituted as relational to nonhuman worlds.

Centring around a community in Marin County, California, the area that Dick himself lived while drafting the novel, *Dr. Bloodmoney* depicts a before and after to its apocalypse, portraying the same group of characters through a series of vignettes across both temporal locations. At the beginning of the narrative we are introduced to the *before* versions of these characters: Stuart McConchie, an African-American TV salesman; Hoppy Harrington, a TV repairman and physically disabled 'phocomelus' born without limbs as an inherited legacy of the drug thalidomide; and Bruno Bluthgeld, nuclear physicist and the central paranoid subject of Dick's narrative. In the opening act of the novel, the discourses of psychiatry and media converge when Bluthgeld visits his Berkeley psychiatrist, Doctor Stockstill. Bluthgeld, whose paranoid delusions lead him to believe that people fixate on his appearance, is already known to Stockstill through his involvement in and culpability for a disastrous nuclear testing program that led to widespread fallout and mutation. Before their appointment, Stockstill has already watched Bluthgeld 'being interviewed on TV, listened to him speak […] and come to the

[81] Roger Luckhurst, 'Diagnosing Dick', in *The World According to Philip K. Dick* ed. by Alexander Dunst and Stefan Schlensag (Basingstoke: Palgrave Macmillan, 2015), pp. 13-30 (p. 27).
[82] Deleuze and Guattari, *Anti-Oedipus*, p. 322.

tentative conclusion that Bluthgeld had a profound hatred for people, deep and pervasive enough to make him want, on some unconscious level, to err, to make him want to jeopardise the lives of millions'.[83] This precondition to Bluthgeld's therapy leads Stockstill to question his own ability to remain objective in his position as analyst: 'considering the way I feel,' Stockstill ponders, 'I can't take a detached, disinterested position regarding you; I can't be genuinely scientific, and hence my analysis, my diagnosis, may well prove faulty' (p. 8).

Bluthgeld's construction as a subject of mass media complicates the relationship between patient and analyst that Stockstill deems crucial for the location of a 'cure' for his patient's paranoia. While Stockstill's dependence on 'objectivity' aligns him with the stasis of institutional diagnoses, the broader world of Dick's novel already to some degree exists inside Bluthgeld's psyche: following the earlier testing disaster, Bluthgeld believes that he is widely recognisable thanks to imagined facial disfigurations and is convinced that others have access to his innermost thoughts and feelings. Assuming the name 'Mr Tree' as a veil of anonymity, Bluthgeld's paranoia extends to an expansion of self that supplants guilt with a sense of absolute power: when the primary nuclear holocaust of *Dr. Bloodmoney* occurs, Bluthgeld concludes that he himself has willed the bombs into existence.

As Fredric Jameson has argued, Dick's centring of Bluthgeld's paranoid schizophrenia draws our attention to the constructed nature of the novel's present reality in relation to the uncertainty of an imagined future. As Jameson notes, 'the point about the atomic cataclysm in *Dr. Bloodmoney* is not merely that Bluthgeld takes it to be a projection of his own psychic powers, but that, as the book continues, we are ourselves less and less able to distinguish between what I am forced to call "real" explosions, and those that take place within the

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[83] Philip K. Dick, *Dr. Bloodmoney, or How We Got Along After the Bomb* (London: Gollancz, 2013), p. 7, Kindle ebook. All subsequent references will appear in the text.

psyche'.[84] Indeed, Bluthgeld's schizophrenic experience is reflected in the structuring of Dick's broader world around ecologies of media. Counterpart to Bluthgeld's infamy is Walt Dangerfield, an astronaut who at the beginning of Dick's novel is preparing to embark on a colonising mission to Mars. Anticipating the screening of Apollo 11 in 1969, Dangerfield's flight is watched by 'all Americans everywhere, in their homes and at their places of work' (p. 25). Extending beyond the limits of this 'event', the flight ends up marking a permanent condition for Dick's world: when the bombs go off, Dangerfield is trapped in perpetual orbit, entombed within the shuttle that doubles as the only satellite feed accessible to those who remain below. Together constituting the 'inside' of the psychic life of the novel, Bluthgeld and Dangerfield mediate a reality caught in a cataclysm that is both happening and not happening. When Bluthgeld later in the novel attempts to bring about a second nuclear strike to appease his paranoia, it is only Dangerfield that sees the 'vague and shadowy' explosion, diffuse and 'unreal', perhaps a 'remnant left over from E Day, still reverberating in space somehow… but harmless, now' (p. 209).

The condition of risk thus provides for Dick the figurative surface upon which new ways of life are articulated, the uncertain potential of future annihilation providing the material for the figuration of new realities. In this regard, such a condition functions in *Dr. Bloodmoney* as the body without organs upon which the desiring-machines of survival interact; a suspended state that, in its modelling of possible futures via the posited threat of annihilation, allows for the observation of the machines and their potential trajectories. As Deleuze and Guattari write, 'the body without organs is like the cosmic egg, the *giant molecule* swarming with worms, bacilli, Lilliputian figures, animalcules, and homunculi, with their organisation and their

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[84] Fredric Jameson, 'After Armageddon: Character Systems in *Dr Bloodmoney*', in Fredric Jameson, *Archaeologies of the Future: he Desire Called Utopia and Other Science Fictions* (London: Verso, 2007), pp. 349-363 (p. 350).

machines, minute strings, ropes, teeth, fingernails, levers and pulleys, catapults'.[85] But while their evocative description of molecular organisation gives us insight into complex and infinite potentials that risk mediates, Deleuze and Guattari's figuration of the concept also involves a double perspective of the body without organs: a figure split into 'the side on which the mass phenomenon and the paranoiac investment corresponding to it are organised on a microscopic scale, and the other side on which, on a submicroscopic scale, the molecular phenomena and their schizophrenic investment are arranged'.[86] To return to the figuration that guided my reading of Pynchon, the body without organs can be viewed as both an image of molecularised life, fuelling the schizophrenic distribution of the subject, and the coherent principle of Life, notating for Deleuze and Guattari the paranoid formation of a 'mass phenomenon'—a consistent aggregate, or 'full body', that marks the semblance of a uniform whole.[87] Constituting two perspectives on the same 'reality', the difference between paranoia and schizophrenia outlined here maps on to Dick's figuring of survival in ways that shine a light on the unexpected resurgence of humanism in *Dr. Bloodmoney.*

The first example of this process lies with the molecular element of Dick's world, which centres around the character of Hoppy. Socially othered from the beginning of the novel due to his physical disability, Hoppy is quickly associated with a molecular thematics, performing a miraculous repair of an electrical item despite his disability: 'I see the break in you, he thought. Molecules of metal not touching' (p. 16). While the *before* version of Hoppy that we meet is subject to an exclusionary standard of the human, after the apocalypse this role is reversed: equipped now with an elaborate prosthetic exoskeleton, Hoppy is the widely sought 'handy' of West Marin County, providing technological know-how in a society that has regressed towards a model of the pre-technological pastoral, in which the augmented vision provided by

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[85] Deleuze and Guattari, *Anti-Oedipus*, p. 321.
[86] *Ibid*., pp. 321-322.
[87] *Ibid*., p. 322.

eyeglasses is now a scarce commodity. In the context of a world caught in the image of paranoid aggregates and Dangerfield's circulation of the human archive, Hoppy represents the possibility of a 'schizoid breakthrough', a route out of the securitised stasis of risk that structures Dick's world.[88] Yet, despite this potential, Hoppy's transformation circles back to a new formulation of control. Developing psycho-kinetic powers that have a greater bearing on the material world than Bluthgeld's, Hoppy seeks to usurp Dangerfield's position as planetary disc jockey, slowly undermining the astronaut's health while casting his voice in imitation of the regularly broadcast readings of W. Somerset Maugham's *Of Human Bondage*. Opposing this project of power-through-imitation is another embodiment of doubling found in Edie Keller, a young girl conceived by her mother Bonny on the day of the Emergency, and Bill, Edie's homunculus brother who lives inside her body. Bill—whose augmented abilities of communication differ from Hoppy's future fetish in that they extend back, down, and deep into conversation with the already-dead—swaps 'meat' with Hoppy, in Laurence Rickels's words, 'who flops about and dies as an externalised and severed part of the internal symbiotic relationship between twins'.[89]

In the character of Bill, Dick attempts to present what appears in some ways a more 'authentic' model of interconnection than that posed by Hoppy, based in the material, animal and bodily instead of the virtual and technological. Indeed, the hopefulness of the ending of *Dr. Bloodmoney*, as Dick sees it, lies in this final usurpation of bodies, Hoppy's dreams of superseding the human supplanted by a more grounded, earthly, and modest commitment to interconnection. Bill, on his way to Hoppy's dwelling, travels by way of hijacking the bodies of animals, in a molecular shift of perspective that renders him sightless, as a worm: 'if I could reach out, he thought. Reach—upward. But he had nothing to reach with, no limbs of any sort'

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[88] *Ibid.*, p. 322.

[89] Laurence A. Rickels, *I Think I Am: Philip K. Dick* (Minneapolis: University of Minnesota Press, 2010), p. 155.

(p. 208). Instead of replacing the need for sight as a figure for Hoppy's desire for the ultra-human, Dick writes Bill as rising through the nonhuman ranks, as it were, in order to challenge Hoppy's power. Meanwhile, Edie, now free from Bill's internal voice, finds herself in symbiosis with the worm: 'she heard its monotonous voice. "Boom, boom, boom", it went, in echo of its nondescript biological processes' (p. 210).

Dick's attention to the nonhuman as a counterpoint to Hoppy's thirst for power unsettles the monolithic image of the human maintained by Dangerfield's broadcasts—and in so doing, repeats Laing's call to recognise the human's organismic characteristics as part of psychiatric definitions of 'personhood'. Despite this, viewed more broadly, the representation of animals in *Dr. Bloodmoney* serves instead to bolster the paranoiac element on the novel's body without organs, linked to the static clinical entity of the 'human' and structured via what Deleuze and Guattari term 'the familial aggregate of Oedipal neuroses'.[90] Bill's communion with the dead, as the 'animal' counterpoint to Hoppy's futurity, freaks out the latter because 'the dead are like fathers, lots of fathers', recalling Hoppy's repressed experience of living before the Emergency (p. 253). This kind of neurosis plays out in more directly species-oriented terms in the character of Stuart. Early in the novel, while both Hoppy and Stuart work together at the store Modern TV, Hoppy has a psychotic episode which, he claims, is a prediction of the future: '"I'm— floating", Hoppy said. […] "I'm weightless, I don't have a body any more so I'm high up, as high as I want to be"' (p. 32). This prediction of Hoppy's supplanting of Dangerfield and succession from the bodily is accompanied by a diametrically opposite prediction for Stuart: '"One time [I saw you]", the phoce insisted. […] "You were eating a dead rat raw"' (p. 36). As with his first forecast, Hoppy's modelling of the future comes to pass when Stuart kills and eats a rat while he is trapped in the basement of Modern TV after the bombs have fallen. As society rebuilds itself, Stuart makes his way by selling 'homeostatic' vermin traps, designed to outwit

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[90] Deleuze and Guattari, *Anti-Oedipus*, p. 322.

animals that have mutated 'and now could avoid or repel the ordinary passive trap, no matter how complicated', as if in repentance for this desperate act of consumption (p. 116).

Dick's representation of the place of animals in the post-apocalyptic world of *Dr. Bloodmoney* thus reproduces an idealised equilibrium depicted as lost in the media saturated world of pre-disaster. The conflict between Hoppy, Bill, and Dangerfield functions as a final expression of the ontological insecurities of this reality; a struggle for power that, as Dick depicts, produces a final restoration of order based in a proper model of relationship between the human and nonhuman world. Stuart's automatic vermin traps signal the facilitation of such a reality, for Dick, through the same developing technologies that produce the schizophrenic reality of the novel: after the strife caused by the unsettling of boundaries between human, animal and machine, Dick depicts technology as facilitating an automated status quo, reinscribing proper models of species difference into the new security that flourishes post-apocalypse. As Stuart ponders, mid-way through the novel: 'our relationship [...] is different with animals now. It's much closer; there isn't the great gap between us and them that there was' (p. 136). Ultimately, for Dick, closing the gap between humans and animals produces a new form of multispecies community that nevertheless defers to the human norm; a relational humanity rendered all the more human through its constructed vision of interconnection with the nonhuman.

In this regard, *Dr. Bloodmoney* reproduces the ideal of an interconnected, relational humanity that the chapter has traced through popular representations of extinction, nuclear risk, wildlife film, and educational anthropology. As a depiction of the species politics of risk, Dick's novel crystallises the logics that sees human subjectivity across these contexts secured both through the uncertainty of its own future, and through the mediation of this uncertainty via the idea of interconnectivity with nonhuman worlds. Responses to the threat of extinction, throughout the examples that have formed the chapter's archive, centre ultimately around the

production of proximity between human and nonhuman, facilitating a form of humanism built upon the notion of multispecies community with which Dick ends his novel. In the following chapter, I examine the articulation of a similar logic in a different scientific-cultural setting: that of behavioural science. As a site at which the violence of species difference is expressed in the laboratory setting, behaviourism also adapted according to cybernetic ideas to incorporate notions of mutual exchange between humans and animal test subjects, modelling theories of communication that sought to challenge anthropocentric norms. This marks a fundamental contradiction in behaviourism's conception of human–animal relationship: animals are both violently excluded others subject to sacrifice in the laboratory, and models for a cross-species continuum that animalises the human through the notion of 'behaviours' which could be traced, modelled, and studied. Just as Dick has recourse to a well-established ideal of human community, the next chapter argues that behaviourists utilised a fluid model of species difference in order to figure better ways of being human in a vision that extended space-age ideals of technological transcendence and evolution.

‘It’s my primordial me devouring me!’: Behaviourism, Cybernetics, and Transcendent Animality

Introduction

This chapter will examine the intersection of the sciences of behaviourism and cybernetics—as well as cultural representations of this intersection—as marking an area of cold war thought at which the boundary between human and animal is rendered fluid. Behaviourism, in the variety practiced by figures such as Ivan Pavlov, John B. Watson, and B. F. Skinner, directly modelled fears of technological massification and the loss of individuality prevalent in the midcentury humanist imagination by undermining essential ideas about free will, suggesting that what may appear to be ‘natural’ behaviours can in fact be products of ideological conditioning. Viewed through a biopolitical lens, the early figures of behaviourism brought disciplinary logics to bear on their animal test subjects, with processes of conditioning functioning in analogous ways to what Foucault describes as the ‘docility’ produced by static institutions of control.[1] But by the 1970s, behaviourism had adapted along with changing attitudes in scientific and cultural spheres towards a more expansive vision of agency beyond the boundaries of the human. Beginning with two thinkers that exemplify this development—John B. Calhoun and John C. Lilly—the chapter argues that transformations in behaviourism, informed themselves by changing dynamics in cybernetic thinking, produced models of multispecies sociality whereby ways of performing humanity could be informed by a dynamic

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[1] Michel Foucault, *Discipline and Punish: The Birth of the Prison* (London: Penguin Books, 1991), p. 136.

and multidirectional communication with nonhuman life. While Lilly in particular developed an ethical model of human–animal relations through his behaviourist-cybernetic practice, I argue that the relationship with nonhuman animals produced in both thinkers' work is best understood through Deleuze's rubric of control, or the transformation of disciplinary biopower into a more dynamic, elusive, and participatory model of subjectification. As with the mediated representations of risk examined in the previous chapter, animals function in this logic as technologies of the human; participants in a relationship that undermines the boundaries of traditional liberal humanist subjectivity while simultaneously enabling new forms of anthropocentric mastery.

The chapter will examine two cultural texts that respond directly to the respective work of Calhoun and Lilly: James Tiptree Jr.'s short story 'The Psychologist Who Wouldn't Do Awful Things to Rats' (1976), and Ken Russell's film *Altered States* (1980). In satirising the mechanical view of behaviour epitomised by Calhoun, Tiptree's story aligns behaviourism's reduction of human behaviour to its animal components with the lack of compassion found in the discipline's instrumentalisation of animal bodies. Imagining a psychologist who is concerned with the suffering experienced by his laboratory subjects, Tiptree shows behaviourist knowledge practices to be dependent upon viewing the human through an animal frame, while simultaneously remaining closed to the possibility of a consideration of animals' own interests. *Altered States*, meanwhile, responds to Lilly's inversion of this rule, depicting its central scientist character as caught in the virtual space between observer and observed, in touch with an original animality that functions in Russell's film to undermine the role of the objective vision of scientific reason. In this regard, the film reflects Lilly's interest in multispecies justice—an aspect of his work that, in paradoxical tension with his instrumentalisation of dolphin bodies, sets Lilly apart from the object of Tiptree's satire in his concern for the interests and ethical standing of dolphins. But in contrast with this de-

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anthropocentric mode of thought is Lilly's commitment to a model of the human that can be augmented in a cybernetic dream of continued evolution; a vision of species enhancement for which the brain of the dolphin provides a living model. Russell's film, in its interpretation of Lilly's techno-fetish for cetacean life, depicts its central character's psychic exploration of the animality of the unconscious as evidencing a new kind of mastery over the self—a conception of future humanity for which animality remains a disavowed feature of the self, and nonhuman animals remain excluded, sacrificial others.

I. Mechanical Animality: Behaviourism, Humanism, and Empathy in John B. Calhoun and James Tiptree Jr.

> I shall largely speak of mice, but my thoughts are on man, on healing, on life and its evolution. Threatening life and evolution are the two deaths, death of the spirit and death of the body. Evolution, in terms of ancient wisdom, is the acquisition of access to the tree of life. This takes us back to the white first horse of the Apocalypse which with its rider set out to conquer the forces that threaten the spirit with death.[2]
>
> John B. Calhoun, 'Death Squared'

In the above quotation, Calhoun outlines a principle central to his career as an animal behaviourist. Calhoun is best known for producing multiple iterations of what he termed the 'rodent utopia': an experimental laboratory setting in which rats and mice were confined within a constructed 'city' with access to ample food, water, and reproductive partners. By using space as its one constant, Calhoun's research aimed to showcase that the health of the rats and mice was dependent upon certain species-specific modes of behaviour that constituted the animals' social system. Encouraged to reproduce freely, the rats and mice produced 'an excessive

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[2] John B. Calhoun, 'Death Squared: The Explosive Growth and Demise of a Mouse Population', *Proceedings of the Royal Society of Medicine*, 66 (1973), 80-88, (p. 80).

number of individuals' capable of 'occupying the social roles characteristic of the species'.[3] The resultant crowding led ultimately to the production of what Calhoun termed 'behavioural sink': a degeneration of normative species behaviours into 'deviant' ones, and the breakdown of social order among the group. The spatial confinement inflicted by Calhoun upon his nonhuman subjects resulted every time in the death of the whole group via overpopulation, caused, in Calhoun's words, by a 'mechanical interference resulting from the high contact rate among individuals living in a high density population'.[4] Writing in 1973, Calhoun argues that his experiment holds special relevance for human population sciences. 'For an animal so complex as man', Calhoun writes, 'there is no logical reason why a comparable sequence of events should not also lead to species extinction. If opportunities for role fulfilment fall far short of the demand by those capable of filling roles, and having expectancies to do so, only violence and disruption of social organisation can follow'.[5] For humans, as for rats, confinement within overpopulated urban environments marks but the first step towards social pathology and extinction.

In turning to nonhuman animals for inspiration in how to avoid disaster in human society, Calhoun's work mirrors the link established in the previous chapter between narratives of extinction and nuclear risk. But rather than looking to the natural world for pre-existing models of survival, Calhoun sought to engineer conditions in the laboratory that reflected the unnatural ways in which humans were beginning to live in technological modernity; as visible in a figure included in Calhoun's 1962 article 'Population Density and Social Pathology', the rodent utopia consisted of clearly demarcated 'domestic' and 'urban' spaces designed to mirror human cities.[6] As Edmund Ramsden and Jon Adams suggest, 'these miniature cities seemed to

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[3] *Ibid.*, p. 86.
[4] *Ibid.*, p. 86.
[5] *Ibid.*, p. 86.
[6] John B. Calhoun, 'Population Density and Social Pathology', *Scientific American*, 206 (1962), 139-149, (pp. 14-141).

model the world without, and the physical similarities offered a seductive behavioural analogy—here in the rodent universe, many of man's social ills were seemingly explained by the relation between space and numbers'.[7] Ramsden and Adams trace the cultural and scientific impact of this argument throughout the 1960s and 1970s: popular science books by Robert Ardrey and Desmond Morris 'combined Calhoun's work with the growing ethological interest in aggression and territorial behaviour', urging that humans view their own 'behaviour in the same way as we view the behaviour of animals'.[8] Along similar lines, Paul Ehrlich's *The Population Bomb* (1968) amplified fears of overpopulation to apocalyptic proportions, predicting an 'inevitable population-food crisis' across the globe if human birth rates continued to exceed death rates.[9] What presented itself in Calhoun's experiments as an unhinged proliferation of life—or the 'reduction of bodily death (ie. "the second death")' through the maximisation of life's potential in the rodent utopia—returned in Ehrlich as a Malthusian will to implement behavioural methods of population control.[10] Anxieties fostered by the danger of overcrowding led thinkers like Calhoun to model a direct link between the notion of 'degenerative' behaviour and a discourse of species; the 'death of the spirit', as represented by Calhoun's experiments as the ultimate end to be avoided, could be brought about by an activation of the human's own animality through the influence of the stifling order and catastrophic limitations of urban technological environments.

Calhoun's concepts of behavioural sink and the 'two deaths' showcase several of the roles played by animal behaviour sciences in the production of American cold war human subjectivity. In one sense, Calhoun's behaviourism instrumentalised nonhuman bodies in a way

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[7] Edmund Ramsden and Jon Adams, 'Escaping the Laboratory: The Rodent Experiments of John B. Calhoun & Their Cultural Influence', *Journal of Social History*, 42 (2009), 761-792, (p. 766).
[8] *Ibid*., p. 767.
[9] Paul Ehrlich, 'The Population Bomb', in *The Future of Nature: Documents of Global Change* ed. by Libby Robin, Sverker Sörlin and Paul Warde (New Haven: Yale University Press, 2013), pp. 54-63 (p. 54).
[10] Calhoun, 'Death Squared', p. 86.

comparable to nuclear testing's rendering of animals disposable in the pursuit of military hegemony. The enclosure of rats and mice within ordered and regularised environments—in a way that, for Calhoun, equated to a necessary killing of the rodents—led directly to the mapping of proper human 'behaviours' in the scientific-cultural arena. In a piece first published in the *New York World Journal Tribune* entitled 'O Rotten Gotham—Sliding Down into the Behavioural Sink', Tom Wolfe draws on this aspect of Calhoun's work:

> I just spent two days with Edward T. Hall, an anthropologist, watching thousands of my fellow New Yorkers short-circuiting themselves into hot little twitching death balls with jolts of their own adrenalin. Dr. Hall says it is overcrowding that does it. Overcrowding gets the adrenalin going, and the adrenalin gets them hyped up. And here they are, hyped up, turning bilious, nephritic, queer, autistic, sadistic, barren, batty, sloppy, hot-in-the-pants, chancred-on-the-flankers, leering, puling, numb—the usual in New York, in other words, and God knows what else. Dr. Hall had the theory that overcrowding has already thrown New York into a state of behavioural sink.[11]

Approved by Calhoun as communicating the concept of behavioural sink to a non-academic audience, Wolfe's piece draws on the notion of 'deviance' as one of the by-products of living in an overcrowded environment.[12] Referencing Calhoun's own accounts of degeneration in the utopia—'in The Sink […] nest building, courting, sex behaviour, reproduction, social organisation, health' all went to pieces—Wolfe depicts New Yorkers as utterly at the mercy of their own disciplinary architectures, descending into an animalistic and carnivalesque 'Sink' in which the laws of culture and society no longer hold.[13] More than parodying Calhoun's own diagnosis of 'autistic' and 'homosexual' groups of rodents, Wolfe paints a picture of a population that has been mechanised and automated in a routinised performance of everyday activities: 'everyday life in New York', Wolfe writes, consists of 'getting to work, working in

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[11] Tom Wolfe, *The Pump House Gang* (Guernsey: Black Swan, 1992), p. 287.
[12] John B. Calhoun, 'Looking Backward from "The Beautiful Ones"', quoted in Ramsden and Adams, 'Escaping the Laboratory', p. 772.
[13] Wolfe, *The Pump House Gang*, p. 290.

massively congested areas, [...] working in cubicles with low ceilings and, often, no access to a window, […] then rushing to get home, piling into subways and trains, fighting for time and for space'.[14] This image of a 'work-a-daddy human animal', addicted to receiving 'jolts of their own adrenalin', signals that in the human case, behavioural sink is the fault of an increasingly technologised existence, marked by an erosion of traditionally 'human' values in favour of the production of capital.[15] Urban environments and overcrowding produced, in this sense, the antithesis to the subject of postwar humanism centred around freedom of choice, creativity, and liberal values. When Calhoun argues that the 'death of the establishment leads to spiritual death', he evokes precisely this tradition of humanism: the apocalyptic results of overcrowding arrive, not with bodily death, but with the destruction of an immaterial human spirit in the face of technological change.[16]

In this regard, it is tempting to align Calhoun's work with the behaviourists mentioned in the introduction to the chapter, commonly associated with the inception of the field. As Ana Teixeira Pinto argues, thinkers such as Pavlov, Watson, and Skinner laid the groundwork for the model of degeneration that we find repeated in Calhoun: 'if social behaviour is not managed, one can expect an increase in the number of social ills: unruliness, crime, poverty, war, and the like. Socialising people in an appropriate manner, however, requires absolute control over the educational process'.[17] What is more, Calhoun's focus on mechanical behaviours ties his work to the discourse of cybernetics. Pinto argues that the disciplines are interlinked both in their shared methodologies—both modes of thought rely on a 'recursive (feedback) model, which is known in Biology as reinforcement'—and in the context of their development: both Skinner and Norbert Wiener worked during World War II on projects

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[14] Wolfe, *The Pump House Gang*, p. 293.
[15] *Ibid*., pp. 287-293.
[16] Calhoun, 'Death Squared', p. 86.
[17] Ana Teixeira Pinto, 'The Pigeon in the Machine: The Concept of Control in Behaviourism and Cybernetics', in *Alleys of Your Mind: Augmented Intelligence and Its Traumas* ed. by Matteo Pasquinelli (Lüneburg: Meson Press, 2015), pp. 23-37 (p. 27).

applying principles from behaviourism and cybernetics to new technologies of automatic warfare.[18] In his depiction of a degenerative feedback loop brought about by an improper relationship with the spaces of modernity, Calhoun deploys some of the central logics first outlined by Wiener at the Macy conferences between 1946-1953, arguing that the human's self-regulating homeostasis is disrupted by the limitations of confined urban spaces. This mechanical model of behaviour, while appearing to contradict Calhoun's preoccupation with an essential humanist 'spirit', in reality aids in explaining the influence of cybernetics on Calhoun's work. For Jean-Pierre Dupuy, the significance of cybernetics lies in its role as 'the height of metaphysical humanism', at the very same time as functioning as 'the height of its deconstruction'; far from eroding the consistency of the human subject, Dupuy writes, the principle of biological self-organisation inspires the human 'to believe that he is the master of his own genome. Never, one is tempted to say, has he been so near to realising the Cartesian promise: he has become—or is close to becoming—the master and possessor of all of nature, up to and including himself'.[19] While representing the danger of being interpellated into a regularised existence, cybernetics also provides the apparatus of control to reaffirm a dominant human subjectivity. Calhoun's depiction of the human as governed by mechanical behaviours that undermine its essential freedoms is thus a problem that behaviourism purports to remedy, restoring a sense of control over the human's passage out of its own biological destiny.

In further outlining the paradoxical relationship between cybernetics and humanism, Dupuy goes on to locate such a contradiction in the philosophy of Martin Heidegger. 'What one discovers in the cybernetic project', Dupuy writes, 'is exactly the ambiguity that Heidegger spoke of in connection with the essence of technology. Technology reveals truth (the Heideggerian truth) about Being, a truth that involves the deconstruction of the metaphysical

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[18] *Ibid*., p. 27.
[19] Jean-Pierre Dupuy, *The Mechanisation of the Mind: On the Origins of Cognitive Science* (Princeton: Princeton University Press, 1994), pp. 19-21.

view of the subject; at the same time, the particular way in which technology unveils truth—by a process of framing (*Gestell*)—forces both humanity and the world to run the risk of being swallowed up in a frenetic quest after power and mastery'.[20] The truth unveiled by framing, according to Heidegger, has to do with the 'mystery of [the] essence' of technology, and the danger posed to the human by the absence of such an essence: 'the rule of Enframing threatens man with the possibility that it could be denied to him to enter a more original revealing and hence to experience the call of a more primal truth'.[21] Technology, for Heidegger, simultaneously ensures the human's identity at the very same time as foreclosing it; as he goes on to remark, '*in truth, however, precisely nowhere does man today any longer encounter himself, i.e., his essence*'.[22] While bolstering a future oriented techno-humanist form of subjectivity, Heidegger's argument follows that some originary characteristic of the human—a 'primal truth'—is unrecognisable by technology's enframing. In the process of declaring the human as cut off from its own fundamental essence, as Cary Wolfe is quick to point out, Heidegger constructs the technological human as existing 'in stark opposition to the "animal", and to the animality of the human when the human becomes something anonymous, either through massification […] or by being reduced to an equally anonymous condition of "bare life"'.[23] The aspect of the human unrecognised by Heidegger's frame, in other words, is an 'animality' that is excluded from the picture; separated via a clear ontological distinction that reinscribes the human's lost essence precisely within the opposition between human/animal.

Reading Calhoun's work via Dupuy, Heidegger, and Cary Wolfe showcases one of the central conflicts that emerges from the rodent utopia; namely, that in applying the results of his experiments to human society, Calhoun supposes a relationship to subjectivity that the

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[20] *Ibid*., p. 109.
[21] Martin Heidegger, *The Question Concerning Technology and Other Essays* (New York: Garland, 1977), p. 28.
[22] *Ibid*., p. 27.
[23] Cary Wolfe, *Before the Law: Humans and Other Animals in a Biopolitical Frame* (Chicago: University of Chicago Press, 2013), p. 5

framework of cybernetics renders ambiguous. Dupuy argues that the relationship between cybernetics, behaviourism, and later cognitivism hinges upon the modelling of a 'mind minus the subject';[24] quoting the neurologist Marc Jeannerod, Dupuy writes that the spirit of cybernetics is best summarised in the notion of the nervous system as an automatic machine that 'works by itself'. Such an explanation, however, 'gives a singularly limited explanation of behaviour. If it explains the automatic aspects quite well, it cannot, by comparison, be generalised to the other aspects of behaviour without producing a *behaviour without a subject*'.[25] Tom Wolfe's article illustrates well the dependence of Calhoun's thesis on a similar conception of automatism. As prime subjects of behavioural sink, Wolfe remarks that 'it got to be easy to look at New Yorkers as animals': anchored to their own primal truths and regulated by disciplinary structures, the city-dwellers are defined by a biological subjectivity which, for Heidegger, notates an improper relationship with technology.[26] As well as playing on the link between 'degenerative' behaviour and animality, Wolfe draws a connection between the technologised city and what is hardwired into the human from an in- or pre-human past: 'Dr. Hall's argument runs as follows: all animals, including birds, seem to have a built-in, inherited requirement to have a certain amount of territory, space, to lead their lives in'.[27] Matched up to the mechanical movements of the city, this programmed response produces the kind of rhythmic interaction between the human and its environment; an automatic performance of behaviour functioning as a mechanised inheritance from an animal past. Wolfe's representation of Calhoun's work shows us that in seeking to demonstrate how to live well according to the ideal of the properly human, Calhoun first had to show that humans are automata, responding

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[24] Dupuy, *The Mechanisation of the Mind*, p. 107.
[25] Marc Jeannerod, *The Brain Machine* quoted in Dupuy, *The Mechanisation of the Mind*, p. 110.
[26] Wolfe, 'O Rotten Gotham', p. 287.
[27] *Ibid*., p. 289.

to their environments according to a pre-programmed nervous system that functions both alongside and despite philosophical ideas about subjectivity.

Calhoun's thesis had a wide impact on cultural representations of behaviourism, and it is in the realm of fiction that the best critiques of the 'behavioural sink' hypothesis can be found. Robert C. O'Brien's *Mrs Frisby and the Rats of NIMH* (1971) responds directly to Calhoun's work, imagining an intelligent society of technologically adept rats as an inversion of the engineered degeneration of the rodent utopia. But it is in the writing of James Tiptree Jr. that the internal contradictions of the humanist-cybernetic-behaviourist nexus emerge. In her short story 'The Psychologist Who Wouldn't Do Awful Things to Rats', Tiptree satirises the ambiguous role played by subjectivity in behaviourism according to a discourse of compassion. The story follows Tilman Lipsitz, a psychologist battling with the requirements of his field to inflict unending pain and suffering upon the animals in his laboratory. A committed behaviourist, Tilman struggles to reconcile his scientific interests with the violence required of him:

> Yet he too believes in "the organism", believes in the miraculous wiring diagram of life; he is naively impressed by the complexity, the intricate interrelated delicacies of living matter. Why is he so reluctant to push metal into it, produce lesions with acids or shock? He has this unfashionable yearning to learn by appreciation, to tease out the secrets with only his eyes and mind. He has even the treasonable suspicion that such procedures might be more efficient, more instructive. But what holistic means are there? Probably none, he tells himself firmly. Grow up. Look at all they've discovered with the knife.[28]

Driven by an empathy for the rats under his observation, Tilman forgoes the requirements of his discipline to care for the animals; sensing the rats' misery, he repairs 'for them a stack of big old rabbit cages' and puts them in a 'dark alcove nobody wanted, provoking mirth among

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[28] James Tiptree Jr., 'The Psychologist Who Wouldn't Do Awful Things to Rats', in *The Weird: A Compendium of Strange and Dark Stories* ed. by Ann and Jeff VanderMeer (London: Corvus, 2011), pp. 980-1006 (p. 982), Kindle ebook. All subsequent references will appear in the text.

his colleagues' (p. 982). While Tilman is interested in the 'miraculous diagram of life', empathy proves for him the most effective tool for accessing its secrets, and he spends his time in the laboratory feeding the rats carrots and distributing newspaper on which they can sleep: 'now he sees with amazement [the] solid cubic volumes of artfully crumpled and plastered paper strips. Fantastic, the labour! Nests; and all identical' (p. 982). But Tilman's research, focussed on the question of his rats' capacity for emotion, is derided by his supervisor, for whom emotionality in rats 'is (a) defecating and (b) biting psychologists' (p. 984). Tilman's exasperation with the redundancy of what he sees as the behaviourist norm—proving 'how damaged organisms are damaged, that kind of engineering thing'—results in him being pathologized by the domineering academic patriarch: 'Psychology is not a field for people with emotional problems' (p. 988).

Tiptree was the pen name of Alice Sheldon, and as Alan C. Elms documents, the behaviourist setting of Sheldon's story draws upon the author's own experience as a practicing research psychologist. Elms notes that Sheldon was influenced by Edward Chace Tolman, a behaviourist who attributed to rats 'a good deal more credit for perceptiveness and purposiveness than did either of his main theoretical competitors, B. F. Skinner and Clark Hull'.[29] Tilman's research in the story is based on Sheldon's own doctoral dissertation, which sought to study rats' responses to familiar and novel visual stimuli; the research showed that when 'the general situation was unfamiliar, the rat would more likely approach a familiar specific stimulus. As the general situation grew familiar, the rat would more likely choose a novel stimulus'.[30] Sheldon includes a figure from the dissertation in the story, depicting some of the common responses in rats elicited by unfamiliar objects or surroundings; while depicting a thesis that Sheldon applies to human behaviour, arguing that humans and other animals most

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[29] Alan C. Elms, 'The Psychologist Who Empathised with Rats: James Tiptree, Jr. as Alice B. Sheldon, PhD', *Science Fiction Studies*, 31 (2004), 81-96, (p. 82).
[30] *Ibid*., p. 86.

often prefer familiarity to innovation, the figure nevertheless shows Sheldon's interest in the intricacies of individual animals' experiences.[31] This point is emphasised further by an illustration of the experimental apparatus used by Sheldon, in which a rat is depicted as choosing between two different visual stimuli. In stark contrast to Calhoun's overhead cityscapes, Sheldon's figures assume the perspectives of the rats in her experiments, differentiating her approach as concerned with the responses of individuals rather than patterns in populations. In a figure not included in the published version of her dissertation, Sheldon depicts her hypothesis by way of imagining what kinds of paintings rats would prefer to view in a gallery based on the artwork they have on display at home (see figure 2.). As Elms notes, here 'Sheldon provides no answer key, leaving the human viewer free to empathise with the rats'.[32]

Calhoun is not cited in the published version of Sheldon's thesis, which was included in 1969 in the *Journal of Comparative and Physiological Psychology*.[33] But by 1967, when Sheldon submitted her thesis to George Washington University, Calhoun had published extensively on the concept of behavioural sink, with his initial studies on rat population beginning in 1947. It therefore makes sense to assume that Sheldon was aware of Calhoun's work, and to read her story as responding to the field that he was helping to define in the 1950s and 1960s. Rather than just pointing to the ethical problems with the regimes of sacrifice found in behaviourist laboratories, Tiptree's story highlights behaviourism's implication within the mechanical, cybernetic animality that its conclusions so often hold separate from the category of the human. This is most immediately apparent in the contrast between Tiptree's descriptions of the rats and the researchers. While the latter are rendered in cold and mechanical terms as

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[31] *Ibid*., p. 83.
[32] *Ibid*., p. 86.
[33] Alice B. Sheldon, 'Preference for Familiar versus Novel Stimuli as a Function of the Familiarity of the Environment', *Journal of Comparative and Physiological Psychology*, 67 (1969), 516-521.

they inflict torturous acts upon their test subjects, the rats are to Tilman 'small black-and-white friends'; 'affectionate' companions that 'nestle in his hands, teeteringly ride his shoulder, display humour' (p. 992). While Tiptree's point is to emphasise the arbitrary nature of the ways in which certain animals are designated 'cute' and others killable, her argument extends through the ways in which Tilman imagines different ways in which to produce knowledge within the behaviourist field. Tilman notes that for his colleagues, the concept of 'the whole organism' functions as a 'fetish', governing an abstract drive towards an exacting knowledge of the physiological mechanics of animal subjects, and a linear and teleological application of this knowledge to conclusions regarding human behaviour (p. 985). By contrast, Tilman's interests lie in 'the great golden mists, the reality of Life itself and the questions he has earned the right to ask' (p. 989). Rather than succumbing to the technological fetish of his discipline, Tilman wants to 'explore the capacity of animals to *anticipate*, to gain some knowledge of the wave-front of expectations that they must build up, even in the tiniest heads' (p. 989).

In contrasting Tilman's desire to observe the unexpected in his animal subjects with the automatism of the behaviourist norm, Tiptree depicts the discipline as producing a mechanical model of animality that governs the relationship between animal behaviour and human society. In viewing their test subjects as machines that possess no emotion, agency, or capacity for suffering, the researchers themselves come to embody a version of this animality: when his supervisor 'exhales troubledly through his lower teeth', Tilman notices that the teeth are 'slightly incurved' in a manner that reflects that of the rats he works with (p. 984). For Tiptree, the idea of a cybernetic continuum between human and nonhuman, in
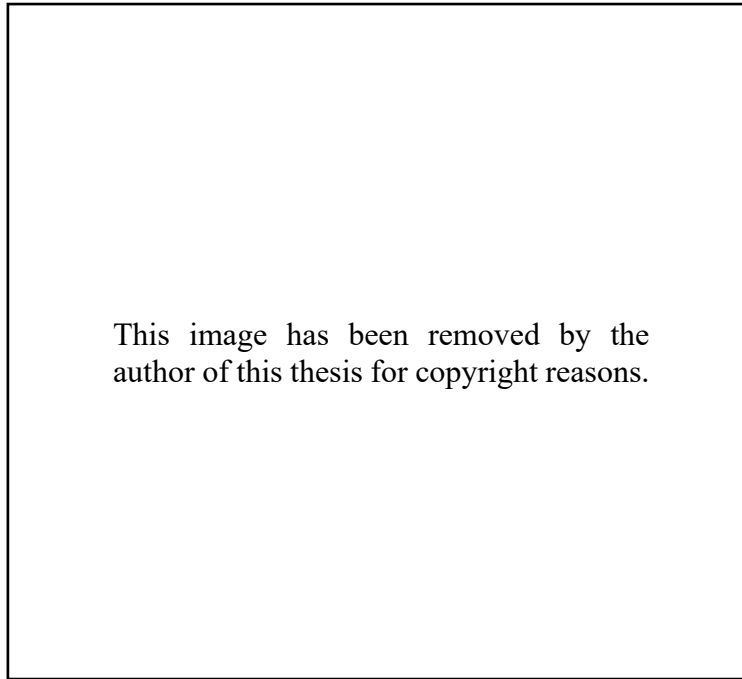
(Figure 1: Rat's eye view)
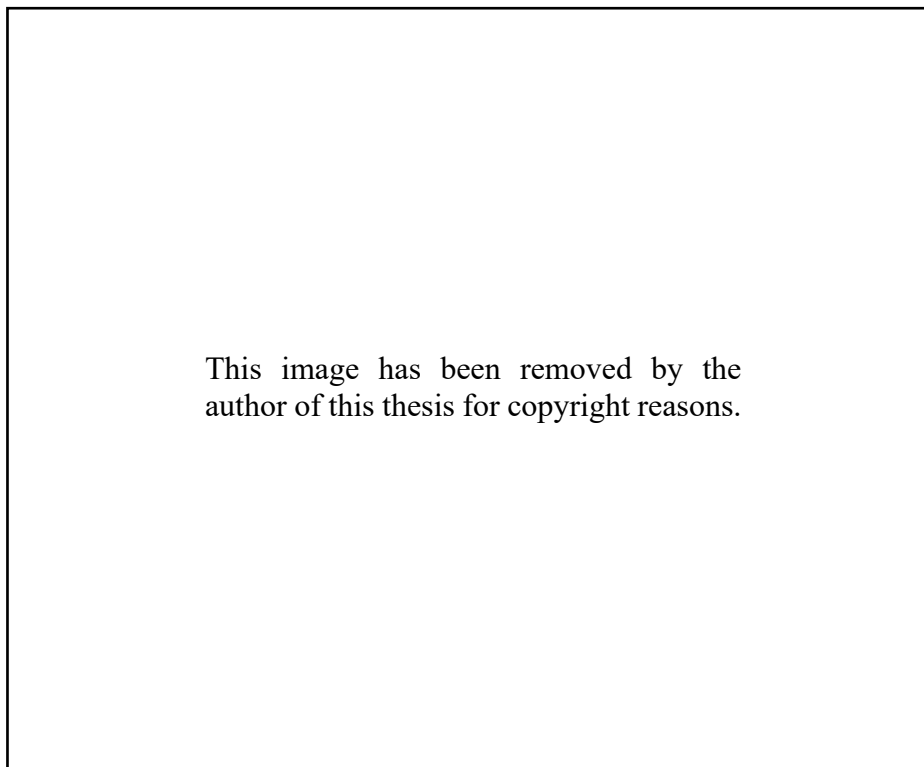
(Figure 2: 'Choice of familiar stimulus')[34]

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[34] While neither of these images are included in the published version of Sheldon's dissertation, I have accessed them via Elms's article, which references Sheldon's doctoral thesis submitted to George Washington University in 1967. See Elms, 'The Psychologist Who Empathised with Rats', pp. 85-86.

which behaviour can be traced, mapped, and modelled across species, forms precisely the logic that necessitates the violence that Tilman wants to reject. But Tilman's alternative to the behaviourist fetish—his desire to experience the unexpected, 'golden mists' of Life—cannot remedy the violence of his discipline as he so hopes. When the pressures of his research become unbearable, Tilman resolves to abandon his project and kill all of his rats in an effort to win back the respect of his colleagues. In an absinthe-induced daze, Tilman begins to kill the rats in what he can devise as the 'decentest way' (p. 994). As he settles into this macabre task, he imagines that the 'temple of pain' he inhabits must only be capable of producing a finite amount of suffering: 'maybe somewhere there is a reservoir of pain, he muses. Waiting to be filled. When it is full, will something rise from it? Something created and summoned by torment?' (p. 996). Before long, Tilman's empathic hallucination produces a manifestation of such a wretched being:

> What's lying back there among the Purina bags is an incredible whorl—a tangle of rat legs, rat heads, rat bodies, rat tails intertwined in a great wheellike formation, joined somehow abnormally rat to rat—a huge rat pie, heaving, pulsing, eyes reflecting stress and pain. Quite horrible, really; the shock of it is making him fight for breath. And it is not all laboratory animals; he can see the agouti coats of feral rats mixed in among it. Have wild rats come in here to help form this gruesome thing? (p. 997).

This weird combination of projected guilt and mythic beasthood—Tilman recognises the creature as a rat king, product of 'ancient grotesque legends of rat and man'—functions as an encounter with an inexplicable, wild animality that mirrors Tilman's desire to find knowledge beyond the behaviourist rubric (p. 997).[35] But reaching beyond the cybernetic framework

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[35] In his study *Rat*, Jonathan Burt associates the mythic figure of the 'rat king' with a particular kind of 'dark vitality' that despite human efforts cannot be overcome. Quoting journalist Charles Fothergill, who was writing in 1813, Burt notes that rats have long been associated with an apocalyptic reproductive fervour: 'if *rats* were suffered to multiply without…restraint…not only would fertile plans and rich cities be undermined and destroyed, but the whole surface of the earth in a very few years would be rendered a barren and hideous waste, covered with myriads of famished *grey rats*, against which man himself would contend in vain'. In applying the results of the rodent utopia to human society, Calhoun is casting the human as exhibiting a similarly inexplicable vitality that has been associated with rats throughout history. See Jonathan Burt, *Rat* (London: Reaktion, 2006), pp. 45-149.

reveals that the animals are defined only by the abject suffering visible in the swarming mass of rats. As the psychedelic episode continues, Tilman realises that he is part of an 'endless host' of suffering creatures, both human and nonhuman, 'going out at last' to a place beyond the 'clockwork Cartesian world in which nothing will mean anything forever' (pp. 1000-1003).

Tiptree's representation of the souls of suffering beings entering another world serves to satirise the relationship between behaviourism and subjectivity. The logic that functions through Calhoun's work to obscure the human's essence, viewing behaviour through an evolutionary and cybernetic lens, is shown by Tiptree to be underpinned by an altogether more straightforward criteria of exclusion, based in the simple adage that dawns upon Tilman: animals are robots, and 'you can do anything to them. Their pain doesn't count' (p. 1002). Tiptree's story ends on a further note of satire: when Tilman awakens from his oneiric episode, he is freed at last from the burden of empathy, proceeding to kill the remaining rats with stony resolve. By constructing Tilman's vision as an intensification of his empathy towards animals, rather than as a way in which to experience the hidden depths of nonhuman minds, Tiptree emphasises in the final pages of her story that the very possibility of expression in the behaviourist mode is defined by the violent speciesism to which Tilman eventually defers. If behaviourism dispenses with the subject in its depiction of automatic processes that extend across species barriers, Tiptree suggests that it does so only by first deploying the Cartesian formula of who counts as such a subject, and who nevertheless—even in this subject's absence—remains excluded from the frame.

II. Paranoid Entanglements: Control, Communication, and Violence in the work of John C. Lilly

While 'The Psychologist Who Wouldn't Do Awful Things to Rats' centres around the biopolitical violence necessitated by behaviourist practice, Sheldon's own research exhibits the

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same desire to learn more about the inner worlds of animals that she bestows upon her central character. In this section of the chapter, I turn to a consideration of the work of John C. Lilly, whose research sought to enact this impulse to the extreme. Eventually separated from the scientific establishment through his emerging status as a countercultural figure and New Age guru, Lilly worked in the late 1950s and early 1960s on establishing ways for humans to communicate with dolphins, and wrote about his efforts for many years afterwards. The section will examine how Lilly's writing on interspecies communication in many regards proposes a politico-ethical theory that reflects the argument made by Tiptree's story: that nonhuman animals are subject to widespread and systemic forms of biopolitical violence perpetuated by the onto-epistemological norms of scientific institutions. Influenced by thinkers such as Gregory Bateson, Lilly repurposed the cybernetic modes of thought that produced for Calhoun a mechanical continuum between humans and animals, instead looking to the field as a source of cosmic transcendence from the confines of the human mind, and as a basis for a dynamic and multidirectional model of communication with cetaceans. But as we will see, Lilly's movement beyond the human retained a commitment to the same forms of mastery that he at once sought to undermine. In arguing this point, the section ends by suggesting that Lilly's interspecies thinking modelled itself in part upon the techno-sublimity of space age discourses of technology, rendering the dolphin itself as the means for an extension and intensification of the human.

Tracing the trajectory of Lilly's career from his position at the National Institute for Mental Health (NIMH) through to the establishment of his own institute for the study of cetaceans, D. Graham Burnett argues that Lilly's interest in the mind of the dolphin is rooted in a cold war sensibility. Paying particular attention to a 1958 paper published in the *American Journal of Psychiatry*, which contains some of Lilly's first musings on the dolphin brain, Burnett notes that Lilly's primary concern 'was to reflect on the fact that neurophysiological

work over the previous five years had established the existence of brain regions that, under stimulation, trigger "negative-painful-stop" responses, whereas other regions trigger "positive-pleasurable-start" responses'.[36] Conducted largely on macaque monkeys, Lilly's research in the paper raised the 'spectre' of mind control, positing the idea of the 'tractability of sophisticated cognitive functioning by means of electrical stimulation'.[37] But the macaques proved imperfect models for human neural physiology, and Lilly turned to the bottlenose dolphin for its more accurate reflection of the size of the human brain. For Lilly, dolphins were the perfect models for testing the fortitude of the human mind because of what he viewed as their own elevated intelligence: 'in a sense', he notes, 'it is a joke when I fantasy that it may be best to hurry and finish our work on their brains before one of them learns to speak our language—else he will demand equal rights with men for their brains and lives under our ethical and legal codes!'.[38]

Lilly's interest in interspecies communication exhibits the scientific-cultural themes examined in my first chapter, which sought to establish how the properly American human subject could render their mind impervious to ideological conditioning. Rather than just reflecting the concerns of his time, though, Lilly was more intimately acquainted with the ideological concerns of the state: 'Lilly was involved well into 1959', Burnett writes, 'in advising members of the security establishment about the potential uses of his neurophysiological investigations', in addition to deploying 'mind control' techniques developed in the isolation tank on his dolphin subjects.[39] In this scenario, dolphins were isolated from members of their own species and allowed contact only with a single human lab

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[36] D. Graham Burnett, 'Adult Swim: How John C. Lilly Got Groovy (and Took the Dolphin with Him), 1957-1968', in *Groovy Science: Knowledge, Innovation and American Counterculture* ed. by David Kaiser and W. Patrick McCray (Chicago: University of Chicago Press, 2016), pp. 13-51 (p. 19).
[37] *Ibid.*, p. 19.
[38] John C. Lilly, 'Some Considerations regarding Basic Mechanisms of Positive and Negative Types of Motivations', *American Journal of Psychiatry*, 115 (1958), quoted in Burnett, 'Adult Swim', p. 20.
[39] *Ibid.*, p. 22.

assistant who would provide food, as well as attempt to establish communication.[40] In this way,

Lilly's cetaceans were rendered tools for better understanding how the human mind could be

influenced, broken, or controlled in the cold war game of 'brain warfare', as Timothy Melley

terms it.[41] Like other behaviourists, Lilly's sacrifice of nonhuman lives aids in the

establishment of a cold war human subjectivity conceived along military lines: in this case, a

subject impervious to malignant attempts at ideological conditioning. Despite this, Lilly's

focus on the brain as a figure of communication that transcended the gap between human and

animal resulted in a multispecies theory of mind that also, as Lilly's remarks in the 1958 paper

suggest, functioned as the seed for a political ethics of nonhuman agency. Before returning to

the implications of Lilly's involvement with the paranoid fantasies of the cold war, I want to

examine first how this ethics develops throughout his work in a way that differentiates him

from the mechanical behaviourism examined in the first section of this chapter.

By 1959 Lilly had left his position at NIMH and secured funding from various

sources—including the Department of Defence and NASA—to open his own institute devoted

to the investigation of 'the mechanisms of inter- and intra-species communication of intelligent

information, emotional status, and basic drives'.[42] In his book *Man and Dolphin* (1961), Lilly

summarises the philosophical rationale of this project, writing that 'we must strip ourselves, as

far as possible, of our preconceptions about the relative place of *Homo sapiens* in the scheme

of nature'.[43] Seeking to displace the perception of the human as the pinnacle of evolutionary

progress, Lilly argues that 'if we are to seek communication with other species we must first

grant the possibility that some other species may have a potential (or even realised) intellectual

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[40] *Ibid.*, pp. 23-24.
[41] Timothy Melley, *The Covert Sphere: Secrecy, Fiction, and the National Security State* (Ithaca: Cornell University Press, 2012), p. 47.
[42] The quote, taken from correspondence with NASA scientist Orr Reynolds contained in Lilly's archives, continues: 'in an attempt to discover the mechanisms which nature has evolved, and to supplement these mechanisms by technological devices'. See Burnett, *Adult Swim*, pp. 25-46.
[43] John C. Lilly, *Man and Dolphin* (London: Gollancz, 1962), p. 21.

development comparable to our own'.[44] The heightened intelligence of dolphins makes it

likely, in Lilly's view, for communication to occur 'within the next decade or two'; upon this

inevitability, dolphins begin to pose a particular 'legal, ethical, moral and social problem'.[45] In

what was his first extended publication on dolphins, interspecies communication is presented

as exposing the limitations of contemporary environmental legislation: 'dolphins correspond

very loosely', Lilly writes, 'to conserved wild animals under the protection of the conservation

laws in certain parts of the United States and by international agreement'.[46] By the publication

of *Communication Between Man and Dolphin* in 1978, Lilly had developed the political

implications of his research into a diagnosis of 'interspecies deprivation': 'man has no one to

talk to but man; man negotiates only with man; he manages everyone else'.[47] Lilly goes on to

propose an ecologically minded philosophy for interspecies communication:

> It is time to recognise that the human species has maintained a human-centred, isolated
> existence on the planet Earth because of its failure to communicate with those of
> comparable brain size existing in the sea. The cetaceans have a reality separate from
> the human reality. Their realities, defined in their own terms, their social competence,
> their surviving for the last fifteen million years, are to be respected, to be researched,
> and the consequences to be legislated into human law.[48]

With his reference to separate 'realities', Lilly ties the conception of interspecies

communication to the idea of a profane knowledge previously inaccessible to an

anthropocentric scientific establishment. But rather than marking an abstract sense of

difference, Lilly argues that the existence of dolphin realities should provoke dynamic

readjustment in the space of human politics; an ability to recognise the limitations of

knowledge about nonhuman life, and a will to adapt human law to account for the interests of

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[44] *Ibid.*, p. 21.
[45] *Ibid.*, pp. 15-164.
[46] *Ibid.*, p. 164.
[47] John C. Lilly, *Communication Between Man and Dolphin: The Possibilities of Talking With Other Species* (New York: Crown Publishers, 1978), p. 106.
[48] *Ibid.*, p. 111.

nonhuman others. Lilly's remarks showcase an awareness of the pitfalls of the discourses examined in the previous chapter, in which the lives of animals captured on film were mediated through the lens of human concerns, instead marking a desire to speak for dolphins' own interests.

The root of Lilly's radical suggestions here are to be found (and as we will see, also come undone) in his notion of language as something that is not exclusive to the human. Reading Lilly through the work of Bateson helps to illuminate this aspect of his theory of language. Bateson was himself a member of Lilly's institute, and went on to examine the topic of cetacean communication in his cybernetic treatise *Steps to an Ecology of Mind* (1972). Situating the problem not with the species barrier between human and nonhuman, but rather with the ways in which even human language fails to properly relate to the reality it purports to describe, Bateson argues that verbal 'language is almost (but not quite) purely digital. The word "big" is not bigger than the word "little"; and in general there is nothing in the pattern (*i.e.*, the system of interrelated magnitudes) in the word "table" which would correspond to the system of interrelated magnitudes in the object denoted'.[49] Language, for Bateson, is a digital system that categorises the world according to its own internal sense of order. In order to properly understand the relationship between language and meaning, Bateson argues, we must take into account all aspects of 'kinesic and paralinguistic communication': 'the magnitude of the gesture, the loudness of the voice, the length of the pause, the tension of the muscle, and so forth'.[50] While communicating with dolphins according to the digital model of language represents a communication 'of an almost totally unfamiliar kind', Bateson's point is that communication between humans already depends upon a kind of relationship that exceeds the boundaries of language's possibility.[51] In the production of meaning, language fulfils only half

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[49] Gregory Bateson, *Steps to an Ecology of Mind* (New York: Ballantine, 1978), p. 373.
[50] *Ibid.*, pp. 373-374.
[51] *Ibid.*, p. 374.

of a job that is completed by more-than-human faculties of relationship such as tone of voice, posture, and bodily presence.

In his early writings on interspecies communication in *Man and Dolphin*, Lilly at times begins to formulate a theory of language that matches with Bateson's later thoughts. Seeking to understand the worlds of dolphins, Lilly writes, must first involve examining our experience of communication 'with members of our species'.[52] Such a task produces two questions that must be answered: 'who are our failures and why can't they communicate? Who in the human species does not possess "intraspecies" language?'.[53] While Lilly's negative formulation of the first question precipitates what I will soon show to be the shortcomings of his theory, the second question relates to an idea that reappears throughout his writing: that understanding dolphins must involve looking to modes of communication that exceed the possibilities of language. This is best illustrated by the particular attention paid by Lilly to the various vocalisations made by his dolphin subjects: 'all of them (wild or captive), he writes, 'frequently creak, putt-putt, and whistle under water, with some rare quacks, squawks, and beats under water and in air'.[54] In the human's overdependence on digital language, Lilly argues, 'our own acoustic systems have been trained (if not overtrained) to extract meaning from complex patterns, but not *all* patterns'; speaking to dolphins as such requires an expansion of the sensory field from which the human might acquire meaning.[55]

In this regard, Lilly's interest in dolphins marks a continuation of the concerns that began during his time at NIMH. When macaques failed to sufficiently model the human brain, Burnett notes, Lilly turned to a device that allowed him to stage experiments within his own mind: the sensory deprivation tank. The tanks—described by Burnett as allowing 'neutrally

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[52] Lilly, *Man and Dolphin*, p. 21.
[53] *Ibid.*, pp. 21-22.
[54] *Ibid.*, p. 151.
[55] *Ibid.*, p. 153.

buoyant subjects' to be confined 'in total darkness and without sound or sensory input'—allowed Lilly to conduct extensive self-experimentation on the psychic states that could be achieved by sensory deprivation.[56] During this period, many of Lilly's ways of conceptualising the alterity of dolphin minds were born through his exploring the uncharted realms of his own psyche. On dolphin communication, writing in 1963, Lilly describes a feeling of 'weirdness' created by 'the thought that we were up against the edge of a vast uncharted region […] we felt we were in the presence of Something, or Someone who was on the other side of a transparent barrier which up to this point we hadn't even seen'.[57] Later, in his more esoteric *The Deep Self* (1977), Lilly describes a similar 'sense of alienness' brought about by sensory deprivation: in the tank, 'one no longer has boundaries; one spreads out and becomes some of the flowing materials, the flowing energies. There is a loss of the boundaries and the distinctions between Self and the surroundings'.[58] As Bateson sees digital language as marking but one limited model of communication among a host of more-than-human ways of being in which the human is always participating, so did Lilly turn inward in order to deconstruct the artificial boundaries enacted by language between the human and its outside.

Lilly's evocative description of sensory deprivation ties his thinking to the imaginaries forged by Burroughs and Ballard, the inner world of the human exerting a deconstructive force over its own ontological security. But like Burroughs, Lilly's critique of language sought to reinstate a new kind of mastery that functioned paradoxically as part of this deconstruction. While *Man and Dolphin* contains numerous links to the way of thinking that Bateson would later articulate, Lilly simultaneously redirects his observations on dolphin vocalisations towards the digital model of language. Justifying his interest in dolphins, as opposed to other

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[56] Burnett, 'Adult Swim', pp. 21-22.
[57] John C. Lilly, 'Productive and Creative Research with Man and Dolphin', *Archives of General Psychiatry*, 8 (1963), 111-116, (p. 112).
[58] John C. Lilly, *The Deep Self: Consciousness Exploration in the Isolation Tank* (Nevada City: Gateways, 2007), p. 107.

animals with large brains, Lilly writes that the chosen species should be able to mimic human speech:

> For our convenience, if not from necessity, the animal should be capable of vocalising within the same measurable ranges of pitch, loudness, duration, and so forth that the human uses. […] *Homo sapiens* seems to be unique in his intimate and detailed control over the muscles surrounding his respiratory outlet—the muscles of vocalisation, the larynx, the naso-pharynx, the pharynx, the mouth, the lips, and the face. However, our mobility of facial expression is not an absolute concomitant of spoken language: we can still speak to one another fairly successfully over the telephone without visual aid.[59]

While situated within an extra-linguistic understanding of communication, Lilly here recourses to the primacy of the digital, imagining the true essence of meaning in a conversation as reducible to an exchange of words without visual stimuli. This commitment to language is repeated, ultimately, in Lilly's desire to encourage dolphins to adopt human patterns of speech. In an anecdote that ties together this privileging of digital language with his manifestly paranoid sensibility, Lilly describes a breakthrough moment with one of the dolphins:

> Someone suggested that I would be late for dinner if I didn't leave and said: "It's six o'clock!" very loudly. The tape recorded this on the air channel; in a few seconds on the underwater channel Lizzie, near the hydrophone, putt-putted, Baby answered with a short, fast series of whistles, and Lizzie very loudly came out with a "humanoid" sentence, the meaning of which (if any) has puzzled several of us since. It may have been a poor copy of "It's six o'clock". But I was caught at first by another "meaning". It sounded to me like "This is a trick!" with a peculiar hissing accent. Other people have since heard the tape and come to the same conclusion.[60]

In this scenario, Lilly skips over any possible interpretation of the dolphins' own vocalisations and instead insists on locating a hidden meaning within the noises; a secret message that, as Lilly speculates, marks Lizzie the dolphin's entry into the realm of human meaning. Clearly guided by the sensibilities of the psychological warfare research that his work at NIMH involved, Lilly grants his dolphin subjects human attributes that reflect his own ideations,

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[59] Lilly, *Man and Dolphin*, pp. 25-26.
[60] *Ibid.*, p. 158.

finding proof in uncanny similarities between dolphin vocalisation and human speech that unveils a subliminal interspecies relationship. Lilly's faith in the dolphin's ability to learn human speech reflects a fundamental commitment to a particular vision of the human, extending beyond the surface logic of anthropomorphism. In what follows, I examine how this aspect of Lilly's work models an augmented vision of the human, dependent on his vision of a dynamic, flowing communication across species boundaries.

While Calhoun's behaviourism utilises the language of discipline, emphasising a humanism that must emerge triumphantly from the apparatuses of technological modernity, Lilly's behaviourist vision is better understood according to the mutation of biopolitical logics compounded by Deleuze under the name 'control'. For Deleuze, while disciplinary societies operate between two poles consisting of 'the signature that designates the *individual*, and the number or administrative numeration that indicates his or her position within a *mass*', control societies blur this boundary: 'individuals have become "*dividuals*", and masses, samples, data, markets, or "*banks*"'.[61] Marking a movement away from a biopower centred around traditional institutions and steadfast subjectivities, control describes a power radically dispersed throughout space and time; universal and omnipresent and yet operating under the surface; substituting the security offered by 'natural' ontological categories for a reliance on flows of data and information. The figure of control, in the context of Lilly's work, is the brain: the human 'biocomputer', centre of communications, functions as the site of interspecies communion as information is shared between the two outposts. Crucially, then, the dolphin's 'value' lies in its immense capacity for the processing of such information, with Lilly arguing repeatedly throughout his writings that his nonhuman subjects possess physiological abilities that are super-human, including the 'ability to receive twenty times as much information through his ears as we do', and possessing skin that is 'much richer than ours in pressure, touch,

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[61] Gilles Deleuze, 'Postscript on the Societies of Control', *October*, 59 (1992), 3-7, (p. 5).

and similar endings, so that their sensory input from their skin, presumably, is several times that of ours'.[62] The dolphins are thus represented through a cybernetic thematics in two overlapping ways: encased, mediated, and regulated through an external technological apparatus, as visible in figure 3, in addition to functioning themselves as the source of technological transcendence beyond the base level 'human'.

While moving beyond the 'subject', in this sense, Lilly's experiments with interspecies communication reinstate a new thematics of control based in a cybernetic dream of unbridled communication across species barriers. In marking an expansion of the human's abilities and an evolution of the human biocomputer towards what Lilly terms self-'metaprogramming', or learning to learn how to program one's own consciousness, Lilly arrives at a new vision of self that sits in paradoxical tension with the demonstrated porousness and connective potential of the brain:[63]

> I am not limited by the known physical senses, known physical signals sent/received by my brain. (Transcended, these limits are left behind. I send/receive messages by means unknown with unknown entities greater than me).
>
> Beyond transcendence is an infinite variety of unknowns. (I move from my brain into other universes and spaces, other states of being. Once lived, these unknowns are no longer unknown).[64]

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[62] John C. Lilly, *The Mind of the Dolphin: A Nonhuman Intelligence* (New York: Avon Books, 1967), p. 89.
[63] Lilly, *The Deep Self*, p. 27.
[64] *Ibid.*, p. 113.
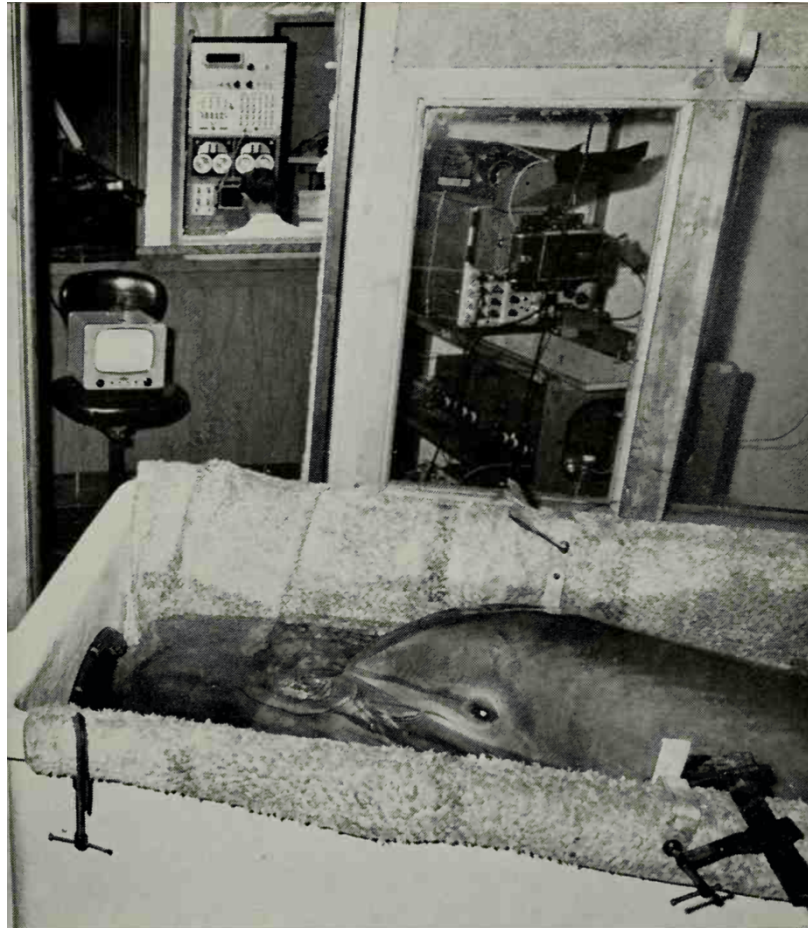
(Figure 3: The cyborg dolphin. 'The dolphin is isolated in this tank and produces his sounds with his head either raised as shown or placed below the water. The blowhole is closed. Hydrophones are placed on his head or in the water near his head. (Note the reflection from the back of his retina of the flash from the camera.) A TV monitor is shown through the doorway. In the far room is the computer used for analysing data'.)[65]

While vague in his definition of 'transcendence', the overwhelming sense here is one an augmented self, immersed in an 'unknown' that draws in equal measure from the idea of nonhuman consciousness as it does from the techno-sublimity of a self that is entirely virtual; unlimited in its modes of being and constituted within a system of absolute communication. While thoroughly decentring the idea of the 'human', the politics of this subjectivity are to be

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[65] *Ibid*., p. 161.

found, unavoidably, in the space age mythologies that mark an intensification of humanist values, as well as an intensification of absolute technological power. Suspended, weightless and floating between these 'other states of being', Lilly's representation draws noticeably from the language of what Manfred Clynes and Nathan Kline first described, in 1960, as the 'cyborg': a 'self-regulating man-machine system' proposed in order to adapt the human to the new environment of space.[66] The problem posed by space travel, for Clynes and Kline, 'challenges mankind not only technologically but also spiritually, in that it invites man to take an active part in his own biological evolution' through adapting his physiological capabilities:

> If a fish wished to live on land, it could not readily do so. If, however, a particularly intelligent and resourceful fish could be found, who had studied a good deal of biochemistry and physiology, was a master engineer and cyberneticist, and had excellent lab facilities available to him, this fish could conceivably have the ability to design an instrument which would allow him to live on land and breathe air quite readily.[67]

In its enacting of the kind of active evolutionary advancement proposed by Clynes and Kline, Lilly's research installs the dolphin as the instrument that propels the human forward into 'other states of being'. Interspecies communication is not the ultimate goal here; rather, in demonstrating the potential for cybernetic interfacing between human and dolphin, Lilly expands the horizons of 'human' possibility through recognising, he writes, 'that we are still babies in the universe, taking steps never before taken'.[68] This dream of 'active species enhancement', to use Fabienne Collignon's phrasing, places Lilly within the purview of a technological project that seeks to escape the confines of the earthly, and the bodily, in pursuit of the 'sublime, englobing machine aesthetic' posed by the cold war military defence state.[69]

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[66] Manfred E. Clynes and Nathan S. Kline, 'Cyborgs and Space', *Astronautics* (1960), 26-76, (p. 27).
[67] *Ibid.*, p. 26.
[68] Lilly, 'Productive and Creative Research', p. 116.
[69] Fabienne Collignon, *Rocket States: Atomic Weaponry and the Cultural Imagination* (New York: Bloomsbury, 2014), pp. 79-82.

While ostensibly separate from this security state, Lilly's research played into scientific-cultural narratives that imagined the human as transcending the limits of its biological capabilities.

III. Psychoanalysis, Sacrifice, and Cybernetics in *Altered States*

In the opening scene of Ken Russell's film *Altered States* (1980), the central character Dr. Edward Jessup is pictured submerged in an isolation tank resembling simultaneously an old boiler and a space shuttle, encasing and illuminating the cyborg body of the scientist within. Swathed in an entangled mess of electrical wiring, Jessup's face appears as if on a screen formed by the circular front facing window of the tank; as the camera pans outwards, both Jessup and the tank are further framed by the window of a control centre in which Jessup's colleague Arthur records his brain activities. The scene serves to localise two of the central operations of technology in Russell's narrative: in the tank, Jessup appears in one sense as the subject of space described by Clynes and Kline, the tank an exoskeleton extending sensory and bodily capabilities while also protecting the vulnerable human body inside. In another sense—and one that becomes apparent when Jessup first emerges from this 'womb of a machine'[70]—the isolation tank serves as a device concerned not with futurity but rather interiority, memory, and the unconscious: after Jessup asks about his own communications while in the tank, Arthur informs him that 'you said you were re-experiencing your father's death'.[71] Technological transcendence and the enactment of a primal psychic complex are framed together in the opening moments of Russell's movie in the virtual space of the isolation tank. Visible too in the film's poster (figure 4), in which Jessup floats upside down against a dark background, is a literal inversion of the figure of Western scientific knowledge: by placing its depiction of a

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[70] Anna Powell, *Deleuze, Altered States and Film* (Edinburgh: Edinburgh University Press, 2007), p. 1.
[71] *Altered States*, dir. by Ken Russell (Warner Bros., 1980).

prototypical male scientist at the centre of this weird experiment, Russell's film establishes Jessup from the outset as both observer and observed; constituted himself within the indeterminate virtuality of the space between the reasoned perspective of the spectator and the object of knowledge itself. As a technology that enacts communication between these intersecting sets of poles—past/future, inner/outer, observer/observed—the isolation tank serves as a space in which, from the film's outset, the consistency of human identity begins to wane.
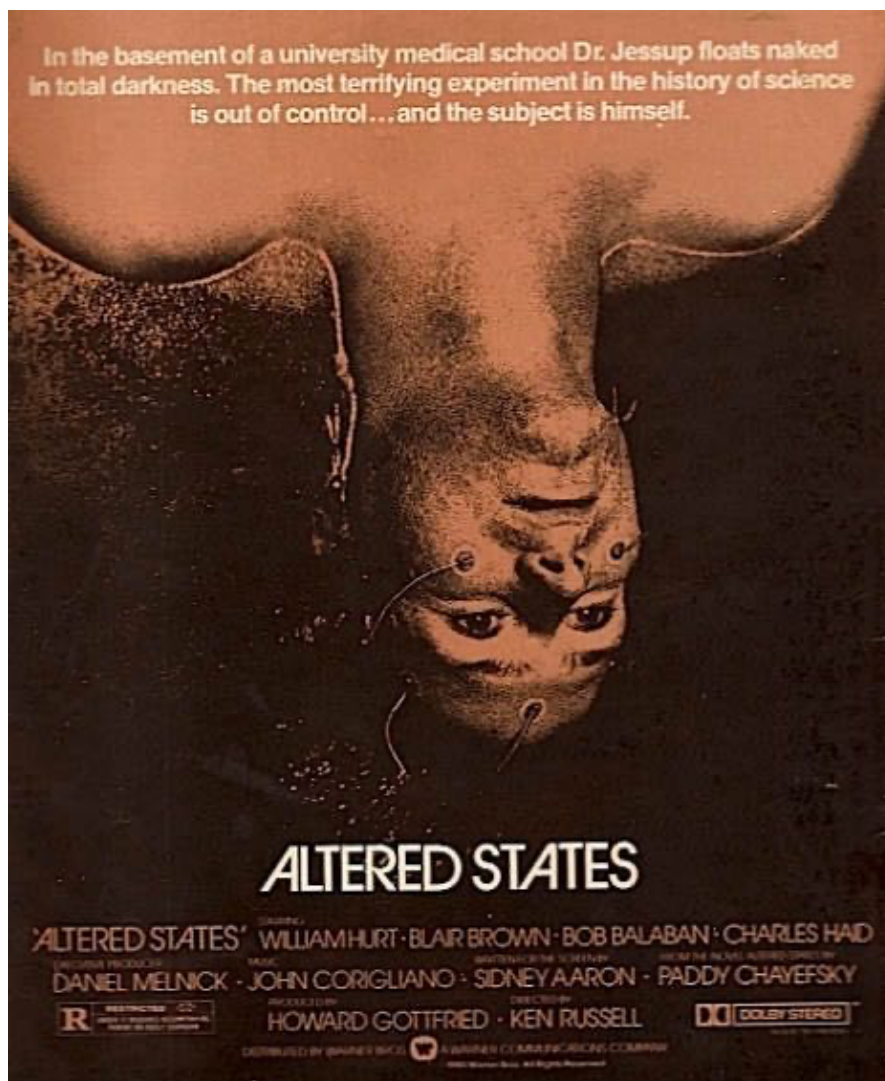
(Figure 4)

Adapted from Paddy Chayefsky's novel of the same name,[72] *Altered States* is concerned directly with the application of cybernetics to philosophical questions of the human's ontological status as separate from both animal and machine. Influenced directly by Lilly's work—and most likely Lilly's extended meditations on his own LSD research in *The Centre of the Cyclone* (1972)—Russell's film follows Jessup's journey towards the discovery of an 'original self' accessible, he believes, through mining his own psyche in the isolation tank under the influence of psychedelics. What is uncovered during this process is an inner, originary animality that resurfaces within Jessup—both physically and at the level of psyche— that sees the film's central trope of the scientific pursuit of knowledge staged as a confrontation with the genetic and evolutionary history of the human as contained within, and accessible through, the body and mind. In one regard, Russell's depiction of an alterity within the human follows in the footsteps of Lilly's own emancipatory aspirations for his research in human–dolphin communication. In constructing the observer as an active participant in the experiment, *Altered States* repeats Lilly's imperative: 'the modern scientific observer must realise that he is a member of a vast feedback system within his own species and the other species. He must realise that man has established a separate "reality" defined by the beliefs current in that society'.[73] In this instance, the dominant belief system that constitutes the human's simulated reality is an exceptionalism among species: as we have already seen, Lilly's vision of interspecies communication is built upon the idea that humans can learn from dolphin ways of being in order to function better as participants, rather than sovereigns, in multispecies ecologies. By emphasising the observer's constitution within the process of observation,

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[72] In drawing upon both Chayefsky's novel and Russell's film, my analysis does not attempt to account for the differences between both texts, but rather examines the ways in which both elucidate the themes present in Lilly's scientific writing. While Chayefsky wrote the screenplay for the film, after a disagreement with Russell his name was removed from the picture and replaced with the pseudonymous Sidney Aaron. See Tom Buckley, 'Ken Russell on "Altered States" controversy', *New York Times*, 16 January 1981, p. 28.

[73] Lilly, *Communication Between Man and Dolphin*, p. 89.

Russell's film contextualises Lilly's research against thinkers such as Bateson, who, as Wolfe notes, demonstrates 'how language is traced by the material contingency of its enunciation and through the body, in its "involuntary" kinetic and paralinguistic significations that communicate in and through in ways that the humanist subject of "intention" and "reflection" cannot master'.[74] Jessup's communication with his own animality, in other words, upsets the exceptionalism of human language by demonstrating the inhuman lineage of linguistic signification, expressed within the body, that stretches back through the human's evolutionary history.

Alongside its engagement with the de-anthropocentric potential of Lilly's cybernetic vision, *Altered States* demonstrates the centrality of Freudian psychoanalysis to its own imagining of otherness within the self. The father complex expressed by Jessup as he first emerges from the tank prefigures a series of hallucinations throughout the film that link the uncovering of the human's animal past to the hidden drives, and surfacing neuroses, of the unconscious. Here, Russell is drawing on Freud's association between the unconscious and animality. As Carrie Rohman writes:

> Freud himself hazards an explanation of humanity's rise from its animal heritage and theorises that our repression of organicism simultaneously deanimalises us and makes us human. Animality is consequently equated with neurosis in psychoanalytic terms since one must repress it in order to become, and remain, human. Historically, then, we might say that Darwinism releases the specter of animality for British modernists, while psychoanalysis attempts to capture and tame it. Freud offers a "cure" for animality's presence in the human psyche.[75]

Jessup's journey into his own psyche appears, considering Rohman's reading of Freud, as a relinquishment of such a 'cure': in contrast to its image as an enshrouding and protective metal

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[74] Cary Wolfe, *Animal Rites: American Culture, the Discourse of Species and Posthumanist Theory* (Chicago: University of Chicago Press, 2003), pp. 86-87.
[75] Carrie Rohman, *Stalking the Subject: Modernism and the Animal* (New York: Columbia University Press, 2009), p. 63.

cocoon, the isolation tank here represents a stripping away of the boundaries set up by the ego to keep the human's primordial animality in check. The conceptual language of wellness brought to the fore here ties in with Lilly's vision for the isolation tank as a therapeutic tool with the potential to aid in a metaprogramming, or 'self-evolution', that will move the subject towards 'higher levels of functioning'.[76] As a tool for self-realisation, the tank requires for Lilly an eschewing of psychoanalysis' pathologisation of unconscious drives, instead necessitating a bringing forth of what lies hidden within the psyche in order to gain deeper control over the workings of the self. Noting the influence of R. D. Laing, Lilly concludes that acquiring such extensive knowledge of the unconscious shows that medicalised concepts of 'psychosis' are 'cultural social term[s] as well as […] having to do with internal states':[77] such diagnoses in this context represent a confinement of the patient within static and immovable mechanisms of subjectification, based within a straightforward oppositions between sickness and health. For Lilly, 'the internal states present in psychosis can be multitudinous',[78] and thus represent the possibility for embracing different ways of being than those constituted by the sealed and bounded subject of biopolitics. In rejecting the notion that the presence of psychosis requires a cure, however, Lilly dispenses with the notion of the unconscious as unknowable, imperceptible, and inaccessible, instead making the drive central to his conception of 'the human biocomputer and its operations'.[79] The 'animality' of the unconscious, in other words, functions as a tool in the human's own programmability, representing at once for Lilly the human's primal origins as well as its cybernetically enhanced evolutionary future.

In responding precisely to the aspect of Lilly's work concerned with unconscious psychic states, *Altered States* engages with the ambivalent role of psychoanalysis within the

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[76] John C. Lilly, *The Centre of the Cyclone: An Autobiography of Inner Space* (St Albans: Paladin, 1973), pp. 48-49.
[77] *Ibid.*, p. 82.
[78] *Ibid.*, p. 83.
[79] *Ibid.*, p. 166.

cybernetic conception of self. In the film, Russell centralises Jessup's experience of self through a Freudian lens when, during another tank experiment, Jessup experiences a set of hallucinations that function as a reckoning with his unconscious mind. After a scene depicting Jessup floating among a variety of sea creatures—an image that ties the act of facing the unconscious to experiencing the world from a nonhuman perspective—Jessup is faced again with an Oedipal scene as he watches his father assume a Christ-like posture, arms extended, from a hospital bed that looks out upon scenes of fire and apocalypse. A cloth depicting Jesus falls onto the dying man's face, and as he casts it off to the floor to burn, Jessup tries repeatedly to recast his father in the image of Christ by holding up a Bible, striving to maintain his position as an absolute figure of authority against which Jessup's own identity is constructed. Despite this, the scene mutates into a dissolution of this ego-driven formula: the image of Jessup's father cuts repeatedly to an image of a Beast with seven eyes in place of Christ's head. Shifting to a surrealist backdrop depicting Golgotha, the Beast—now fully 'animal', with the body and curved horns of a ram—is sacrificed, its blood spilling out over the cover of a ceremonial book. The scene then abruptly changes its perspective to an abstract sequence that appears as if through the lens of a microscope, and Russell's camera rushes forwards into an explosive depiction of fracturing atomic structure. This image is finally cut against a violent and primal sexual scene taking place upon another sacrificial altar; as Anna Powell observes, here, 'Jessup's unconscious has been colonised by the Oedipal primal scene, where intercourse appears to the child as a frightening act of violence'.[80]

As representative of Jessup's first foray into the isolation tank, these hallucinations mark a version of Jessup's unconscious coded along Freudian lines. Drawing on the case of Sergei Pankejeff, or the Wolf Man, in which Freud traces his patient's neurosis to a witnessing of his parents having sexual intercourse and a subsequent identification with the mother, Jessup

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[80] Powell, *Deleuze, Altered States and Film*, p. 55.

here is brought face to face with the symbolic register via which his own identity is constituted.[81] The father, in this scenario, functions as the structuring principle of order and civilisation: aligned first with Christ, and subsequently with a demonic inversion of Christian moral doctrine, Jessup's father signifies the line between the enforcement of cultural ideals and their undoing in the primal space of the unconscious. Marking Jessup's subjectivity as constituted via a fear of castration, this scene also recalls Freud's construction of the figure of the father in *Totem and Taboo* as exerting symbolic power while remaining fundamentally absent:

> It seems certain […] that the change in attitude to the father was not restricted to the sphere of religion but that it extended in a consistent manner to that other side of human life which had been affected by the father's removal—to social organisation. With the introduction of father-deities a fatherless society gradually changed into one organised on a patriarchal basis.[82]

In fulfilling the symbolic role of the father, what Freud describes here as 'father-deities' emphasise a fundamental paradox at the centre of psychoanalytic subjectivity: it is precisely through remaining absent—'God Himself had become so far exalted above mankind', Freud writes, 'that He could only be approached' through the intermediary of a priest—that the ultimate presence of the father's authority is guaranteed.[83] As Wolfe and Jonathan Elmer summarise, Freud's point is that 'to kill the father is not to bring about the destruction of the social and its rule of law; it is, on the contrary, to found the social on that very threat and to give birth to that rule precisely as a compensatory gesture'.[84] The merging of seemingly opposing images in Jessup's hallucination—father as both Christ and anti-Christ; Jessup

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[81] Sigmund Freud, *The "Wolfman" and Other Cases* trans. by Louise Adey Huish (London: Penguin, 2003), p. 275.
[82] Sigmund Freud, *Totem and Taboo* (London: Routledge, 2004), p. 173.
[83] *Ibid*., p. 174.
[84] Cary Wolfe and Jonathan Elmer, 'Subject to Sacrifice: Ideology, Psychoanalysis, and the Discourse of Species in Jonathan Demme's *The Silence of the Lambs*', in Cary Wolfe, *Animal Rites: American Culture, the Discourse of Species and Posthumanist Theory* (Chicago: University of Chicago Press, 2003), pp. 97-121 (p. 112).

himself performing the role of father in a re-enactment of the primal scene—serves to emphasise the rootedness of Jessup's subjectivity in an immovable law that functions, paradoxically, through its own inversion.

Central to this formula of aporetic subjectivity is the motif of sacrifice, which recurs throughout *Altered States*. In Jessup's first hallucinatory experience, the sacrifice of the Beast follows precisely the logic outlined by Freud: depicted as both sacred and unholy, the animal is constructed as a direct reflection of the father, its sacrifice repeating the death of Christ and reinstating the symbolic order that requires the father to be 'always already dead'.[85] As the film continues, the notion of sacrifice returns repeatedly in a guise relating less to an Oedipal identity and more to the kind of originary and internal animality discussed by Freud in *Civilisation and its Discontents*. Seeking to delve deeper into the unconscious, Jessup travels to Zapatecus, Mexico, to take part in a ritual involving the mushroom *amanita muscaria* which, for the Hinchi tribespeople, 'invokes old memories, even ancient ones'.[86] In the following hallucination the visual language of the Oedipal fantasy is exchanged for a continuation of the visions of molecular transformation with which the previous sequence ended: after perceiving a silhouette of a mushroom-shaped rock formation against a psychedelic image of the cosmos, Jessup's hand is pictured emanating with rays of light reminiscent of Stanley Kubrick's depiction of interstellar travel in *2001: A Space Odyssey* (1968)—an image in which the journey through space and time is depicted through the camera's rapid movement through passages of blinding light. This image, in turn, is cut against a scene in which Jessup and his romantic partner Emily walk together towards a mushroom cloud that envelops the horizon. As the episode draws to a close, the optics of technological sublimity pictured within Jessup's

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[85] Wolfe and Elmer go on to note that 'Lacan will famously extend this mythic narrative in saying that the father is always already dead, and that the "name of the father" only retroactively assigns the status of guarantor of the law to the dead father, when in fact the law comes to be only in his sacrifice'. See Wolfe and Elmer, 'Subject to Sacrifice', p. 112.

[86] Paddy Chayefsky, *Altered States* (London: Corgi, 1978), p. 56.

hand comes to an abrupt end; instead, Jessup imagines a lizard crawling across his palm, as he and Emily both succumb to a recalibration into the logics of deep time and turn into sand, gradually losing their human form and becoming one with the landscape, before finally blowing away into particulate matter in the wind. As the hallucination ends, the camera cuts suddenly to the image of a disembowelled lizard that Jessup has killed and eaten while tripping. The lizard—while very much part of material 'reality'—stands in here as a part of Jessup's self tied to a virtual evolutionary memory denoting lineage from nonhuman animals, and thus seems to appear from a space in between dreaming and reality. As Jessup puzzles in Chayefsky's version of the scene, 'I ate the lizard in my dream. I didn't eat the lizard here around the fire. If you saw me eat the lizard, you must have been with me in my dream'.[87]

While the first hallucinatory sequence of *Altered States* utilises the isolation tank to expose the rootedness of Jessup's identity in the drives of the unconscious, the introduction of psychedelic drugs into the narrative reimagines the psyche as a space of possibility and becoming. In this scene, Jessup assumes (and transcends) the role previously played by his dead father: sacrificing the animality that exists within himself, Jessup recasts the symbolic order of the father as a means by which to access primordial memories that unsettle, rather than seal, the boundaries of his subjectivity. As Chayefsky's description of the hallucination emphasises, though, this process of undermining the totally 'human' nature of the psyche relies upon a renewed sense of mastery over the self:

> suddenly, a large lizard […] flitted across the white expanse and was engulfed by the flaming molten substance, ripped with a sickening scream of bone and muscle, and devoured. The scene, which would have revolted Jessup in real life, he now watched with a benign smile. Having paused for its meal, the mass of substance now continued to Jessup and engulfed him, painlessly and gently. He felt infused with endless power. Engulfed in the substance, he catapulted himself into infinity.[88]

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[87] *Ibid.*, p. 63.
[88] *Ibid.*, p. 62.

Here, the dismemberment and devouring of the animal occurs at the same time as a distillation of Jessup's self, as both he and the lizard are subsumed by the pulsating protean 'substance'. The link drawn by Derrida in *The Beast and the Sovereign* between sovereignty and the drive to 'engulf' and 'devour' the other is illustrated here in full force: both Jessup and the lizard exist in a dream space that grants them both a 'common being-outside-the-law' which, for Derrida, links both beast and sovereign together in an 'obscure and fascinating complicity'.[89] On the one hand, the co-constitution between human and nonhuman outside of the boundaries of law precipitates in *Altered States* a movement towards an undermining of the sovereign human's absolute power: the boundaries of the ego, transgressed through Jessup's experiments, are revealed to be symbolic constructs that police the boundaries of the properly human in order to keep the dangerous animality of the unconscious in check. Despite its transformative potential, though, Chayefsky and Russell's depiction of this species-transgressing ritual creates a space of indistinction putatively outside the law, and free from the ego's influence, in which 'noncriminal putting to death' is allowed to take place.[90] The lizard of Jessup's hallucination, in addition to pointing towards his own primordial becoming, in this sense mirrors the rats which, on his return to Boston, are sacrificed and rendered abjectly material in a very different manner to Jessup's own 'painless' and 'gentle' immersion into the viscous 'substance': 'they shot up three more rats, chopped off their heads, extracted their organs, sliced them into microtonal sections, applied regular and fluorescent antibodies, and examined each slice under an ultraviolet microscope'.[91]

More than only justifying the sacrifice of animal test subjects in the production of scientific knowledge, the development of Jessup's psychic awareness throughout *Altered*

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[89] Jacques Derrida, *The Beast and the Sovereign: Volume I*, ed. by Michel Lisse, Marie-Louise Mallet, and Ginette Michaud, trans. by Geoffrey Bennington (Chicago: Chicago University Press, 2009), p. 17.
[90] Jacques Derrida, 'Eating Well or the Calculation of the Subject', in *Points… Interviews, 1974-1994* ed. by Elisabeth Weber, trans. by Peggy Kamuf and others (Stanford: Stanford University Press, 1995), pp. 255-288, (p. 280).
[91] Chayefsky, *Altered States*, p. 79.

States locates an all-consuming hunger for flesh at the heart of its exploration of the hidden parts of the psyche. What Derrida describes as the 'uncanny' resemblance between beast and sovereign returns when, after combining his isolation tank and psychedelics research, Jessup enters a 'primeval timespace' that he insists is no hallucination.[92] After encountering a 'proto-human' in a Cenozoic landscape, Jessup realises that he himself is being hunted: 'he's devouring me! Ripping at my flesh! [...] It's my primordial me devouring me! [...] I'm hunting! I'm killing! I'm eating!'.[93] Marked again as both devourer and devoured, this vision sees what began as an abstract and formless immersion into primal sludge gain specific shape in a staged ritual of hunting. The gaining of form that occurs between these two scenes— 'substance' becoming 'flesh'—has the effect of solidifying what Jessup perceives to be the meaning attached to the increasing sense of indistinction that he is experiencing. Commenting on the term 'formlessness', Georges Bataille writes that the word

> is not only an adjective having a given meaning, but a term that serves to bring things down in the world, generally requiring that each thing have its form. What it designates has no rights in any sense and gets itself squashed everywhere, like a spider or an earthworm. In fact, for academic men to be happy, the universe would have to take shape.[94]

Read along these lines, Jessup's identification with the figure of the early human hunting and killing animals works as a necessary making-sense of the orderless content of his visions. What is still a depiction here of self-sacrifice and self-mutilation—a point which ties this scene in with Jessup's violent dismantling of his own ego—begins to function doubly as a vision of the human's supposedly innate relationship to the outer, nonhuman world. This emerging logic does in fact come to the fore when, in a later experiment, Jessup emerges from the container

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[92] *Ibid.*, p. 91.
[93] *Ibid.*, p. 92.
[94] Georges Bataille, *Visions of Excess: Selected Writings, 1927-1939* ed. by Allan Stoekl, trans. by Allan Stoekl, Carl R. Lovitt and Donald M. Leslie, Jr. (Minneapolis: University of Minnesota Press, 1985), p. 31.

physically transformed into a hominid creature, breaking free from the laboratory and attacking a security guard. An embodiment of the hunger previously experienced only in his mind, the Jessup-creature rampages through the city and arrives finally at the Van Buren Park zoo, where he hunts down, kills, and eats an antelope, 'a primal animal at one with his elemental world'.[95] This literal taking shape of the drive serves to externalise, finally, what had previously been directed inwards towards Jessup's self: what the innate animality of the unconscious really denotes, we are told, is an original desire for the consumption of flesh that transcends and predates the cultural law of the ego.

Despite this, however, both Chayefsky and Russell present this supposedly 'natural' inheritance from the human's ancestry through a markedly unreliable narrative lens. In the film, after failing to steal meat from a tiger that is unreachable through the bars of its cage, the Jessup-creature arrives at the zoo's 'safari shop'. As he gazes through the windows, Russell's camera lingers on the stuffed animals that populate the shop's shelves, and the film's barrelling and climactic score slows to an eerie pause as Jessup stares at the reproductions of elephants, tigers, and monkeys arranged in static and lifeless postures. The space that allows for Jessup's primal becoming is shown, in this moment, to be one simultaneously mediated by an institution devoted to the taxonomic delineation of species and the construction of the 'natural' world as spectacle. Writing on the institution of the postwar zoo, Seán McCorry argues that the space is constituted between three overlapping themes: the production of scientific knowledge, the recreational observation of nonhuman animals as objects of pleasure, and finally the 'ecological ethics' of 'human-animal encounter' that imagines the construction of 'wild' space as a means for 'affective engagement' with nonhuman worlds.[96] As his own subject of observation, Jessup's placement within the zoo functions as a double instance of knowledge

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[95] Chayefsky, *Altered States*, p. 147.
[96] Seán McCorry, 'animal-machine: Technology, Subjectivity, and Species in Postwar Literature and Film, 1945-1970', (unpublished doctoral thesis, University of Sheffield, 2015), pp. 53-54.

production and affective dialogue with his own animal self. Rather than mirroring what McCorry identifies in his reading of Angus Wilson's *Old Men at the Zoo* (1961) as a reframed mode of observation that sees the traditional scientific gaze combined with a 'fuller immersion in the natural world', resulting ultimately in a 'sympathetic identification with the captive animals', Jessup's embodiment of both animal and scientific observer is shown by Chayefsky and Russell to produce a renewed sense of a proper relationship between human and nonhuman based on instrumentalisation.[97] While undermining the idea of an objective scientific power of seeing, in line with Lilly's cybernetic vision for interspecies communication, Jessup lands on a model of identity which, as with the constructed space of the zoo, promises a kind of authentic dialogue across species barriers while simultaneously reproducing anthropocentric hierarchy. Jessup's hunting and killing of the antelope within the bounds of the zoo functions to outline the emergence of a primal animal self that is still nevertheless produced according to specific, culturally, and historically coded coordinates. These coordinates are, of course, the laws that declare human subjectivity contingent, as Derrida notes, upon the 'ingestion, incorporation, or introjection of the [animal] corpse'.[98] The inherent animality of the unconscious, now unleashed, is revealed to be a cipher for something fundamentally, and characteristically, human.

The centrality of sacrifice within the narrative of *Altered States* marks a collapsing, and subsequent reconstruction, of the boundaries of the ego; what is initially presented by Jessup as a means to break down the accumulated learned behaviours associated with scientific humanism becomes, as the narrative progresses, a recentring of these very values in a new form. For both Chayefsky and Russell, this central irony is represented through Jessup's repeated references to what he describes as his 'true self', which, despite its location in the

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[97] *Ibid*., pp. 74-75.
[98] Derrida, 'Eating Well', p. 278.

indiscernible depths of the psyche, can now be mapped, measured, and counted: as Jessup exclaims, 'I think I've found the Ultimate Force! I've found the Final Truth! I found it and I can bring it into the laboratory and demonstrably quantify it!'.[99] As such, to conclude, I want to draw out the ways in which the nexus of sacrifice, psychoanalysis, and science found in *Altered States* describes a model of thought reflected in the concurrent development of cold war techno-cultures and cybernetics. Jessup's journey into the unconscious, in this sense, follows a cultural narrative that conflates the central 'truth' of human identity with an imperative to transcend, and literally rise above, the earthly in a fetishised performance of technological determinism. As Jessup remarks in a comparison between his own work and the defining themes of the space age: 'in outer space, there is no difference between a split second and a billion years! Why the hell should there be any difference in our inner space? We've got millions and millions of years stored away in that computer bank we call our minds!'.[100]

The presence of a dubious vision of the technological sublime, in *Altered States*, is to be found first in the narrative's engagement with the Freudian notion of the drive. As I have already argued, the drive functions for Jessup as an attainable truth which, once the barriers of the ego are breached, allows him to embody a primal self defined by insatiable hunger and an unbreakable will to devour flesh. The culturally constructed nature of this image of the drive—based, as I have suggested, around what Derrida terms the 'sacrificial structure' of subjectivity[101]—draws upon a cybernetic interpretation of Freud that views the unconscious mind as something that can be programmed and re-programmed. Writing on this interface, Seb Franklin notes that

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[99] Chayefsky, *Altered States*, p. 154.
[100] *Ibid*., p. 124
[101] 'Eating Well' p. 278.

The basic principles of psychoanalysis and cybernetics, or the depth and surface models that they respectively represent, would seem to place them in diametric opposition as far as approaches to psychology go. This impression is only fortified by observations from theorists such as [Karl] Deutsch that the emergence of cybernetics represented a historical movement away from "drives" toward a new focus on "steering". […] To adhere to this clean opposition, however, is to ignore both the longer genealogy of control […] and the work that cultural forms grounded in psychoanalysis and the depth model of the subject continue to perform alongside cybernetic modes of socioeconomic visioning. […] Because the idea of universal programmability built on an epistemic digitisation (or disciplining) of the subject is a precondition for new forms of subsumption, one should pay close attention to the ways in which this discretisation is imposed on and mutates older, nominally "analog" concepts.[102]

For Franklin, the onset of what Deleuze describes as 'control society' involves a mutation of 'analog' concepts such as the drive and the unconscious. Rather than leaving these notions behind, cybernetics (as the science that marks the onset of control) transforms and repurposes them, Franklin writes, through a process that amounts to the 'digitisation of desire': 'control introduces a programmable object in place of the subject and through a process of disciplining, and channels the metaphorical energies associated with the subject into (equally metaphorical) discrete and thus valorisable quantities'.[103] Instead of a site of unknown forces influencing human behaviour, the unconscious in this light is imagined to be comprised of programs, rather than drives, that both guide the human from within and interact with other programs in a networked system of communication.

Indeed, this reimagining of the unconscious was not a one way interpretation of psychoanalysis by cyberneticians: as Lydia H. Liu argues, Lacan was especially influenced by the development of cybernetics during the 1950s, and based his theorisation of the symbolic order on 'a cybernetic notion of language which brought him closer to the mathematician's symbolic logic than suggest any substantial affinity with […] modern linguistics'.[104] Lacan's

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[102] Seb Franklin, *Control: Digitality as Cultural Logic* (Cambridge: The MIT Press, 2015), pp. 140-141.
[103] *Ibid*., p. 142.
[104] Lydia H. Liu, *The Freudian Robot: Digital Media and the Future of the Unconscious* (Chicago: University of Chicago Press, 2010), p. 184

vision of the relationship between the unconscious and the symbolic order operates through a kind of communication comparable to 'a telephone exchange system or a cybernetic machine that runs automatically regardless of what happens to pass down its wires'.[105] For Lacan, Liu emphasises, language emanates not from a traditional conception of the 'speaking subject' but rather from a probability machine utilising the universal binary signs of 0 and 1: 'whatever comes out of the thinking machine merely reflects on how the game is played'.[106] Cybernetics, in this regard, undermines the humanist conception of free will in a different way to psychoanalysis: while the Freudian unconscious decentres the human by declaring the subject to be guided by something hidden and unknowable, the cybernetic repurposing of the unconscious imagines this force to be knowable, measurable, and equally inhuman. We are returned, here, to Tom Wolfe's engagement with automatism as a central feature of Calhoun's behaviourist science: the human, in Wolfe's observation of the disciplinary space of New York city, operates according to a mechanism that exists despite, and in absence, of subjectivity.

For *Altered States*, far from an expression of routinised and disciplined existence, this fundamental loss of control over the self is represented as a sublime ascendence into a state of pure virtuality. In the final act of Russell's movie, after entering the isolation tank for the final time, the camera centres on an image of Jessup's face pictured on a television screen in a repeat of the film's first scene. As Emily and Arthur watch on, Jessup begins to scream as his image is broken up by static distortion and he begins to transform into an increasingly amorphous protean monster. Another colleague opens the tank, and is thrown back by an explosion of blinding white light; the same light is subsequently pictured emanating from the television screen, as Arthur stands transfixed and silhouetted, unable to tear himself away from the image. Subsequently, as Chayefsky writes:

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[105] *Ibid*., pp. 189-190.
[106] *Ibid*., pp. 190-191.

> There was an ear-shattering explosion of blue light that swept through the tank room in shock waves, and the four walls of the tank flew apart, as if a nuclear blast had been detonated inside it. Water geysered up to the ceiling in a screaming mushroom cloud, crashing with a clap as loud as thunder, and then flooded through the room to ankle depth. […] Where the tank had been was a pulsating mass of white substance, rising out of the thin layer of boiling water, which must have been Jessup.[107]

Assuming the terrifying form of his own virtual memory becomes, in this scene, a nuclear explosion that is also a literal ejaculation of Jessup's being. In Russell's adaptation, this image of frightening sexual sublimity is followed by another abstract sequence that takes us to the heart of Jessup's programmed unconscious: the camera advances through a series of images that resemble the breaking of atomic structure, as well as viruses, bacteria, and DNA, and finally arrives at a depiction of Jessup pictured against the black background of the cosmos, his figure constituted entirely by the flickering texture of television static. As Emily reaches out her arms to hold him, Jessup finally returns to human form: after the erotic act of facing his own lack of subjectivity is 'fulfilled as a "little death,"' as Bataille writes, Jessup is reconstituted as subject within the schema of romantic love.[108]

In depicting Jessup's orgasm-death in the same sequence as his reconstitution in the institution of love, Russell's film ends with the same expression of aporia that has defined Jessup's scientific pursuit throughout: form and formlessness, human and animal, mechanism and spirit coexist in uneasy synchronicity in the constitution of human subjectivity. But rather than an expression of duality, *Altered States* depicts these oppositions as coexisting through a relationship of mastery, with Jessup's transformation into both beast and molecular matter aiding in the film's construction of his character as prototypical scientific Man. In this regard, Chayefsky and Russell depict the science of behaviourism, which I have traced between the figures of Calhoun and Lilly, as bolstering a particular vision of the human as the master of its

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[107] Chayefsky, *Altered States*, p. 181.
[108] Bataille, *Visions of Excess*, p. 251.

own ontological insecurity. In the following chapter, I examine another mode of this insecurity located in the discourse of misanthropy. While the meeting of behaviourism and cybernetics examined here can be summarised in the mobilising of the human's animal past as a tool for modelling its future, the thinkers and texts to which I turn in the next chapter reject futurity as itself a facet of ecologically damaging anthropocentrism. While *Altered States* correctly diagnoses the model of violent mastery that I locate between Calhoun and Lilly, the novels I examine in what follows attempt to remodel what futurity can stand for, replacing the thematics of speed and techno-sublimity with a misanthropy that favours the slow, gradual onset of a multispecies kind of future.

<center>**Chapter Five**</center>

<center>**Planetary Health, Misanthropic Currents, Multispecies Futures**</center>

Introduction

In her work *Flexible Bodies*, Emily Martin documents a transformation in perceptions of immunity in American culture from the postwar period to the late-twentieth century. As suggested in my first chapter, attitudes towards the body in the 1950s centred around a largely straightforward opposition between inside/outside, with frequent attention given to the eradication of malevolent germs and microbes that threatened to breach the body's vulnerable defences.[1] By the 1980s, this perception had evolved via the widespread adoption of complex systems theory perspectives across medical, scientific, and public contexts. In addition to the image of the 'body at war', Martin's study establishes the immune system as a site of co-constitution between the human and its environments, acting both as a force of individuation and as a principle of constant and adaptable relationality with the not-human. As well as filtering into the kinds of cultural constructions of species identity that form the focus of this thesis, changing attitudes towards immunity had a more direct impact on the discourse that this chapter will attend to: health and wellbeing.

In one regard, definitions of health retained a certain constancy throughout the period covered by Martin's book, continuing to rely upon the early cybernetic principles of balance and equilibrium. Despite uncovering increasingly complex relationships between the human and its outside, in other words, medical systems thinking maintained a thematics of discord (illness) and harmony (health), sustaining the idea that individuals could maintain a level of

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[1] Emily Martin, *Flexible Bodies: The Role of Immunity in American Culture from the Days of Polio to the age of AIDS* (Boston: Beacon Press, 1995), p. 39.

agency over their own wellbeing through habit and lifestyle.[2] On the other hand, the late

twentieth century saw the immune system become a site for intensified visions of both personal

control and unavoidable catastrophe. Incorporating increasingly complex understandings of the

interactions that take place across the human's physical boundaries, the immune system painted

a picture of a healthy equilibrium ever more expansive in scope, incorporating aspects of an

individual's life never before associated with wellness. 'Imagine a person who has learned to

feel at least partially responsible for her own health', Martin writes, 'who feels that personal

habits like eating and exercise are things that directly affect her health and are entirely within

her control. Now imagine such a person gradually coming to believe that wider and wider

circles of her existence—her family relationships, community activities, work situation—are

also directly related to personal health'.[3] While still linked to the idea of harmony, the notion

of immunity as product of complex systems renders this harmony increasingly precarious, with

the promise of intensified self-management matched by a far greater margin for catastrophe in

the figure of systemic collapse. The expansion of agency sets the scene for agency's ultimate

dissolution, with the solution to systemic imbalances hidden within processes that operate

beyond the reach of the subject's perception and control, becoming unrelenting and seemingly

inevitable.

Martin's study paints a picture of a conception of health increasingly defined by this

sense of precarious agency. Beginning with this concept, this chapter will investigate a

discourse of health caught between the poles of empowerment and helplessness as a site of

changing human identity formation. There is a sense, throughout the texts that form the

chapter's archive, that the *idea* of systems (and their associations of porosity, interconnection,

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[2] Martin argues that this sense of agency itself transformed throughout the late 20th-century, centring in the 1940s and 1950s on the idea of 'automatic habits' that would create a generalised notion of 'passive resistance, the way a solid wall can "resist" being knocked down'—a notion in keeping with static perceptions of the body at this time. By the 1960s and 1970s 'this subjectivity becomes participatory (and mouldable into different forms)'. See Martin, *Flexible Bodies*, pp. 30-125.
[3] *Ibid*., p. 122.

and relationality) can either work *for* or *against* the human. The first section of the chapter will show that both of these assumptions harbour a commitment to futures that are anthroponormative, to use Tom Tyler's phrase, meaning that they 'take human being to be self-evidently normal', treating the human 'as a reference point, or axis for reflection, or criterion for judgement'.[4] In this part of the chapter I examine three examples of public discourse committed to visions of hopeful futures that illustrate this trend. These examples are snapshots of much wider discussions—the role of nonhuman test subjects in ensuring the human's biomedical future; medical perspectives on nuclear war; and the idea of the human as itself a malignant failure of planetary immunity—that differ radically in content and intent, yet retain a vision of normative humanity in their depictions of agency, empowerment, and control, *or* helplessness, inevitability, and fatality.

The following sections will further examine the anthroponormativity of health via a school of thought dedicated to the analysis of another kind of normativity: queer theory. My argument begins by drawing comparisons between anthroponormative health and what Lee Edelman terms 'reproductive futurism'. Edelman's rejection of this ideology, centred around the repressive figure of the Child, offers a way of thinking through the fatalistic acceptance of systemic collapse as a form of radical refusal, embracing not the opposite of health but rather the very schema whereby health measures life lived as properly human. Following this, I turn to a strand of queer theory often contrasted with Edelman's thought, centring around Eve Kosofsky Sedgwick's notion of reparative reading and Lauren Berlant's formulation of a 'lateral' biopolitics. For both of these thinkers, the mode of radical refusal suggested by Edelman serves as an impossible commitment for the neoliberal subject for whom precarity is both a repressive reality and a condition of existence. Instead, paying closer attention to the

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[4] Tom Tyler, 'The Exception and the Norm: Dimensions of Anthropocentrism', in *The Palgrave Handbook of Animals and Literature* ed. by Susan McHugh, Robert McKay and John Miller (Cham: Palgrave Macmillan, 2021), pp. 15-36 (p. 22).

present—rather than proposing an outright rejection of the future—reveals contingencies that can spark resistance to both hetero- and anthroponormative ideas of the future. Edelman helps me to articulate a way out of the schema of empowerment and helplessness, informing a reading of both feelings as oriented ultimately towards the same repressive futures. Berlant and Sedgwick, meanwhile, shift the chapter's attention to the space inside this circuit, allowing me to read the systemic production of agency and inertia in discourses of health as a productive space for both biopolitical subjectivities and forms of resistance to these subjectivities.

Alongside this theoretical discussion, the chapter will consider how these ideas function across Kurt Vonnegut's novel *Galápagos* (1985) and Octavia Buter's Xenogenesis trilogy (1987-89). In one regard, both authors mobilise the idea of systemic collapse as radical refusal via a thematics of misanthropy. For Vonnegut, this involves imbuing his narrative with a simple and aphoristic thesis: the catastrophes of the twentieth century can be explained solely by the unfortunate existence of the human's 'big brain'. By pathologising human hyper-intelligence, Vonnegut satirises the association between health and hopeful futures, positing human exceptionalism as antithetical to a health conceived through a more-than-human frame. Along similar lines, Butler's trilogy centres the idea of an innate human contradiction—the combination of intelligence and hierarchy—that renders systemic collapse inevitable. Through the figures of the Oankali, an alien species devoted to the repopulation of life on Earth after nuclear apocalypse, Butler constructs a vision of reproductivity incompatible with human structures of meaning. The future posed by the Oankali, for the humans of Butler's novels, is marked by what Edelman would describe as a radical negativity, undermining the conceptual structure of the mode of futurity that the human is anchored to.

Through mobilising the discourse of misanthropy, both authors repurpose the notion of systemic inevitability in order to imagine a space in which the normative dictates of human identity, and the violence that these norms represent, are uprooted by the notion of a radically

nonhuman otherness. At the same time, however, the ethical stakes present in both *Galápagos* and the Xenogenesis trilogy are never resolved through a rejection of identity in absolute terms. Rather, the de-anthropocentric potential illustrated by both authors' use of misanthropy comes to fruition through its suspension alongside the ideals of anthroponormative futurism, which are ideals that neither author attempts to dispense with completely. For Vonnegut, this means attending to a notion of evolution that proceeds, despite the human's big-brained interventions, in a way that cannot be modelled or predicted. The very process that produces the human as a defective species, in other words, holds the queer potential for an otherwise that is only realised in *Galápagos* through a series of events that occur completely by chance. For Butler, meanwhile, this means that the central logics of reproductive futurism—located, as Edelman emphasises, in the figure of the Child—persist in complex ways throughout her trilogy. In one regard, Butler models a reproductive form that, as Neel Ahuja suggests, 'disturbs the individuated sexual subject' while moving 'laterally away from the confines of speciated form'.[5] In another sense, Butler's representation of reproductive futures recreates the flexible oscillation between agency and inertia that marks developing liberal attitudes to health in the 1980s, and that her use of misanthropy so effectively challenges. Butler's multi-species vision ultimately falls upon a form of difference predicated on the loss of a properly human agency, combined with a simultaneous intensification of control over multispecies futures as objects of tactical and strategic potentiality.

I. Health and Hopeful Futures

I want to begin this section with three examples that frame a set of concerns linking the late cold war politics of the 1980s with developments in environmentalism and animal politics

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[5] Neel Ahuja, 'Intimate Atmospheres: Queer Theory in a Time of Extinctions', *GLQ*, 21 (2015), 365-385 (p. 380).

during the same period under the broad rubric of illness (and more specifically, as we will see, the rubric of reproductive biopolitics). The first is a letter published in the 14 July 1984 issue of *The New York Times* entitled 'Animal Rights Activists "Steal" Biomedical Hope'. The author of the letter, Frankie L. Trull, is the Executive Director of the Foundation for Biomedical Research—an organisation which, to look ahead momentarily from the context at hand, lobbied for the Animal Enterprise Terrorism Act, a law signed in 2006 by George W. Bush designed to protect animal research institutions from animal rights 'extremists'. Trull's letter in the *NYT* is responding to a previous article published in June 1984 detailing one such act of 'terrorism', centring on an action carried out by the Animal Liberation Front in which activists broke into a laboratory at the University of Pennsylvania, exposing 'an audiovisual record on 32 magnetic tapes of several years of brain-damaging experiments on monkeys and baboons'.[6] This act of exposure, in perhaps less disruptive terms than Trull's response signals, 'embroiled university officials in long hours of explanations in defence of their research'.[7]

Trull's problem with the article stems from its overlooking the 'greater harm' done by such actions: 'more serious than vandalising laboratory facilities is their attempt to steal the hope that biomedical research offers to millions who suffer from life-threatening, crippling, and debilitating diseases and injuries'.[8] Responding to the original article's representation of the 'militant' activists—who suggest that the researchers' 'failure to use anaesthetics […] indicates callousness toward animals', and that 'experimenters have no right to sacrifice animals for the possible benefit of people'—Trull underlines the necessity of such a logic of sacrifice for the production of future based 'hope'.[9] '*We can use human beings* as the primary research models', Trull writes, 'in finding the cause, cure and prevention of cancer, diabetes,

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[6] William Robbins, 'Animal Rights: A Growing Movement in U.S.', *The New York Times*, June 15 1984.

[7] *Ibid.*

[8] Frankie L. Trull, 'Animal Rights Activists "Steal" Biomedical Hope', *The New York Times*, July 14 1984.

[9] Robbins, 'Animal Rights'.

cardiovascular disease, AIDS, blindness, birth defects and hundreds of other diseases that plague so many'. But it 'is doubtful the public will find [this] choice preferable to continuing responsible and humane animal research' aimed at curing such illnesses.[10] While conceding that it is perfectly possible to conduct this research on human subjects, Trull's emphasis is not the cure itself but rather the hopeful future secured by practices of animal sacrifice. To extrapolate further, Trull's formulation of 'hope' serves to shift the conversation away from the human's immediate implication within a host of debilitating illnesses that stretch the limits of biomedical knowledge. By underlining the necessity of animal test subjects in modelling hopeful futures, Trull inadvertently conjures the possibility of this future becoming unattainable, and the human as itself terminal, destined to succumb to the biological threats that mark its material existence. In assuming the role of the biological—that is to say, in speaking for, modelling, and being made to exclusively embody the biological—nonhuman test subjects liberate the human from this designation of terminality that Trull's comments nevertheless bring into being.

If Trull's letter emphasises the importance of sacrificial hope in the human's battle against illness and disease, my second example locates the very possibility of such a futurity as a problem for medicine. Founded in the early 1960s in order to document the medical effects of nuclear testing, Physicians for Social Responsibility (PSR) evolved into a prominent anti-nuclear organisation, affiliated with the International Physicians for the Prevention of Nuclear War (IPPNW) which received a Nobel Peace Prize in 1985.[11] As Daniel Cordle observes, PSR sought to understand the threat of nuclear apocalypse in medical terms, emphasising in their publication *The Final Epidemic* (1981) the meaninglessness of medical expertise in a potential

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[10] Trull, 'Animal Rights Activists'. Emphasis mine.
[11] Daniel Cordle, *Late Cold War Literature and Culture: The Nuclear 1980s* (London: Palgrave Macmillan, 2017), p. 143.

post-attack world.[12] For Cordle, the primary achievement of the group's argument in *The Final Epidemic* is its focus on medicine as part of a broader social ecology, threatened both by the potential of actual nuclear strikes, and the economic privileging of security over public and social institutions by the right-wing governments of the 1980s in Britain and the United States. PSR utilised the discourse of medicine in order to emphasise the idea of a 'social fabric', emphasising the value of community and establishing nuclear weapons as a threat 'not merely because they deal out death but because they rend one person from another'.[13]

While following these threads of neoliberal govermentality, our interest here lies first in the conceptual language of medicine that frames the organisation's concerns. Writing in the introduction to *The Final Epidemic*, the anti-nuclear activist Helen Caldicott conceptualises nuclear war as a form of disease: 'this planet can be compared to a terminally ill patient infected with lethal "macrobes" which are metastasizing rapidly. The terminal event will be essentially medical in nature, but there will be few physicians remaining to treat the survivors'.[14] By mobilising the image of cancer, Caldicott here taps into a medical-cultural imaginary which, as Ellen Leopold argues, places cancer in a relationship of 'uncomfortable circularity' with the atomic world: an insidious legacy of atomic weaponry that was treated using developing methods of radiotherapy, cancer was both caused and cured by different applications of atomic energy.[15] Cancer, in other words, is a figure for the immunitary function of the nuclear state, infusing the worlds of security and medicine with the very death they seek to protect against. In deploying cancer as an image for a rapidly proliferating nuclear danger, Caldicott bypasses this immunitary logic in favour of a clearer distinction between sickness and health. The threat of nuclear war is presented here as a planetary affliction, described by Robert Jay Lifton in his

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[12] *Ibid.*, p. 144.
[13] *Ibid.*, p. 145.
[14] Helen Caldicott, 'Introduction', in *The Final Epidemic: Physicians and Scientists on Nuclear War* ed. by Ruth Adams and Susan Cullen (Chicago: University of Chicago Press, 1981), pp. 1-7, (p. 1).
[15] Ellen Leopold, *Under the Radar: Cancer and the Cold War* (New Brunswick: Rutgers University Press, 2009), p. 16.

contribution to the volume as representing a 'grotesque, absurd, collective, unacceptable, unabsorbable death'.[16] Such a death, in reaching far beyond the 'structured death of individuals', marks a sickness that can only find a cure along similarly planetary terms.[17] Thus, as Cordle suggests, PSR locates its cure to the nuclear in a vision of ecological interconnection, utilising the idea of a fabric of relations—a community of the living—as an antidote to the threat of unassimilable death.[18]

While this idea invokes an affirmative ecological message, I want to explore some of the ways in which the discourse of medical futures that is emerging here smuggles in a latent humanism. To do this, I'm going to compare my first two examples with a third, located across multiple environmental discourses in the 1980s and centring for our purposes on the journal *Earth First!*: the representation of humans *as* cancer. In a 1981 article founder Dave Foreman summarises the organisation's position with the following questions: 'how can we continue to live inside of a social organism that is a cancer on the life of the Earth and decry the effects of it? […] Are we going to plan for a college education for the kids based on the trajectory of those dynamics?'.[19] Human civilisation, for Foreman and other *EF!* contributors, is characterised as a disease affecting a specifically medical vision of planetary wellbeing. Such a model of ill-health, for Foreman, has to do with the 'psychological program of individualism and selfishness' that separates the human from the 'fundamentals' of its existence as a cellular organism: 'energy flow and communication'.[20] The neoliberal ideal of individualism is here given a counterpoint in the human's ecological being, connected to its surroundings despite also embodying a civilisation that is for Foreman a 'dying beast', unworthy of the true

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[16] Robert Jay Lifton, 'In a dark time…', in *The Final Epidemic: Physicians and Scientists on Nuclear War* ed. by Ruth Adams and Susan Cullen (Chicago: University of Chicago Press, 1981), pp. 7-21 (p. 8).
[17] *Ibid*., p. 8.
[18] Cordle, *Late Cold War Literature and Culture*, p. 145.
[19] Dave Foreman, 'We've Got to do Some Motherin'', *Earth First!*, 1 (1981), 1-9 (p. 1).
[20] *Ibid*., p. 1.

'creativity and intelligence' attributable to the human's rudimentary connection to the natural world.[21]

In this regard, both the PSR and *EF!* perform a comparable move, writing the dichotomy between planetary sickness and health as hinging upon the ideal of ecological connectivity. While it is here that the aforementioned humanism of this discourse emerges, a 1987 article by Daniel Conner demonstrates one further aspect of *EF!* rhetoric worthy of attention. Entitled 'Is AIDS the Answer to an Environmentalist's Prayer?', the article proposes the virus as 'Earth's own response to human-created environmental problems', deploying the cybernetic principle of equilibrium to explain the crisis as a 'natural' example of planetary immunity, the malignancy of humanity systematically stripped back by Gaian defence systems.[22] As an example of what Sarah Ensor describes as the Deep Ecology movement's 'neo-Malthusian' tendencies, Conner's article approaches the idea that an acceptance of human extinction, rather than its avoidance, might be the key to a hopeful future. Writing of another *EF!* piece penned by activist Christopher Manes under the pseudonym "Miss Ann Thropy", Ensor notes that such 'appeals to kill or to let die', while apparently celebrating death, exist 'primarily as a foil to and a precondition for the continuance of life'.[23] Such a position, Ensor notes, simply repeats the will found across environmental movements to save a broad and universal model of planetary life: 'even when human death is advocated rather than feared, […] the logic remains sacrificial, and the ultimate goal remains rescue—saving the planet (at virtually any cost) is an unquestioned aim'.[24] In the case of Conner's article, the universalisation of both 'life' and 'the human' conceals the exclusion of the victims of the AIDS crisis as sacrificial subjects in this vision of ecological health. In this regard, the logic

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[21] *Ibid.*, p. 1.

[22] Daniel Conner, 'Is AIDS the Answer to an Environmentalist's Prayer?', *Earth First!*, 8 (1987), 14-16, (p. 15).

[23] Sarah Ensor, 'Terminal Regions: Queer Ecocriticism at the End', in *Against Life* ed. by Alastair Hunt and Stephanie Youngblood (Evanston: Northwestern University Press, 2016), pp. 41-62 (p. 42).

[24] *Ibid.*, p. 42.

underpinning Conner's article repeats the already well-established necropolitics of the Reagan administration's response to the crisis, which as Simon Watney argues was defined by the active prevention 'of the release of funds for targeted HIV education and other prevention measures', as well as a bolstering of conservative media narratives of a 'gay plague' threatening the moral purity of an imagined heterosexual public.[25] The *EF!* vision of planetary health, from this vantage, embraces the terminal condition of a generalised human only through its privileging of this human's most dominant avatar of white heterosexuality.

To make sense of these three examples together, I want to draw upon a concept used by Ensor that is taken in turn from Sedgwick: terminality. In Ensor's interpretation of Sedgwick, terminality denotes an affirmative relationship with the inevitability of death, marking a transformative mode of thinking about environmental harm that orients itself towards the relations that make up the present rather than the harms that define the future.[26] In the current context, I understand terminality as denoting a more neutral relationship to the inevitability of endings that means different things in different contexts; in my reading of Vonnegut and Butler's fiction later in the chapter, I examine the idea in its affirmative usage as described by Ensor. For Trull's criticism of the ALF activists, the terminal is displaced onto the nonhuman test subject as a model for mapping cures for human disease. In this case, terminality is kept at bay through a sacrificial logic that rejects the idea that there may be no future for the human—as long as nonhuman animals are used in medical testing, then a future is possible. For the PSR, the terminal functions as a renewed expression of the ecological mantra examined in chapters two and three: that the human is intimately connected to planetary systems, sharing a body with the environments threatened by nuclear testing and industrial toxicity. Shared between these relational systems, the terminal condition of the nuclear finds

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[25] Simon Watney, *Policing Desire: Pornography, AIDS and the Media* (Minneapolis: University of Minnesota Press, 1996), p. 154.
[26] Ensor, 'Terminal Regions', p. 43.

its treatment in the acknowledgement of interconnection, a vital cure to the threat of unassimilable death. Finally, for the environmentalist rhetoric of *EF!*, terminality is a lens through which to view the human's status within ecological systems that are intolerant to anthropogenic harm. As Ensor suggests, such an embracing of death conceals a greater commitment to the rescue of a particular idea of nature and life. By seeking a solution to an idea of anthropocentrism based around the human as itself a terminal disease, *EF!* activists employ some of the same basic ideas as Trull and the PSR: health, and the promise of a future.

Taken together, these examples showcase a preoccupation with the terminal in the cultural consciousness of the late cold war. Such a cultural narrative draws from several intersecting distillations of cold war logics that mark the decade of the 1980s, and represents a convergence of several of the biopolitical concepts this thesis has examined, most notably risk and immunity. As Cordle suggests, in comparison to notions of 'containment culture' that define responses to the early cold war, the 1980s have received little critical attention as a 'coherent Cold War moment'.[27] Marked by 'the reemergence in public discourse of nuclear anxieties largely suppressed since the 1962 Cuban Missile Crisis', Cordle's conception of the nuclear 1980s sees nuclear fear re-articulated through the neoconservative and market-centric lens of the Reagan and Thatcher governments, as well as through the opposition posed by protest movements encompassing a reinvigorated CND and the allied struggles of gender politics and environmentalism.[28] Visible across the three examples with which I begin this chapter, this nexus of concerns overlap in complex and often contradictory ways, sharing a commitment to the future articulated along fraught political lines. The two authors that form the primary focus of this chapter—Kurt Vonnegut and Octavia Butler—both respond to the late cold war themes of health, immunity, and terminality in ways that complicate this primary

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[27] Cordle, *Late Cold War Literature and Culture*, p. 3.
[28] *Ibid*., pp. 3-5.

cultural formation. In Vonnegut's *Galápagos* and Butler's Xenogenesis trilogy, both authors undermine the conceptual link between health and hopeful futures, hinging their post-apocalyptic narratives on an embracing of various forms of terminality. Before turning to these texts, I want to spell out some of their major concerns by situating my three examples of terminal futures within a theoretical context that showcases their reliance on ideas of species, reproductivity, and immunity.

II. Theorising Queer Misanthropy

The misanthropic rhetoric of *EF!*, out of the three examples discussed above, best embodies what I'm describing as the hermeneutics of empowerment and helplessness through its active engagement with *both* of these logics. This means that, while the spectre of systemic inevitability hangs over both Trull and the PSR's visions of hopeful futures, the writers of *EF!* envision a future secured through a kind of *hopeful fatalism* whereby the human is empowered to accept its own death. As I have argued, rather than offering a way out of the cycle of hope and hopelessness brought about by the combined discourses of health and complex systems, *EF!* represents the pinnacle of this logic, reinforcing a linear temporality of health, life, and reproductivity that is latently humanist despite its anti-human content. Before examining the ways in which Butler and Vonnegut modify this interpretive model, I want to question whether the basic rejection of the abstract figure of the human performed by this sector of the environmental movement can be reimagined as a rejection of humanism more broadly. How can we think, in other words, a misanthropy that does not fall into the epistemological and ethical pitfalls of *EF!*, but rather rejects the human insofar as it rejects the future as an absolute referent for both hope and fatalism?

In his book *No Future*, Lee Edelman offers a critique of futurism that provides a useful analytic framework for this task. Edelman's argument is predicated on the idea that

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heteronormativity, as the structural symbolic logic governing social and political life, polices subjects according to a specific ideological formation that Edelman terms 'reproductive futurism'. This is the idea that, across political locations, heteronormativity retains a dominant hold over the structures of reality via an insistence—an insistence that often appears to be above, beyond, or indifferent to the political—that futurity is an inherent good. Edelman's argument relies upon Lacan's notion of the symbolic order, which he summarises as the 'fantasy' and 'organisation' that 'assures the stability of our identities as subjects', as well as Lacan's placement of death drive as central to such an order as 'the negativity opposed to every form of social viability'.[29] Associated with the symbolic order for Edelman is the figure of the Child, capitalised to sever its association with the lives of actual children but rather functioning as a totem of futurity that appears across Edelman's cultural analysis as the very condition for political expression. Following Lacan's theorisation of a subjectivity enacted through an endless circulation around an essential lack, Edelman interprets the Child as constituting a vision of the future that is omnipresent, yet unattainable: 'such a goal, such an end, could never be "it"; achieved, it could never satisfy'.[30] The repressive power of the Child thus functions as a linear execution of this logic of circulation, demanding an orientation towards the future that persists precisely through the impossibility of its own achievement.

For Edelman, refusing the repressive dictates of reproductive futurism involves more than a definition of oneself in opposition to this ideology as 'queer'. Such a move would appear to repeat the hazards of *EF!*'s hopeful fatalism: writing on Judith Butler's analysis of Antigone, Edelman scrutinises what Butler describes as the play's opening towards 'a new field of the human, achieved through political catachresis, the one that happens when the less than human speaks as human [...]':

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[29] Lee Edelman, *No Future: Queer Theory and the Death Drive* (Durham: Duke University Press, 2004), pp. 7-9.
[30] *Ibid.*, p. 22.

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Antigone lays claim, in the powerful voice that Butler's argument gives her, to a proper place in the order of things, though that place must exceed all propriety, to a "livable" life in the "political sphere", though that life won't affirm the Symbolic. Rejecting the perpetual melancholia of loving "in an ontologically suspended mode", this Antigone refuses to be deprived, by the normative and normalising logics of social legitimation and cultural intelligibility, of the "ontological certainty and durability" that she demands, "in spite of its foreclosure", as the prerogative of her love.[31]

Rejecting a life of ontological insecurity, as Edelman reads Butler, involves articulating transgression using the very same language of intelligibility used by the norm that is being transgressed. While Butler uses the term 'human' to notate a standard of normality that can be accessed by the 'less than human' in a movement towards political inclusivity, Edelman interprets such an argument as 'all too familiarly liberal'.[32] Demanding 'ontological certainty' as a form of legitimating recognition, Edelman notes, involves a 'rearticulation of meaning through a transformation of the signifier's capacity to mean'.[33] While for Butler this process marks the potential for new forms of liberated and legitimated meaning, Edelman's point is that it is precisely the desire for meaning that keeps Butler's argument anchored to the repressive futurism they seek to reject. Defining the parameters of sense, reproductive futurism delivers the very possibility of ontological 'security', or in other words identity, via the same symbolic structure that produces forces of othering and repression in the first place.

Instead of conceptualising queerness as a site of stable opposition to heteronormativity, then, Edelman imagines a more fundamental force of negation and radical refusal as challenging the symbolic fabric of futurism. It is clear, in this regard, how we might characterise the anti-human stance of *EF!* as failing to achieve such a negation: in calling for human extinction in an affirmative mode, *EF!* relies upon the mandate of futurity that is already working to secure 'human' as an ontological category. In diagnosing this mandate, Edelman

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[31] *Ibid.*, p. 103.
[32] *Ibid.*, p. 103.
[33] *Ibid.*, p. 104.

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proposes instead a form of queerness that embraces its own constitution as threat to the social order, refusing to be assimilated into supposedly benign and well-meaning processes of inclusion that fail to recognise the radical negativity of queerness. Edelman's point is a queerness without the static identity 'queer', a position that not only undermines the symbolic order of heteronormativity but refuses to render itself meaningful in relation to this order.

In this sense, Edelman's conception of queerness is defined by its turning against the self and towards that monstrous emptiness, what Lacan calls the Thing, that inhabits the centre of the symbolic order and around (or towards) which futurism's unending velocity circles (or takes aim). This means that the symbolic order's conservative will to preserve identity takes place 'beneath the banner of openness to the difference of the Other', with such a notion of difference founded upon the fantasy that futurism chases but will never attain.[34] Queerness, as a result, is charged with a 'future-negating sameness construed as reflecting its pathological inability to deal with the fact of difference'.[35] The liberal self's dependence upon ideas of flexibility and progress, in other words, creates a situation in which queer negativity is aligned with a static, unchanging present. This evaluation of queerness as self-defeating is mirrored elsewhere in Tyler's analysis of the figure of the misanthrope in Shakespeare's *Timon of Athens* and Molière's *The Misanthrope*, both of which depict characters unable 'to tolerate the inconstancies, accidents, and infractions with which they are beset'.[36] Misanthropy is depicted here as an incapacity for change, rather than as a deviation from a human norm, with the misanthrope incapable of accepting the difference constituted by such a norm (i.e., the proper difference of futurism's semblance of flexibility and dynamic change). Indeed, just as Edelman's vision of queerness receives the charge of self-hatred by the standards of reproductive futurism, so the misanthrope, Tyler writes, is depicted as pathological in their

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[34] *Ibid*., p. 60.
[35] *Ibid*., p. 60.
[36] Tom Tyler, 'Misanthropy Without Humanity', *Paradoxa*, 26 (2014), 239-245, (p. 243).

rejection of this proper mode of difference: 'their hatred is, in truth, a form of self-hatred. And it is in this way that these conventional representations of misanthropy would have us grant that hatred of humanity is pathological: what could possibly be more unhealthy than to hate yourself?'.[37]

Tyler argues that this way of thinking about misanthropy takes place within a specific normative framework.

> It is this self-defeating impulse that is ultimately the deviation or abnormality that determines the archetypal misanthrope's downfall. But this characterisation of misanthropy as a pathological state is itself, of course, an evaluation, a particular, prejudicial depiction of the misanthrope and the object of their disaffection. In construing an individual's self-love and their love of humanity as both equivalent and necessary, it casts humanity itself as the norm. It is, in short, an anthropocentric portrayal of misanthropy, or, better, what we might call an *anthroponormative* portrayal.[38]

Along similar lines to Edelman, Tyler notes that archetypal depictions of misanthropy always feature a human self that is performing this pathology: 'the word has in fact been used only of *humans* who express this loathing'.[39] Using the framework of normativity thus allows Tyler to express the possibility of a 'misanthropy without humanity', imagining the critical sentiment of the misanthrope as severed from a subjectivity that could meaningfully perform something like 'self-hatred'. Instead, Tyler suggests a model for interpreting misanthropy according to an 'inhuman norm', rejecting the idea that a dislike for humanity constitutes pathology but rather considering such an attitude as if from outside the human, considering the interests of nonhumans as ways in which to envision 'non-anthropocentric modes of opposing humanity'.[40] To supplement Tyler's argument with Edelman's, such a misanthropy proceeds from within the fantasy of anthroponormativity in order to provide an obstacle to this very fantasy,

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[37] *Ibid*., p. 243.
[38] *Ibid*., p. 243.
[39] *Ibid*., p. 243.
[40] *Ibid*., p. 244.

beginning as a loathing for the singular and general 'human' and becoming, in this same utterance, a mode of rejecting the framework of meaning that allows such an identity to be formed.

Approaching the circulation of empowerment and helplessness that I argue is epitomised by the misanthropic futurism of *EF!* via Edelman's thought thus provides a way of re-thinking the relationship between health and the human. It is in this mode precisely that Vonnegut and Butler, in their apocalyptic depictions of misanthropy, conjure a transformative negativity that refuses the fantasy of futurity, enacting perspectives born within this fantasy that act to bring about its eventual dissolution. While examining each author's mobilisation of pessimism yields radically de-anthropocentric results, however, I will argue that the politics of species in these novels also stems from what should be termed a reparative attitude to futurity, to echo Sedgwick, based less in a rejection of the future than in a heightened attention to the present. Rather than countering the perspective that Edelman's work brings to the idea of misanthropy, this aspect of both Vonnegut and Butler's work coexists with their rejection of futurism, marking both authors' elaboration of a multispecies ethics irreducible to one theoretical perspective. With this in mind, I will now turn to an examination of the discourse of misanthropy in both authors.

III. Misanthropic Futures in *Galápagos* and the Xenogenesis Trilogy

Both *Galápagos* and the Xenogenesis trilogy situate their visions of apocalypse within a discourse of health that makes use of misanthropy's central tenets: helplessness, systemic collapse, and a dislike for humanity (in general). For Vonnegut, the ultimate figure of this theme is that of the 'big brain'. Far from the site of interspecies cosmic union that we see in chapter four, the brain functions for Vonnegut as a marker of humanity's ineptitude, and as an evolutionary outlier that marks the human as tragically incompatible with planetary systems.

A tale of calamitous evolution, *Galápagos* follows the voyage of the 'Nature Cruise of The Century', an excursion of rich and famous individuals that begins in the city of Guayaquil, Ecuador, and aims to reach the Galápagos Islands. Through its omniscient narration by the character of Leon Trout—a ghost haunting the aforementioned ship, named the *Bahía de Darwin*—*Galápagos* constructs its negative vision of the human *in general* as a perspective that is both manifestly and satirically rendered believable in the text. This is because Trout, a construction worker and veteran of the Vietnam war who was killed during the building of the ship, narrates Vonnegut's novel from the perspective of one million years in the future. During this time, he perceives the stranding of the occupants of the *Bahía de Darwin* on Santa Rosalia, Vonnegut's fictional addition to the Galápagos archipelago, and their evolution away from the human form towards a simpler existence as beings with flippers, fur, and beaks.

During this impasse, Trout witnesses the demise of humanity at large thanks to a virus that inhibits fertility, and ponders the reasons behind the horrors of human history that culminate in financial crisis and war on the day that the 'Nature Cruise of the Century' sets sail. His conclusions, littered throughout Vonnegut's narrative as satirical aphorisms that explain the root of systemic crises, are simple: the human brain, an organ developed far beyond the basic evolutionary measure of survival, brings about systemic collapse as an *inevitability*. Trout's transhistorical access to the inner worlds of Vonnegut's characters gives him powers of observation that parody the ability of the author of fiction to imbue complex narratives with simple meanings, and the narrator of *Galápagos* places the unquestioned and unquestionable nature of his own narrative front and centre:

> So I raise this question, although there is nobody around to answer it: Can it be doubted that three-kilogramme brains were once nearly fatal defects in the evolution of the human race?
>
> A second query: What source was there back then, save for our overelaborate nervous circuity, for the evils we were seeing or hearing about simply everywhere?

My answer: There was no other source. This was a very innocent planet, except for those great big brains.[41]

Exhibiting a form of knowing that appears to transcend the traditional historical contingencies of knowledge, Trout's musings on human intelligence have two primary effects. First, by making absolute claims about the human's destiny, Vonnegut's narrator makes a broad point about the role of pathology in producing hard and fast, rather than flexible, identities. Second, and resultantly, Trout's satire on identity, under the guise of a simple explanation for humanity's failures, problematises the structures whereby human life is rendered meaningful through its anchoring to the idea of the future.

Butler's trilogy, along similar lines to Vonnegut, tells a story that hinges upon the pathologisation of the human as planetary malignancy. The first novel in the trilogy, *Dawn* (1987), follows the character of Lilith Iyapo as she awakens in the captivity of the Oankali, an alien species devoted to the restoration of human life after an apocalyptic nuclear war. More than simply altruistic, the Oankali are beings with a deep commitment to an incorporation of otherness, mating with different species on their travels in a continuing celebration of vital impurity. Just as Trout's position as ghost narrator gives him the ability to diagnose the general ailments of the human, so too do Butler's Oankali possess a heightened awareness of molecular reality which provides their proclamations on the human condition with rational justification in Butler's narrative world. As Jdahya, the Oankali that awakens Lilith explains, human existence is marked by the fundamentally contradictory attributes of intelligence and hierarchy:

> You are hierarchical. That's the older and more entrenched characteristic. We saw it in your closest animal relatives and in your most distant ones. It's a terrestrial characteristic. When human intelligence served it instead of guiding it, when human intelligence did not even acknowledge it as a problem, but took pride in it or did not notice at all […] That was like ignoring cancer. I think your people did not realise what

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[41] Kurt Vonnegut, *Galápagos* (London: Flamingo, 1994), p. 16. All subsequent references will appear in the text.

a dangerous thing they were doing.[42]

Mobilising the same rhetoric of inevitability found in *Galápagos*, Butler naturalises the disastrous war that prefigures her novel as a planetary destiny, an unavoidable outcome of the human's particular variety of malignancy. Yet for the Oankali, the analogy with cancer does not equate to a malignancy in an absolute sense. Jdahya notes that the origins of any cancer 'isn't simple, and it isn't a gene or two'. Rather, the possible explanations are 'many—the result of a tangled combination of factors that only begins with genes' (p. 39). Bridging the gap between planetary metaphor and personal prognosis, Jdahya informs Lilith that the Oankali have removed a growth from her body. Lilith experiences the feeling of inevitability as the personal burden of heredity: 'she went cold. Her mother had died of cancer. […] the family "tradition" was apparently continuing' (p. 21). But Jdahya corrects Lilith's description of this tendency as a 'curse': 'my relative examined you, observed a few of your normal body cells, compared them with what it had learned from other humans most like you, and said you hadn't only a cancer, but a talent for cancer' (p. 22). Jdahya's description results not from a lack of human vernacular, but rather communicates ecstatic discovery: Lilith's cancer teaches the Oankali, who Butler writes as cosmic genetic engineers, how to regenerate their bodies. 'Future Oankali may be much less frightening to potential trade partners if they're able to reshape themselves and look more like the partners before the trade' (p. 41).

While we can begin to perceive in this statement the liberal commitments that permeate the trilogy, the point here is the significant sense in which Butler reconfigures the idea of inevitability. As the physical embodiment of this process, Lilith experiences a reconstruction of her own internal potential for death as a renewed potential for life. Yet this life, as the remainder of *Dawn* explicates, functions in its own way as a form of dying (or rather, as the

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[42] Octavia Butler, *Lilith's Brood* (New York: Grand Central, 2007), p. 39. All subsequent references will appear in the text.

death of a particular kind of meaning). After Lilith gains the Oankali's trust, she is tasked with 'awakening' a group of humans kept in suspended animation by the Oankali, and who will form the seed for a new community on Earth. Even before she begins this process, Lilith recognises that the future she must present to her peers does not adhere to the safe promise of reproductive futurism: 'how would she Awaken these people, these survivors of war, and tell them that unless they could escape the Oankali, their children would not be human?' (p. 117). Granted with increased physical strength, as well as the ability to communicate via chemical signals with the Oankali spaceship (a vehicle that is alive, and somewhere between the categories of plant and animal), Lilith appeals to her fellow humans to cooperate with the Oankali. Yet this alignment with her captors renders her abject, and ultimately untrustworthy, to those she awakens. Throughout the remainder of *Dawn*, the separation between Lilith and the rest of humanity is articulated through the language of species difference, with Lilith's bodily transformation working to animalise her in the eyes of those she has awakened. But by the novel's end, and throughout the remaining two parts of Butler's trilogy—*Adulthood Rites* and *Imago*—this difference is articulated through a more complex depiction of incompatible modes of reproductive futurism. The Oankali, in their rekindling of human life, require a participation in human reproduction that renders the heterosexual model of futurism defunct, ensuring a future of queer and vital hybridity for the human. The majority of humans, despite their now irreversible infertility, reject this future, electing instead to live out their days in separate colonies, faced with an inevitable extinction that they choose to accept.

In *Dawn*, it often appears as though humanity's rejection of the Oankali functions as a violent reaction to an 'animality' that, through an essential lack of humanity, can justifiably be put to death. Such a logic comes into force when Joseph, lover and ally to Lilith, is murdered by other humans during a simulation of Earth aboard the Oankali ship, designed to train those who will go on to live in the post-apocalyptic wilderness below. Like Lilith, Joseph is

biologically altered to be more resilient to such attacks, and evidence of these changes prompt his killer to exclaim, 'we didn't kill a human being. […] We killed one of your animals!" (p. 228). Butler's emphasis, however, is on a more complex formulation of a species difference that is itself informed by the human's own animality. Explaining Lilith's changes to the humans, Nikanj, another Oankali, describes her great strength as already 'latent': 'I gave her more efficient use of what she already has. […] Her ancestors were stronger—her nonhuman ancestors in particular. I helped her fulfil her potential' (pp. 155-156). Likewise, and perhaps conversely, Butler draws links between human violence—rooted in, for the Oankali, their inherent 'contradiction'—and humanity's nonhuman heritage. After a scene of sexual violence in which a newly awoken man attacks a member of the group, Lilith issues a warning to any who may behave similarly: 'we stay human. We treat each other like people, and we get through this like people. Anyone who wants to be something less will have his chance in the forest' (p. 178). Invoking the idea of the killer ape, Butler suggests that it is the very same notion of animality excluded by the humans that governs their own actions, and their own accepted deviations from the civilised norm.

In representing both Oankali and human through the lens of animality, Butler turns inevitability back on itself, writing the human as already implicated within the logic that threatens the fabric of its being. The animality associated with the Oankali, and the future devoid of meaning that they propose, is thus also the negative core around which the human's idea of itself revolves, an inevitable departure from meaning that occurs when the human's evolutionary heritage disrupts its idea of the future. In this way, Butler's trilogy converges with Vonnegut's representation of evolution in *Galápagos.* In what follows of this section, I will outline the ways in which Vonnegut articulates his own vision of misanthropic negativity.

By situating his narrator as speaking from a deep future, Vonnegut establishes inevitability—or a simulation of inevitability—as a textual component of the novel. This is

most apparent in Trout's practice of starring the names of characters who will soon die in the narrative. 'This convention of starring certain names', Trout notes, speaking directly to his imagined reader, 'will continue throughout my story, […] alerting readers to the fact that some characters will shortly face the ultimate Darwinian test of strength and wiliness' (p. 24). The human biographies of Vonnegut's characters are thus prefigured with a textual coding of their evolutionary transience. In constructing his narrative in this way, Vonnegut establishes the process of evolution as a formal limitation for the meaning that Trout is able to communicate: the human drama of the novel, while marked by affective and interpersonal complexity, is nevertheless severed from any semblance of linear narrative temporality. This experimental use of narrative allows Vonnegut to detach the human from its relationship to the future, and therefore its primary centre of meaning, instead representing specific avatars of the human—namely neoliberal capitalism and technoscientific reason—within a satirical evolutionary frame.

In contrast to his use of hard textual evidence of imminent death, Vonnegut locates human behaviour as operating according to 'mere opinions': 'so the Galápagos Islands could be hell in one moment and heaven in the next, […] and Ecuadorian paper money could be traded for food, shelter, and clothing in one moment and line the bottom of a birdcage in the next' (p. 22). As the source of the financial crisis that precipitates the disaster of the novel, opinions also determine the significance of the Islands. In 1832, Vonnegut writes, 'one of the smallest and poorest countries on the planet, which was Ecuador, asked the peoples of the world to share this opinion with them: that the islands were part of Ecuador' (p. 22). Vonnegut continues:

> But then young Charles Darwin, only three years later, began to persuade others that the often freakish plants and animals which had found ways to survive on the islands made them extremely valuable, if only people would look at them as he did—from a scientific point of view.

> Only one English word adequately describes his transformation of the islands from worthless to priceless: *magical* (p. 23).

Presented as a counterpart to what Trout perceives as evolutionary fact, opinions, portrayed as fickle and arbitrary, dictate the coordinates of supposedly stable categories of meaning. Vonnegut here mirrors Marx's description of commodity fetishism as producing a 'mystical' relationship between objects of labour and the concept of 'value'.[43] The artificial gap that Marx locates between objects and the category of the commodity is mirrored by Vonnegut in his depiction of human systems of meaning, which are sustained through external processes of signification that bear no intrinsic relation to lived reality. As Trout opines, the human's very ability to conjure such systems, in the form of opinions, entails a fundamental violence unique to human neuroanatomy: 'this financial crisis, which could never happen today, was simply the latest in a series of murderous twentieth century catastrophes which had originated entirely in human brains' (p. 28).

As well as his starring the names of soon to be dead characters, Trout's mischievous narration traces the theme of inevitability through the lives of Vonnegut's characters. For James Wait, a duplicitous trickster visiting Guayaquil in order to find an unwitting partner to marry, murder, and embezzle, ethical failure is attributed both to Wait's big brain and the perception of his inevitable wrongdoing: 'all throughout his childhood', Trout notes, 'Wait was severely punished by foster parents for nothing and everything. It was expected by them that, because of his inbred parentage, he would become a moral monster' (p. 20). Trout's meditations on inevitability continue in his assessment of Roy and Mary Hepburn, the latter of whom is attending the Nature Cruise of the Century because of a malfunction in her husband's mind that she suspects is linked to his inoperable brain cancer. In a passage that links Roy's terminal

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[43] Karl Marx, 'The Fetishism of the Commodity and its Secret', in Karl Marx, *Capital: Vol. 1* trans. by Ben Fowkes (London: Penguin, 1990), p. 164.

condition with the violence of nuclear testing, as well as the technological automation of jobs in Roy and Mary's hometown of Ilium, Trout recounts a delusion experienced by Roy as a result of his illness:

> While Roy Hepburn was dying, and while the whole city of Ilium was dying for that matter, and while both the man and the city were being killed by growths inimical to a healthy and happy humanity, Roy's big brain persuaded him that he had been a sailor at the United States atomic bomb tests at Bikini Atoll, equatorial like Guayaquil, in 1946. He was going to sue his own government for millions, he said, because the radiation he had absorbed there had first prevented his and Mary's having children, and now it had caused his brain cancer (p. 39).

Despite the impossibility of the recollection, Roy experiences 'vivid memories of the terrible things his government had made him do to so-called lower animals', and even extends the sacrificial menagerie of atoll testing to include 'peacocks and snow leopards and gorillas and crocodiles and albatrosses', including finally his own golden retriever Donald in the mix: 'So long, old pal. You're going to a different world now. It's sure to be a better one, since no other world could be as bad as this one is' (p. 40).

More than simply highlighting the fantasies capable of being produced by his big brain, Roy's experience of terminality highlights a fundamental quality of the human's species-being articulated finally on his death bed: 'I'll tell you what the human soul is, Mary […] Animals don't have one. It's the part of you that knows when your brain isn't working right' (p. 43). In associating the human's essence with its propensity for failure, Vonnegut reverses the pretence of mastery that marks its relationship with the figure of the nonhuman, showcasing this imagined exceptionalism to function only through its reliance on the wanton cruelty and violence imagined by Roy in a fantasy that, of course, mirrors the basic realities of nuclear testing's instrumentalisation of nonhuman life. Like Butler, then, Vonnegut's misanthropic imaginary highlights not only human contradiction and ineptitude, but the foundation of this maladjusted nature on speciated forms of violence. The challenge posed by *Galápagos* to such

a mastery lies, in another similarity to Butler's trilogy, in its satirical representation of human life in an evolutionary frame that lends new credence to the idea of inevitability, with Vonnegut depicting human intelligence as comically maladapted to practices of living well in a multispecies world. But before examining the development of both authors' misanthropic narratives, I want to return first to a brief theoretical discussion that supplements my understanding of misanthropy via Edelman's queer pessimism by way of Sedgwick's reparative methodology. While both *Galápagos* and the Xenogenesis trilogy mobilise misanthropy in order to trouble human systems of meaning, both equally retain a commitment to a futurism that remains legible within these systems, reconfiguring—rather than wholly rejecting—new forms of reproductivity for multispecies futures.

IV. Reparative Misanthropy

In a chapter on 'Paranoid Reading and Reparative Reading', Sedgwick differentiates between what she sees as the paranoid epistemologies that mark dominant strands of critical theory from Freud to Foucault, and a reparative counterpart located in the psychoanalysis of Melanie Klein and the cybernetic psychology of Silvan Tomkins. For Sedgwick, paranoid reading describes a practice of uncovering attuned to systemic crises and forms of violence, often beginning with a preestablished diagnosis or structural critique that is then located in the object of concern. Such a method, Sedgwick notes, is almost always necessary for the critical theorist: 'in a world where no one need be delusional to find evidence of systemic oppression', she writes, 'to theorise out of anything *but* a paranoid critical stance has come to seem naïve, pious, or complaisant'.[44] But in seeking to question not just the contents of particular epistemologies, but what these performative knowledge practices *do*, Sedgwick argues that the paranoid

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[44] Eve Kosofsky Sedgwick, *Touching Feeling: Affect, Pedagogy, Performativity* (Durham: Duke University Press, 2003), pp. 125-126.

impulse, rather than representing the only proper theoretical voice, marks only one framework among many.[45] Recognising the necessarily paranoid bent of all theoretical inquiry, Sedgwick argues that nevertheless, paranoia supposes a model of inevitability that renders theory incapable of responding to the contingency of relations that may exist, surprisingly, in ways illegible to the paranoid frame.

In his dependence on the figure of the Child as an absolute referent for the ideology of reproductive futurism, Edelman falls squarely into the paranoid rubric identified by Sedgwick, his rejection of futurity functioning according to the uncovering of a repressive logic that suffuses heteronormative cultural and political life. Indeed, Edelman's troubling of futurity, read according to Sedgwick, sits in tension with the dependence of his theory on the meaning communicated by this great signifier: 'because there must be no bad surprises', Sedgwick notes, 'and because learning of the possibility of a bad surprise would itself constitute a bad surprise, paranoia requires that bad news be always already known'.[46] Edelman's thesis on queer negativity, in other words, enacts its own paradoxical commitment to inevitability, his rejection of the framework of meaning supplied by reproductive futurism itself dependent on a preordained conception of precisely what kind of meaning is being rejected. To follow Sedgwick's logic, Edelman's thought—and the mode of misanthropy that I have used it to articulate—depends on a theory of negative affect that Sedgwick differentiates from a position that allows itself hope: 'to read from a reparative position is to surrender the knowing, anxious paranoid determination that no horror, however, apparently unthinkable, shall ever come to the reader *as new*; to a reparatively positioned reader, it can seem realistic and necessary to experience surprise'.[47]

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[45] *Ibid.*, p. 124.
[46] *Ibid.*, p. 130.
[47] *Ibid.*, p. 146.

Sedgwick's approach to a reparative methodology thus involves situating paranoid reading within an affective framework that extends far beyond its own limitations. Drawing on Klein, Sedgwick associates these limitations with the paranoid/schizoid position, defined by five distinctive themes:

> The first is the inability of the self to comprehend or tolerate ambivalence—the insistence on all or nothing. The second is its consequent, "schizoid" strategy of splitting both its objects and itself into very concretely imagined part-objects that can be only seen as exclusively, magically good or bad—where those are not in the first place ethical designations but qualitative judgments involving life or death. Third […] is that, in the paranoid/schizoid position, the sense of agency, too, occupies only two extreme positions. The self and its constituent parts, like others and their parts, can only be experienced as either powerless or omnipotent. Fourth is a kind of greed for "good" things that is figured in terms of ingesting them and holding them inside, where they are liable to remain distinct and magically alive, doing battle with "bad" contents and vulnerable to being devoured or fatally contaminated by them. And fifth is the mechanism of projection, classically that of attributing to other people the unacceptable parts of oneself, but given […] a new immediacy in the work of Klein.[48]

I quote Sedgwick's description in its entirety because of its linkage not only to the paranoia of queer negativity and misanthropy, but to the paranoid epistemologies that have recurred throughout this thesis; ways of knowing that see thinkers like Burroughs, Dick, and Lilly caught in a process of uncovering that deviates from the human norm only to circle back to a paradoxical recentring of anthropocentric mastery. Sedgwick's solution to paranoia's concrete imagination lies in Klein's conception of the depressive position, a 'uniquely spacious rubric' that defines 'both the preconditions of severe depression and also quite a varied range of resources for surviving, repairing, and moving beyond that depression'.[49] Far from a conservative impulse, Klein's conception of the depressive position centres around the reassembly of paranoia's part-objects into a repaired whole: 'once assembled', Sedgwick notes, 'these more realistic, durable, and satisfying internal objects are available to be identified with,

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[48] Eve Kosofsky Sedgwick, 'Melanie Klein and the Difference Affect Makes', *South Atlantic Quarterly*, 106 (2007), 625-642, (p. 633).
[49] *Ibid.*, p. 637.

to offer one and to be offered nourishment and comfort in turn'.[50] Sedgwick views Kleinian

depression through her own experience with incurable cancer, the diagnosis of which she writes

drew 'my own temporality and mortality […] into an unexpected kind of focus'.[51]

Depressiveness, Sedgwick notes, 'endeared to me the idea of nonbeing, as well as made me

perhaps oversensitive to the psychic expense extorted by the paranoid defences'.[52]

Sedgwick's personal account offers insight into the ways in which paranoiac reading,

in its production of inevitability and a sense of either absolute agency or a loss of control, can

serve to obscure necessary strategies of ongoingness in the present; practices of repair attuned

to ambivalence, contingency, and survival as a way of living with and within the repressive

structures identified by paranoid methods. It is just such a methodology that leads Ensor, in her

reading of Sedgwick, to imagine reparative reading as a way of inhabiting terminality: 'what

if terminality', Ensor writes, 'were thought of not simply as a condition, but also as a deeply

ethical—and importantly non-normative—practice in which we *all* (regardless of our current

health) could engage?'.[53] In contrast with the examples of health and hopeful futures examined

in the first section of the chapter—themselves visible now as paranoid responses to their

respective crises—Ensor's vision of reparative terminality proposes an 'ethics of

temporariness' not as a state concerned with endings, but rather as a space within which

different ways 'to persist and dwell together' can be imagined'.[54]

Identifying the reparative strand of Vonnegut and Butler's fiction thus requires an

addendum to the model of misanthropy theorised according to Edelman's queer negativity.

For, while both *Galápagos* and the Xenogenesis trilogy use their respective misanthropic

imaginaries to problematise anthroponormative futurism as the limitation of intelligibility, both

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[50] *Ibid.*, p. 637.
[51] *Ibid.*, p. 639.
[52] *Ibid.*, p. 640.
[53] Ensor, 'Terminal Regions', pp. 45-46.
[54] *Ibid.*, pp. 47-48.

texts simultaneously work within the boundaries of the same model of futurism that they denature, depicting ways of being and methods of ongoing that trace tentative, imperfect lines through the realities that their theses on misanthropy define. To read Butler and Vonnegut reparatively, in this instance, is to place misanthropy within the same frame as the ways of being it negates, understanding contempt for the human as an interpretative strategy that must nevertheless maintain a bearing on an anthroponormative reality. Indeed, just as a misanthropy articulated according to Edelman's queer negativity begins itself from within the fantasy of anthroponormativity, a reparative misanthropy remains situated within this frame, working in a kind of productive tension with anthroponormativity in order to chart ways of being that remain plausible, practicable, and hopeful. In the remainder of the chapter, I examine how both authors enact such a reconfiguration of hope away from the paranoid frame and towards the contingencies of a multispecies futurity.

V. Evolutionary Atmospherics and Multispecies Futures

In *Galápagos*, the sense of inevitable systemic collapse brought about by the human's big brain is supported formally by its narrator's omniscience. Because Trout has personally perceived every event that Vonnegut's novel depicts, his narration reads like a paranoid treatise on human mishap, with a calamitous end to human civilisation appearing to be coded into the novel's most fundamental structure. But at the same time as presenting Trout as possessing a knowing, rational gaze over both past and the future, Vonnegut allows us to perceive him as trapped within an unending and unreliable present, his narration the product of a banal purgatory that he is forced to inhabit for a vast amount of time. Indeed, towards the end of Vonnegut's novel, we discover that Trout has recorded the events of the narrative with his finger, in mid-air:

> Does it trouble me to write so insubstantially, with air on air? Well—my words will be as enduring as anything my father wrote, or Shakespeare wrote, or Beethoven wrote, or

Darwin wrote. It turns out that they all wrote with air on air, and I now pluck this thought of Darwin's from the balmy atmosphere:

Progress has been much more general than retrogression.

'Tis true, 'tis true (p. 233).

Trout's admission of impermanence repeats the critique of humanity he has been advancing throughout the novel, rendering the work of great thinkers just as fleeting as his own ethereal prose. But in acknowledging his own brevity, Trout underlines the position occupied by the novel not in opposition to a straight and forward anthroponormative futurism, but rather in and around such a futurism; an atmospheric critique of the human that does not wholly negate it, but rather draws it into contact with the worlds that encompass and surround it. Trout's satire on the ineptitude of human knowledge is given an object by Vonnegut in the figure of Manadarax, a technological device filled with ironically prescient quotations from notable figures in human history. The novel's epigraph, the first of Mandarax's human citations, is a quotation attributed to Anne Frank: 'in spite of everything, I still believe people are really good at heart' (p. 7). The dark irony of this moment sees Vonnegut's novel begin in the misanthropic mode that I have outlined, characterising the human's violent and inevitable self-destruction as predicted by war and genocide in the twentieth century. But read alongside Trout's later invocation of Darwin, the quote reads less as paranoid irony, and more like one position among a host of other possibilities; a particular view of the human that retains acknowledgement of the 'everything' that it proceeds in spite of. *Galápagos* begins, in this sense, with an inversion of its own satire, Frank's words underlining the reparative impulse behind the future that is Trout's perpetual present.

The reparative inclination of Vonnegut's novel can be found in its reconfiguration of big-brained ideas about evolution. Evolution functions as an enduring context for Trout's observations, from the banal to the transhistorical, and structures the minute details of the ways

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in which Vonnegut presents his characters. Often, this repeated focus on evolutionary context serves the same purpose as Trout's practice of starring names: in an otherwise innocuous passage, we discover that Mary Hepburn will live until her eighty-first birthday, on which day she will be eaten by a great white shark (p. 37). Later, Trout compares the ethically dubious behaviour of businessman Andrew MacIntosh to the ultimate fate of humanity on Santa Rosalia: after observing MacIntosh's desire to catch investors like a fisherman, Trout writes that his own narrative in reality 'doesn't change all that much from beginning to end. In the beginning, as in the end, I find myself speaking of human beings, regardless of their brain size, as fisherfolk (p. 49). As the novel progresses, Trout's preoccupation with evolution goes beyond situating the human within a sense of evolutionary inevitability, and towards an undermining of the very premise of evolution as a linear process. Instead, from his all-seeing vantage, Trout characterises evolution as necessarily experimental on the part of 'Nature':

> If Selena was Nature's experiment with blindness, then her father was Nature's experiment with heartlessness. Yes, and Jesús Ortiz was Nature's experiment with admiration for the rich, and I was Nature's experiment with insatiable voyeurism, and my father was Nature's experiment with cynicism, and my mother was Nature's experiment with optimism, and the Captain of the *Bahía de Darwin* was Nature's experiment with ill-founded self-confidence, and James Wait was Nature's experiment with purposeless greed, and Hisako Hiroguchi was Nature's experiment with depression, and Akiko was Nature's experiment with furriness, and on and on (p. 71).

In situating the affective characteristics of individuals in an evolutionary frame, Trout both undermines the human's position at an imagined evolutionary pinnacle, and simultaneously establishes a satirically broad framework for evolutionary significance. Rather than a big-brained example of evolution gone too far, the human is here divided into particular avatars, each with varying degrees of 'success' in the natural order of things—with success itself a measure defined, of course, by Trout's narrative vantage.

Indeed, Trout's reflections on evolution result in the depiction of a process that does not function through any one dominant characteristic, behaviour, or avatar of the human

animal, but instead via the contingencies of what Vonnegut constructs as a present that cannot be mapped or predicted. Vonnegut's depiction of a perpetual present functions akin to Berlant's notion of the 'impasse': 'a stretch of time in which one moves around with a sense that the world is at once intensely present and enigmatic, such that the activity of living demands both a wandering absorptive awareness and a hyper vigilance that collects material that might help to clarify things'.[55] Influenced in part by Sedgwick, Berlant is concerned with tracing strategies of living that keep individuals anchored to an affective present in the context of repressive, threatening, or harmful attachments; attachments which, as connections to normative forms of identity, present themselves as the *only* possible forms of intelligibility.[56] Taking our focus away from the future and towards a lateral view of the present, for Berlant, helps to bring into focus other kinds of attachments that disrupt the forms of normative identity, allowing the 'potentiality' of formlessness to dictate new strategies of living. [57] In Vonnegut's case, Trout's lateral view of evolution traces the potentialities that accompany a series of catastrophic events that lead to the demise of wider humanity. This lateral focus reveals the future of human evolution in *Galápagos* to be governed by banal chance, rather than big-brained progress, including in one instance a door left ajar by a soldier with his own paranoid delusions: 'if he had not burglarised that shop', Trout writes, 'there would almost certainly be no human beings on the face of the earth today. […] Everybody alive today should thank God that this soldier was insane' (p. 122).

Vonnegut's focus on contingency as an evolutionary force leads to a depiction in *Galápagos* of a modified form of reproductivity centred around the novel's depiction of an enigmatic and affective present. But before further unpacking this logic, I want to outline Butler's approach to a reparative form of futurity in her trilogy. Just as Vonnegut envisions

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[55] Lauren Berlant, *Cruel Optimism* (Durham: Duke University Press, 2011), p. 4.
[56] *Ibid*., p. 125.
[57] *Ibid*., p. 125.

evolution through an affective present, the Xenogenesis trilogy depicts a multispecies future that persists with, rather than negates, the contradiction that Butler depicts as structuring human identity.

In *Adulthood Rites*, Butler tells the story of Akin, one of several hybrid 'construct' children parented by Lilith and the Oankali. By now, both humans and Oankali live together on Earth; but while Akin is the result of cross-species reproduction, most humans live separately from their alien others in towns and enclaves, resigned to a non-reproductive existence imposed upon them by the Oankali. Through Akin's perspective, Butler depicts the intricacies of the new ways of life proposed by the Oankali: as well as new reproductive formations, defined by several Oankali parents mating together with one human, the Oankali require new ways of relating to the nonhuman world, growing new kinds of vegetables that mimic the tastes and textures of meat.[58] Akin embodies the Oankali drive to become intimately acquainted with all new forms of life that he encounters; while outwardly 'human', he has in place of a tongue a 'tendril' through which he can perceive the molecular structure of plants and animals, driven by the desire to incorporate otherness into his conception of self (p. 257). But rather than simply contrasting Oankali ways of being with the human 'contradiction' that takes centre stage in *Dawn*, Butler's novel traces a complex intersection of both: when Akin is captured by a group of dissenting humans and sold as a coveted remnant of reproductive futurism to an infertile community, he must reconcile his own ways of being with that of his captors. At first, human contradiction prevents Akin from empathising with the resistors: not

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[58] The Oankali's vegan practices function as a major way in which Butler differentiates them from humans in the trilogy. While the Oankali refuse to instrumentalise nonhuman animals, growing all of the food that they require through their expertise as chemical engineers, Butler depicts the humans that capture Akin as possessing a carnivorous appetite: 'They craved meat. Within the last few days, they had caught, cooked, and eaten several fish, but they talked a great deal about real meat—steaks and chops and roasts and burgers…' (p. 338). Butler depicts the human commitment to meat-eating not only as a dietary requirement, as an essential aspect of their cruelty: in one of the only instances throughout the trilogy of an Oankali choosing to kill, Akin ends the life of a suffering agouti that has been shot by his captors.

only violent, the humans seem to embody the antithesis to the Oankali commitment to life, refusing medical interventions for diseases with which they would rather live than be cured. When two further construct children are captured, one resistor attempts to persuade others that their 'un-human' tentacles must be removed: 'how can little girls grow up to be Human women when their own sense organs betray them? (p. 391). But in time, Akin begins to differentiate such anthroponormative violence as but one attachment among many experienced by the humans; an affective genre that while dominant for the human, does not encompass it, forming instead a single model of intelligibility among many.

Akin's observation of this complex affective field begins with an acknowledgement of the human's own more-than-human impulses: 'tell me why Human kids put things in their mouths', Akin asks, after another human questions his impulse to taste everything that he encounters (p. 406). Later, when Akin has been reunited with his kin, Nikanj offers further insight into how the Oankali view the human's essential 'contradiction':

> Anything to do with Humans always seems to involve contradictions. [...] Examine Tino. Inside him, so many very different things are working together to keep him alive. Inside his cells, mitochondria, a previously independent form of life, have found a haven and trade their ability to synthesise proteins and metabolise fats for room to live and reproduce. We're in his cells too now, and the cells have accepted us. One Oankali organism within each cell, dividing with each cell, extending life, and resisting disease. Even before we arrived, they had bacteria living in their intestines and protecting them from other bacteria that would hurt or kill them. They could not exist without symbiotic relationships with other creatures. Yet such relationships frighten them (p. 427).

The human's inability to recognise its own messy co-constitution with the nonhuman functions for the Oankali as an alluring problem. Rather than centring wholly on their propensity for self-destruction, the human 'contradiction' marks a paradoxical expression of individuality that becomes in turn an object of desire for the Oankali, embodying an unexpected region of life that must be studied, understood, and assimilated. But while the Oankali view their own model of cross-species reproductivity as emancipating the human from its repressive individuality,

Akin comes to understand the human to be already involved in such processes. After scavenging for plants with his human guardian Gabe, Butler writes that what 'he and Gabe were doing was what the Oankali always did—collect life, travel, and collect and integrate new life into their ships, their already vast collection of living things, and themselves' (p. 410).

Ultimately, Akin's time living among humans leads to his recharacterisation of the Oankali's own primary attachments: far from an emancipatory merging with otherness, Akin sees humans as simply 'something we consumed' in a relationship characterised not by symbiosis but by the logic of predator and prey (p. 443). Akin's realisation marks Butler's engagement not only with discourses of species, but with race and coloniality. In her book *Unthinking Mastery*, Julietta Singh theorises a form of 'dehumanism' that functions in opposition to posthumanism's decentring of the human in what is often an ahistorical context.[59] For Singh, discourses of race and coloniality produce masterful subjectivities that are often sustained through the same critical processes that purport to undermine them; reading mastery as assuming new forms in decolonial and posthumanist discussions, Singh argues that 'there is an intimate link between the mastery enacted through colonisation and other forms of mastery that we often believe today to be harmless, worthwhile, even virtuous'.[60] For Butler, the Oankali model of reproductivity assumes just such a virtuous self-image, proposing a model of relationality that obscures the more-than-human relations within which the human is already implicated. In the Oankali's masterful embodiment of a 'proper' model of relationality, Butler engages the logics that Singh attributes to certain strands of decoloniality, depicting Oankali knowledge practices as assuming the role played by 'civilising' language practices that persist through histories of decolonisation.

In allowing Akin access to the humans' own perspectives, Butler opens the space for a

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[59] Julietta Singh, *Unthinking Mastery: Dehumanism and Decolonial Entanglements* (Durham: Duke University Press, 2018), p. 4.
[60] *Ibid.*, p. 9.

reparative relationship between human and Oankali futures; by the end of Butler's second novel, Akin succeeds in persuading the Oankali to allow any willing humans to live on Mars with their fertility restored, a proposal that the Oankali agree to fulfil despite their conviction that humans left to their own devices will always self-destruct. In *Imago*, however, the complex double-articulation of human and Oankali attachments gives way to a metamorphosis that Butler presents as liberating for the human. The novel follows Jodahs, who like Akin is a construct child with both Oankali and human parentage. But unlike Akin, Jodahs becomes, unexpectedly to those who beget him, the first construct ooloi: the third Oankali sex who play a central role in the species' reproductive practices, collecting within themselves information from all life forms they encounter. Butler presents the ooloi as close to incompatible with human systems of meaning, noting that the name contains no straightforward definition into human language: '"Treasured stranger". "Bridge". "Life trader". "Weaver". "Magnet"' (p. 526). As well as figures of mastery, ooloi function as figures of desire and attachment, merging with the humans they mate with in sexual encounters that produce dissociative pleasures; a loss of individuality that Butler constructs as a form interspecies orgasm-death. In a movement away from the reparative events of *Adulthood Rites*, Butler's third novel returns, via the figure of the ooloi, to the liberatory negativity that structures the misanthropic rhetoric of *Dawn*. As an embodiment of both Oankali mastery and negativity, Jodahs seeks to persuade those remaining humans committed to their own reproductive attachments on Mars to embrace the Oankali, transcending the limits of their restored fertility and becoming-anew as part of the Oankali's ongoing vital project. The ooloi's seductive promise of vital becoming complicates the human principles of agency and consent, producing an involuntary attraction to the dissolution of boundaries associated with a coupling with the Oankali. While Butler ensures that Jodahs gives the humans he encounters the choice of joining the Mars colony, the final image of the trilogy—a new seed containing the 'tiny positioning movements of independent

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life'—inscribes the Oankali mode of attachment as the ultimate marker of Butler's vision of multispecies futures (p. 746).

Despite the reparative nature of Butler's narrative, the Oankali remain encompassed by a set of virtues that wholly differentiate their vital drives from a comparably static model of the human. While the trilogy underlines the inevitability of co-evolution in a multispecies world, Butler nevertheless prevents co-evolution as bifurcated; premised upon two dominant models of attachment to the future even as the trilogy traces the complex affective zones between these poles. I want to compare this aspect of the Xenogenesis trilogy, finally, with the vision of reproductivity advanced by Vonnegut in *Galápagos*. While the Oankali represent multispecies futurity that encompasses its own form of elevated mastery, Vonnegut's depiction of humanity's fate involves a conscious refusal of mastery's residual hold.

Like Butler, Vonnegut constructs the means for humanity's continued reproduction through a removal of agency. Rather than humanity at large, the subject in this case is Adolf von Kleist: Captain of the *Bahía de Darwin*, and one of a group of unlikely survivors that arrive at Santa Rosalia after war breaks out and the port at Guayaquil is attacked with missiles. In contrast with a heteronormative model of reproductivity, which Vonnegut likens to the techno-fetish of the missiles, the launching of which 'was virtually identical with the role of male animals in the reproductive process', Adolf is taken off-guard when Mary Hepburn conducts an experiment suggested by her big brain, involving transferring the Captain's sperm into a fertile woman unbeknownst to either party (p. 153). Like the allure of Butler's ooloi, Vonnegut's depiction of humanity's reproductive future involves a bypassing of the human's freedom to consent; but unlike the Oankali's masterful control over the dissolution of individual form, Mary's act of taking 'rash, inexplicable, irresponsible, plain crazy' liberties with the bodies of her fellow castaways is a response to a sequence of spectacular failures that set the scene for her reproductive experiment (p. 214). Chief among these are the Captain's

own ineptitudes, mostly navigational in nature, that result in the ship's stranding on Santa Rosalia. But rather than directing blame towards individuals, Trout situates the Captain's incompetence within the broader frame of the novel's satirical rubric, depicting humanity's survival—and multispecies evolution—as the chance result of a complex web of failure, incapacity, moral catastrophe and big-brained intervention. As one of the final actions precipitated by the big brain's presumption of mastery, Mary's experiment ironically forecloses the possibility of such an assumption in the future. 'As for human beings making a comeback', Vonnegut writes, 'of starting to use tools and build houses and play musical instruments and so on again: they would have to do it with their beaks this time' (p. 150).

In his satirical rendering of the human's evolution away from the illusion of mastery, Vonnegut outlines a reparative mode of misanthropy that locates its critique of the human within the field of affective complexity from which human identity emerges. Both Vonnegut and Butler's depictions of misanthropic futures exhibit aspects of both theoretical perspectives that this chapter has examined: paranoid queer negativity on the one hand, and a reparative affective approach on the other. Between these contexts, both authors provide different ways of conceptualising the themes of health and hopeful futures that permeate cultural discourses in the 1980s, depicting a misanthropy that is at once radically negative in its rejection of human structures of meaning, and reparative in its proposal of multispecies futures that gesture beyond the limited schemas of agency and systemic collapse that define discussions from the period. Vonnegut's rejection of mastery, in particular, offers a way of conceptualising a futurity that, in its satirical awareness of such a project's indebtedness to the very mastery it seeks to critique, provides a framework for thinking hopeful futures that begin, and continue to extend beyond, the human.

Conclusion

Fantasising Biosecurity

This thesis has argued that cold war culture is marked by a fantasy of the human that persists precisely through its own destabilisation. In doing so, it has identified five sites of scientific-cultural interface that prove central to this logic: the image of the virus; the material logics of toxicity and the geological imaginary; the linked operations of nuclear risk and extinction; the questions of behavioural control and interspecies communication; and the discourses of planetary health and misanthropy. The thesis has argued that between these locations, cold war criticism marks fertile ground for further investigation of human–animal relationships, as well as further work in examining the persistence of humanist ideals in contexts in which they seem to disappear. Disentangling humanism, as I set out in my introduction, has functioned as a methodological practice for reading across scientific and cultural contexts, identifying logics that work via multidirectional exchanges between both locations. Ultimately, the thesis identifies the need for scholarship across animal studies and posthumanism to pay greater attention to the instances in which inclusion—rather than exclusion—forms the basis for humanism's persistent dominance in scientific-cultural settings. Far from disavowing animality, 'the human'—in its dominant avatars in these settings—more often than not maintains a dominance and mastery precisely through its own sense of interconnection with nonhuman worlds.

In concluding the thesis, I want to offer some final remarks on how the disentangling of humanism from cold war culture marks a methodology that can be applied to the legacies of the cold war: a period in history that did not end in 1991, but rather continues in the logics of security, digitisation, control, and US imperialism that mark the contemporary world. As

Joseph Masco observes in tracing the development of cold war security into what is now deemed 'counterterrorism': 'the United States is a global hyperpower that increasingly produces the conditions for its own instability (politically, economically, environmentally) and then mobilises the resulting vulnerability of its citizens and systems to demand an even greater investment in security infrastructures'.[1] Such a logic extends from the beginnings of US nuclear strategy through to contemporary formations of the spectral 'terrorist', a figure of uncertainty constructed to expose the porosity of national boundaries that must then be sealed in the enactment of a violent fantasy of xenophobic national-bodily consistency. As the thesis has argued, such a logic engages a fantasy of the human's own species-identity, the security of national boundaries feeding an imaginary that maps on to the human's relationship with its nonhuman outside. In contemporary critical contexts surrounding biosecurity, thinkers are approaching the intersections of security and species with a view to understanding the complexities of exchange that takes place between both conceptual fields.

A primary example of such a movement can be found in the work of Frédéric Keck, whose book *Avian Reservoirs* traces the intersection between conservation, pandemic preparedness, and geopolitical tension in the specific context of influenza detection in Hong Kong, Taiwan, and Singapore. Examining 'how techniques to prepare for influenza pandemics have transformed our relations to birds', Keck's study differentiates between the microbiologists and birdwatchers who 'refuse to kill the birds they observe, or defer the moment of killing, because they need to catch something of their perspective on the environment', and the public health officials for whom 'bird diseases are signals that something has gone wrong in the world and requires human intervention'.[2] As he notes in a summary of

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[1] Joseph Masco, *The Theater of Operations: National Security Affect from the Cold War to the War on Terror* (Durham: Duke University Press, 2014), p. 2.
[2] Frédéric Keck, *Avian Reservoirs: Virus Hunters & Birdwatchers in Chinese Sentinel Posts* (Durham: Duke University Press, 2020), pp. 1-3.

his research, Keck sees the former model of engagement with avian 'reservoirs'—a name for the biological sites at which new viral threats can develop, break free, and be observed—as denoting an affirmative kind of biopolitics: 'the capacity to anticipate human diseases by the surveillance of microbial mutations among animals', Keck notes, can give rise to a positive relationship in which reservoirs function 'as places of conservation where humans pay attention to the role of biodiversity in protecting them from diseases'.[3] The linked conceptual fields of human–animal interconnection, risk and security converge in Keck's work towards a new way of conceptualising a politics of inclusion mediated by viral exchange. Pandemic preparedness here functions as a way of paying close attention to a multispecies present, protecting against pandemic threats and advocating for the lives of nonhuman animals in a simultaneous process.

In this regard, Keck's project appears to mark a transformation of the relational humanism that sees anthropocentric hierarchy maintained through the conceptual production of interconnectivity during the cold war period—functioning instead according to the kind of lateral attention to the present that my final chapter located in the fiction of Vonnegut and Butler. But contemporary pandemic preparedness does not function always to enable the kind of affirmative interspecies biopolitics that Keck envisions. Fantasies of the relational human persist in the broader contexts of the 'One Health' movement: an initiative that since 2000, as Lucinda Cole summarises, has emphasised 'the agency of nonhuman animals in human medicine', viewing issues such as 'emergent diseases, food insecurity, food safety, and climate change' from a perspective in which 'the health of humans is considered in relation to the health of other animals and the environment'.[4] But as Natalie Porter argues in her study *Viral Economies*, the 'ethos of preparedness' regarding viral threats found in One Health discourse

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[3] Frédéric Keck, 'Of virus and hunters, an interview with Frédéric Keck', *Ponto Urbe*, 2020 <https://journals.openedition.org/pontourbe/9982> [accessed 10 June 2021].
[4] Lucinda Cole, 'Plagues, Poisons, and Dead Rats: A Multispecies History', in *The Palgrave Handbook of Animals and Literature* ed. by Susan McHugh, Robert McKay and John Miller (Cham: Palgrave Macmillan, 2021), pp. 589-603 (p. 591).

conceals the fact that 'in some sites, and for some species, the pandemic has already arrived'.[5]

Porter's point is connected to her case study of the H_5N_1 virus and Vietnam—a location that, as 'a locus for multinational and nongovernmental interventions against the disease', is subject to technoscientific measures that fail to 'address the social, historical, and political-economic conditions that allow' viral transmission routes to form.[6] Porter's ethnographic study shows that the fantasy of interconnection espoused by One Health fails to account for the geographically specific modes of relationship between human and nonhuman that mediate viral vectors. Crucial to Porter's methodology is viewing poultry as 'life forms as well as livestock', with One Health approaches depending on a model of interconnection that confines birds to their status as commodities—'stock' that can be manipulated via technoscientific strategies that ignore the ways of life in which animals participate.[7]

The role of One Health in pandemic preparedness represents a fertile area of enquiry for developing the ideas examined in this thesis. The cold war logics that see interconnectivity mobilised as a concept for strategizing uncertainty extend through the methods deployed by contemporary governments and organisations seeking to better manage viral threat. In this regard, the relational humanisms that I have located at various sites of scientific-cultural intersection during the cold war maintain a bearing on the condition that Neel Ahuja describes as the 'government of species'—the process whereby 'some life forms (human or otherwise)' are optimised and expanded 'due to biocapital investments in national, racial, class, and sex factors'.[8] The form of power that Ahuja theorises—understood as 'a project in the management of affective relations'[9]—helps to characterise the process whereby, in contemporary settings,

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[5] Natalie Porter, *Viral Economies: Bird Flu Experiments in Vietnam* (Chicago: University of Chicago Press, 2019), p. 4.
[6] *Ibid*., pp. 10-14.
[7] *Ibid*., p. 14.
[8] Neel Ahuja, *Bioinsecurities: Disease Interventions, Empire, and the Government of Species* (Durham: Duke University Press, 2016), p. x.
[9] *Ibid*., p. xi.

nonhuman affect plays a central role in the production of relational subjectivities against the backdrop of global viral exchange. Such a logic is visible in reporting during the SARS-CoV-2 pandemic regarding zoo animals denied human interaction because of lockdown measures. In an article that highlights the 'loneliness' experienced by such animals, Sophie Williams reports that at Phoenix Zoo, 'primates have gone looking for missing visitors', while 'an aquarium in Japan has asked people to FaceTime its eels so that they remain comfortable around people'.[10] As Jonathon Turnbull, Adam Searle and William M. Adams have observed, such strategies of connection mark 'new modes of attunement to, and commodification of, nonhuman life through digital encounters' engendered by quarantine conditions.[11] In this case, the affect attributed to the zoo animals fosters a fantasy logic in which humans and zoo animals alike are constructed as being threatened by the termination of their contact. To follow the rationale implicit in the article, reinstating this particular form of interconnection—the physical human–animal relationship mediated by the institution of the zoo—functions to restore an image of the human that has been damaged by the limitations imposed by state biopolitics in the form of lockdown measures. This is a relationship of supposed mutual benefit between human and animal, but one that in reality conceals a commitment to a fantasy of the human rendered 'proper' by a relationality that also fosters its own biopolitical logic in advocating for the termination of measures that protect against viral threat. Nonhuman affect here functions to secure a particular form of relational subjectivity constituted between human, animal, and viral risk—with the mediated human–animal relationship here representing the element of security. Of course, such a schema leaves unthought questions of biopolitical confinement exerted against the animals themselves by the institution of the zoo.

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[10] Sophie Williams, 'Coronavirus: Animals in zoos "lonely" without visitors', *BBC News*, 20 May 2020 <https://www.bbc.co.uk/news/world-52493750> [accessed 22 June 2021]. My thanks go to Robert McKay for drawing my attention to this particular example of relational humanist speciesism.
[11] Jonathon Turnbull, Adam Searle, and William M. Adams, 'Quarantine encounters with digital animals: More-than-human geographies of lockdown life', *Journal of Environmental Media*, 1 (2020), 6.1-6.10 (p. 6.8).

In demonstrating the development of relational humanism throughout the cold war period, I hope to have opened avenues of interest in tracing such a fantasy through the contemporary contexts in which it persists. The case of nonhuman affect, lockdown, and zoos is but one example of a relational subjectivity among the many that are formed concurrently across the broader contexts of bio- and national security, One Health discourses, and digital ecologies. But equally, the thesis has demonstrated that the cultures of the cold war period deserve further examination for their harbouring of ideas and logics regarding notions of interconnectivity and fantasies of the human. Contemporary discourses surrounding the Anthropocene, and its various other avatars, look to the cold war as a historical moment in the production of the human's planetary consciousness; a decisive cut in time made by radionuclides that signals the universal culpability, and shared species identity, of the anthropos. But such perspectives risk obscuring the sense in which human identity develops through the latter half of the twentieth century in tandem with its own molecularisation, destabilisation, and distribution. Equally, thus, the planetary holisms of the Anthropocene obscure the sense in which the fantasy of the human mobilises forms of power and domination that are equally distributed, flexible, and variegated—inviting nonhuman others into its field of relation as a strategy for further entrenching its own operations of mastery. More work needs to be done at the intersection between animal studies, posthumanism, and cold war criticism to further understand how the scientific cultures of the cold war period mediate such a politics of inclusion. Tracing these logics through the historical and cultural avenues of their development will offer better understanding of how a discursive, shifting discourse of species structures contemporary fantasies, and planetary horizons, of biosecurity.

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