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The Descent of Man:
Re-envisionings of "The Fall" in Post-Darwinian Novels

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ABSTRACT

In *On the Origin of Species*, Darwin presented a revised creation narrative which contradicted and superseded the Judeo-Christian narrative in Genesis. His second significant text, *The Descent of Man*, reflects in its title the ideological and philosophical impact his ideas have had in reversing the anthropocentric assumptions of humanism. This research examines how Darwinian theories have been mediated by science writers and incorporated by literary critics and authors, with emphasis on the representation of Edenic archetypes and the renegotiation of hierarchical relationships between animal, human, and posthuman forms. The thesis is divided into two parts. Part One explores critical responses to Darwinism. In popular science writing, a renewed emphasis has emerged on the dominance of human nature over nurture, and human activities (including art and culture) have been explained in terms of their adaptive functions. In literary criticism, the new school of Literary Darwinism has begun reading texts as expressions of biological drives. Part Two uses a modified form of Literary Darwinism to analyse pairs of literary texts which negotiate the anxieties raised by the implications of Darwinian theory. *The Island of Doctor Moreau* (1896) and *Brave New World* (1932) express the fear that mad scientists might exploit their knowledge of evolutionary science to create new, genetically altered species whose freedoms are curtailed by their creators. As Darwinian evolution gained credence, later novels turned away from fear of the scientist and towards fear of the science. Works such as *Lord of the Flies* (1954) and *Galapagos* (1985) explore the notion of human as beast, depicting biological and/or societal 'devolution' scenarios in which humanistic higher reasoning loses ground to animalism. More recent novels have combined the fears of mad scientists and devolved humanity to imagine future societies in which the genetic alteration of humans is controlled and politicised. In *Oryx and Crake* (2003), one dangerous and errant mind genetically extinguishes the human race and creates, in its place, a race of naive and unsophisticated posthumans. And in *Genesis* (2006), the human race is merely something to be studied by a post-apocalyptic chimp-android hybrid species which is physically devolved, but sufficiently advanced intellectually to have conquered humanity. In all of these novels, the depictions of alternative and future societies run alongside re-envisionings of the 'fall of man'. In their Darwinian updates of the Fall, authors imagine evolutionary biology to be the Tree of Knowledge from which their Adams and Eves eat. Their new societies thus become alternate (inverted) versions of Eden; however rather than the lost paradise of Genesis, these Darwinian Edens are prisons which leave residents trapped and stripped of their humanity.

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INTRODUCTION

Darwinism was widely interpreted as a major blow both to religion and to the humanities. As Flanagan notes, Darwin's theories amounted to no less than the deconstruction of the anthropocentric hierarchy: "when Darwinism explains that we are animals, descended from earlier species, the picture that says we are not animals, that we sit high on the Great Chain of Being, beneath God and angels but above animals, takes a hit." (Flanagan 36) As lay science writers negotiated and explored the implications of the Darwinian revision of human origins, they increasingly cast *Homo sapiens* as a species to be studied, like any other – a 'naked ape' whose cultural activities must be explained in terms of adaptive function. In the wake of this paradigm shift, many theorists throughout the humanities recognised a need to reaffirm the relevance of their fields. Thus art and culture have been repositioned as biological necessities, and Literary Darwinism has been developed to verify literary texts as documentary artefacts of evolved human behaviours. However, while the humanities have attempted to re-establish their own relevance, literary texts have inscribed wider societal fears associated with evolutionary biology. These fears stem in large part from the revision of the anthropocentric hierarchy; however they also equate the very *knowledge* of human origins to a kind of Biblical-hubristic transgression.

This thesis examines how, in light of the decline of humanism, literary texts have connected Darwinism to notions of a Biblical 'fall of man.' Part One explores how Darwinian theory became such a potent source for literary authors. The metaphorical value of natural selection is discussed, and a brief history is given of the lay science texts which teased out the implications of Darwinian theory for the humanities. The application of Darwinism in literary criticism is also discussed, and the limitations of Literary Darwinism are sketched out. In Part Two, a modified Literary Darwinist approach is applied to three pairs of novels. *The Island of Doctor Moreau* and *Brave New World* are read as 'mad scientist' narratives in which over-empowered scientists bring about a diminished human society by tampering with human biology. *Lord of the Flies* and *Galapagos* are examined as expressions of the fear of reversed evolution and explorations the innate animalism of the human beast.

Finally, *Oryx and Crake* and *Genesis* are read as combinations of the mad scientist and devolution fears which use both as springboards to speculate about a future posthuman age. For all six novels, particular attention is paid to the employment of Biblical rhetoric and the use of the Judeo-Christian creation narrative as an allegorical framework by which to imply that the Biblical 'Fall of Man' and the Darwinian 'Descent of Man' are inextricably linked.

PART ONE: DARWINISM AND ITS APPLICATIONS IN THE HUMANITIES

CHAPTER ONE

DARWINIAN THEORY, POETICS, AND RELIGIOUS REACTION

DARWINIAN POETICS

Critics have often noted the incongruities between Darwin's writings and the norms of scientific writings in the 19th Century.¹ At a time when scientists were attaining a new status of professionalism, their writings were by convention highly technical and specialised; the ideas contained within were only conveyed to the lay reader by way of mediating popular accounts written (usually) by journalists (Lightman 188). *On the Origin of Species*, by contrast, was written in plain language to accommodate as many readers as possible (Beer "Introduction" viii).² However, beyond merely eschewing dense technical details, Darwin adopted a language – not just in *On the Origin of Species*, his first truly controversial work, but later in *The Descent of Man* also – which was heavily anecdotal and metaphorical. It is perhaps this literary style which allowed his key works to be read, understood, and alluded to by writers in the 150 years since the publication of *On the Origin of Species*. Indeed, Leatherdale claims that “Darwin's ubiquitous use of metaphor in the terminology of his theories... is one of the reasons for the unusually wide and powerful effect of Darwin on general ideas and literature” (4). To hypothesise about what prompted Darwin to write in such an unscientific style is inevitably to speculate. It might be theorised that a more literary writing style is necessary to provide context and aid interpretation in scientific texts that are revolutionary in nature.³ Indeed, Beer argues that Darwin's studies in grammar, etymology, history and language provided him with a “thought-model” (“Introduction” xvii) which is evident in his choices of metaphors within *On the Origin of Species*. Supporting this theory, parallels have been identified between Darwin's writing style and that of the pioneer

chemist Lavoisier. Anderson notes that, as an agent of paradigmatic shift in his field, Lavoisier's "major innovation is the construction of a different epistemology for his science, and any specific chemical 'discoveries' must first be understood in this context in order for them to have any meaning" (747). Upheaval in the style of scientific discourse might perhaps be understood then as necessary to texts which prompt a revolution in thought in their field.⁴

However, none of Darwin's writings were entirely revolutionary. Evolution as a concept existed as early as the 6th Century BCE, when several Greek thinkers wrote of their belief that humans descended from fish (Loenen 217), and the philosopher Anaximander claimed that all life was formed abiogenetically in the ocean (Loenen 223). In the century leading up to the publication of *On the Origin of Species*, interest in evolution intensified. The French philosopher Diderot expressed ideas regarding the survival of species according to suitability in 1749 (Dennett 33), and Darwin's own grandfather Erasmus wrote on the improvement of species by evolution in 1794, more than sixty years before his grandson would publish (Beer "Introduction" ix). The publication of Lamarck's theories of evolution in the first decade of the 19th Century provided Darwin with a blueprint for his model of evolutionary change as a result, in part, of environmental factors (Oldroyd 29).⁵ By the mid 19th Century, in the context of Victorian agnosticism, the concept of evolution had become sufficiently accepted for thinkers such as Spencer to regard it as *a replacement for* Biblical creationism (Low-Beer 7). In fact, Darwin's reluctantly rushed publication of *On the Origin of Species* only occurred when it did because Alfred Russel Wallace was about to publish similar theories on evolution by natural selection (Beer "Introduction" xv).

Thus, when Darwin published, evolution *as a principle* was neither new nor particularly controversial. What made *On the Origin of Species* so notoriously divisive was not its core ideas (which were not wholly unprecedented) but rather Darwin's departure from the teleological approach taken by his predecessors (Kuhn 172). Dawkins examines the implications of the non-teleological approach in *The Blind Watchmaker*, which discusses how devastating the idea of evolution-as-chance was to the theological community. Taking

his title from Paley's *Natural Theology* (1802), Dawkins revisits the classic theological argument of the complexity of nature as evidence of design. In Paley's version, if you found a watch you would assume a watchmaker; therefore, upon finding complex objects in nature, you must assume a designer (*The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe without Design* 4). Instead, Dawkins argues, natural selection creates only the *illusion* of design because "each successive change in the gradual evolutionary process was simple enough, *relative to its predecessor*, to have arisen by chance." (*The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe without Design* 43) By building randomness into his theory of natural selection, Darwin departed from the Lamarckian view of evolution, which encompassed "a strong belief in progress up... the ladder of life" (Dawkins *The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe without Design* 289), and replaced it with the 'blind watchmaker' of natural selection, which "does not see ahead, does not plan consequences, has no purpose in view." (Dawkins *The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe without Design* 21). Not only does this sense of purposelessness undermine the designed-universe arguments of Paley and others, it also offends those who, for reasons not necessarily religious, object to the element of chance as implying pointlessness in the human experience (Dawkins *The Blind Watchmaker: Why the Evidence of Evolution Reveals a Universe without Design* 250).

Perhaps anticipating the controversy that would follow publication, Darwin adopted a tone in *On the Origin of Species* which was far less formal and more conversational than other scientific texts of the Victorian era. Charles' son Francis Darwin wrote of *On the Origin of Species*, that "the reader feels like a friend who is being talked to by a courteous gentleman, not like a pupil being lectured by a professor" (cited in Campbell 4). The literary community too has noticed the extent to which Darwin borrowed from their toolbox: Ian McEwan remarks that "Darwin, though hardly the greatest prose writer of the nineteenth century, was intensely communicative, affectionate, intimate, and honest. He wrote many letters and filled many notebooks" (7). In addition to a decidedly literary tone, Darwin used personification, metaphors and similes to distance himself from strict scientific positivism. His anthropomorphic depiction of species' behaviour acted as a kind of shorthand to allow lay readers to comprehend foreign species in terms of their own motivations and habits:

I could give many facts, showing how anxious bees are to save time; for instance, their habit of cutting holes and sucking the nectar at the bases of certain flowers, which they can, with a very little more trouble, enter by the mouth. (*On the Origin of Species* 73)

The scientific basis for Darwin's assumption that the bees were, in fact, acting to save time is not given; however the lay readers' comprehension is simplified by the assertion. Darwin's anthropomorphic bent is not limited to his most famous work. In *The Descent of Man*, too, he describes animals in similar terms:

Mr Hewitt has described the habits of some ducks... at the approach of a strange dog or cat, [they] would rush headlong into the water, and exhaust themselves in their attempts to escape; but they knew Mr Hewitt's own dogs and cats so well, that they would lie down and bask in the sun close to them. (*The Descent of Man* 463)

The description of the ducks as 'basking', as well as the anecdotal nature of the passage, would seem to indicate literary prose rather than scientific discourse. Similarly, again in *On the Origin of Species*, animal instincts⁶ were likened to human habit: "as in repeating a well-known song, so in instincts, one action follows another by a sort of rhythm" (*On the Origin of Species* 156). This is not the only instance of simile in Darwin's writing; in fact a claim that apes "use their arms like crutches" (*The Descent of Man* 72) is entirely typical of the tradition of anthropomorphic simile intrinsic to his writing style.

However Darwin was writing for the expert *as well as* the lay reader, and his informal mode of discourse was cloaked in inductive methodology which allowed the former group to accept his claims without ceding to reservations over his relaxed tone:

Darwin was able to make his rhetoric seem unimportant or at best incidental to his scientific point and to persuade his professional peers because his narrative was governed by the conventions of Baconian induction and quasi-positivist standards of proof. Examination of the discrepancies between Darwin's public and private attitudes towards his method, language, and achievement [reveals] the production of the Mark Anthony effect, in which rhetoric is freely employed and effectively masked. (Campbell 6)

Thus, in his choice of a prose style which combined scientific legitimacy with literary appeal, Darwin achieved both the respect and the readership necessary to place his ideas within the cultural bank from which writers of literary fiction have drawn.

RELIGIOUS REACTION AND THEOLOGICAL LANGUAGE IN THE SECOND EDITION OF *SPECIES*

The tensions between Darwinian theory and theology are well-known. The process of evolution by natural selection as hypothesised by Darwin directly contradicts the account of God's creation of Adam in Genesis: "And the LORD God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul." (2:7) As much as Darwin may be cast as the enemy of the creationist account, it was a position he did not choose for himself. *On the Origin of Species* drew respectfully upon theological works, citing two in the first edition and three in the second (Campbell 4). Even more significantly, Darwin was cautious to exclude humans from his discussion of the origins of life, and restricted his analysis to other species exclusively.⁷ However this was not enough to avoid disparagement from theologians, many of whom made the very move of extrapolation to humans that Darwin had avoided. An advance review in the *Athenaeum* complained that "man, in [Darwin's] view, was born yesterday – he will perish tomorrow. In place of being immortal, we are only temporary, and, as it were, incidental... Why construct another elaborate theory to exclude Deity from renewed acts of creation?" (cited in Beer "Postscript" xxvii-xxviii). Another review – like that in the *Athenaeum*, written by a theologian but published anonymously – lamented that "man's derived supremacy over the earth; man's power of articulate speech; man's gift of reason; man's free-will and responsibility... all are equally and utterly irreconcilable with the degrading notion of the brute origin of him who was created in the image of God" (cited in Dennett 62).⁸ However as Oldroyd has argued, theologians had encountered scientific challenges to Biblical literalism before, with much less controversy than accompanied the Darwinian challenge (245). Scholars have interpreted the central anxiety underpinning the religious reaction against *On the Origin of Species* as either stemming from its denial of teleological design (Oldroyd 247) or from its decentring of human beings amidst the natural order (Beer "Postscript" xxvii).

However, many of Darwin's contemporaries in the scientific community did not accept the non-teleological aspects of his argument. This was largely due to the influence of Spencer,

whose own conception of teleological evolution involved notions of progress and perfectibility,⁹ and who advocated Lamarckian evolution over Darwinism (Bowler 65). Lamarck had pioneered the (now disproved) theory that acquired characteristics – for example, strength from exercise – could be passed down through generations to result in evolutionary change. Spencer championed the theory, in part because it aided his own views on the importance of education (Low-Beer 10). If, under Spencer’s guidance, the scientific community held on to some vestiges of teleological design in their accepted view of evolution, then Darwin’s non-teleological revision – while provocative to Biblical literalists – would not have represented a widespread threat. It may be, then, the decentring of humans which contributed more to theologians’ rejection of Darwin’s theory. The centrality of man is a fundamental concept in Genesis, in which God is described as giving the first man and woman “dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth” (1:28). However, under Darwinism, humans are a species descended, like all other species, from common stock (*On the Origin of Species* 356). This revelation implies that, in the language of Freud, “*the ego is not master in its own house.*” (cited in Beer *Darwin's Plots: Evolutionary Narrative in Darwin, George Eliot and Nineteenth-Century Fiction* 13; italics in original) Thus the dismantlement of the anthropocentric hierarchy threatened the Judeo-Christian creationism which was so heavily based upon the notion of human supremacy in the natural world.

Responding to theologians objections, Darwin released a new edition of *On the Origin of Species* a few weeks after the original was published. This second edition yielded somewhat to theologians’ criticisms. In this second edition, Darwin tweaked his language to create compatibilities between his argument and the account of creationism in Genesis. For example, writing on the facial features of insects, he added the previously absent clause that natural selection was “acting on some originally created form” (*On the Origin of Species* 320). This very carefully worded amendment does not go so far as to argue for a Creator, but, critically, does not deny the possibility of one’s existence. As a further gesture of goodwill towards theologians, Darwin provided funding for fellow naturalist Asa Gray to distribute his religious interpretation of evolution via pamphlets, despite privately disagreeing with the contents (Campbell 5).

However, the relationship between Darwin's texts and Genesis was not exclusively one of tension. Darwin borrowed the image of the 'Tree of Life' as a metaphor in his concluding comments on natural selection:

From the first growth of the tree, many a limb and branch have decayed and dropped off; and these lost branches of various sizes may represent those whole orders, families, and genera which have now no living representatives... As buds give rise by growth to fresh buds, and these, if vigorous, branch out and overtop on all sides many a feeble branch, so by generation I believe it has been with the great Tree of Life, which fills with its dead and broken branches the crust of the earth, and covers the surface with its ever branching and beautiful ramifications. (*On Natural Selection* 100)

Beer suggests that this choice of metaphor may have been intended to make the 'Tree of Life' and the 'Tree of Knowledge' seem like one united entity within his theoretical paradigm, whereas they had been separate in Genesis (*Darwin's Plots: Evolutionary Narrative in Darwin, George Eliot and Nineteenth-Century Fiction* 37). However many of the authors in this study have, like Darwin, recognised the "mythic potentiality" (Beer *Darwin's Plots: Evolutionary Narrative in Darwin, George Eliot and Nineteenth-Century Fiction* 92) of the tree metaphor, and have twisted his intention by recasting his theories as a 'Tree of Knowledge' from which humanity hubristically eats.

CHAPTER TWO

THE HUMANITIES UNDER NEO-DARWINISM

To understand how Darwinian ideas have been incorporated into the work of authors and literary critics, one must first comprehend the implications of evolutionary biology for the humanities in general. The encroachment of Darwin's ideas into humanities departments was slow; perhaps because, working before the discovery of the gene, "Darwin had no proper *unit* of heredity, and so his account of the process of natural selection was plagued with entirely reasonable doubts about whether it would work." (Dennett 20) However the 'Modern Synthesis' in the 1920s united Darwinism with the new theory of population genetics, creating a revised version of evolutionary biology now known as 'Neo-Darwinism' (E. O. Wilson *Sociobiology: The New Synthesis* 63). As science writers explored the innateness of genetic traits and reinvigorated the idea of a prescribed, animalistic human nature, the doctrine of 'tabula rasa' began to lose credence. There emerged a need for humanities scholars "to view all minds, both real and fictional, as 'Darwin machines' (of variable sophistication), engaged in the project of negotiating and making sense of their physical and social worlds." (Storey 103) In order to integrate human nature and culture, and thus preserve their relevance in a post-Darwinian world, humanities scholars have created theories which validate culture, art and literature as biological products. Anthropological and sociological theory, in particular, have been revolutionised by a neo-Darwinian re-evaluation of the role of human nature in forming human culture (rather than vice versa); this in turn has prompted new hypotheses on the origins of art (including literature) as an adaptive function. However, the publication of *On the Origin of Species* did not prompt an immediate flurry of debate or paradigmatic change in the humanities. Most recently, evolutionary biology has been adopted by critics of postmodernism and social constructivism as a mechanism by which to reinstate a more logical positivist approach in the humanities. Previously fashionable relativist stances have been challenged by the notion of the human as a biological – rather than a social – animal; and of art as an evolutionary necessity rather than a product of civilization and refinement.

THE RETURN OF HUMAN NATURE AND THE DECLINE OF THE TABULA RASA THESIS

“[Natural selection] explains our deepest strivings: why having a thankless child is sharper than a serpent’s tooth, why it is a truth universally acknowledged that a single man in possession of a good fortune must be in want of a wife, why we do not go gentle into that good night but rage, rage against the dying of the light.”

(Pinker *The Blank Slate: The Modern Denial of Human Nature* 52)

The ‘tabula rasa’ (or ‘blank slate’) thesis underpinned much social theory in the late nineteenth and early twentieth centuries. The idea that human beings are ‘written on’ or formed by cultural factors had roots in Freudian theory and provided a comfortable explanation for differences between races or socio-economic classes, particularly following the eugenics of Nazi Germany. However, beginning in the 1960s, a spate of publications by popular science writers invigorated the argument for humans as biological creatures. Desmond Morris began the trend in 1967 with *The Naked Ape*, a landmark survey of human practices written as a zoological study. Morris justified his approach by casting the human individual as the titular ape:

The naked ape is an animal. He is therefore fair game for my pen and I refuse to avoid him any longer simply because some of his behaviour patterns are rather complex and impressive. My excuse is that, in becoming so erudite, *Homo sapiens* has remained a naked ape nonetheless; in acquiring lofty new motives, he has lost none of the earthy old ones. (9)

The tradition in anthropology to conduct surveys of marginal or atypical human cultural practices needed to be contextualised, he argued, by also investigating “the common behaviour patterns that are shared by all the ordinary, successful members of the major cultures” (10). Morris’ own investigation begins from the premise that, assuming the accuracy of the known account of human evolution, “we have arisen essentially as primate predators.” (22)¹⁰ From this standpoint, he explains modern eating habits in terms of evolutionary drives to hunt and prepare food (33); monogamous pairing habits in terms of practicality for hunting and social harmony among men (57); childhood play in terms of future sexual and parental success (123); and friendly chatter as a kind of social ‘occupation’ similar to grooming habits amongst chimps (177). In treating humans as animals, Morris admits that “I have deliberately insulted us... because we are so powerful and so successful when compared with other animals, we find the contemplation of our humble origins

somehow offensive, so that I do not expect to be thanked for what I have done.” (210) However, despite Morris’ doubts, the human-as-animal approach was to be revived in several influential books in the 1970s.

E. O. Wilson’s landmark 1975 study entitled *Sociobiology: The New Synthesis* built on Morris’ contribution by naming¹¹ and framing a new field devoted to the study of animal social behaviours in terms of genetic and evolutionary explanations. Wilson’s discussions cover similar ground to Morris; for example, he explains play in kittens and komodo dragons as practice for social domination and foraging, respectively (*Sociobiology: The New Synthesis* 165-6); and monogamous pairing as a practical strategy for resource protection (*Sociobiology: The New Synthesis* 330). However, where Morris adopted a deliberately (and somewhat self-consciously) controversial strategy of referring to human behaviour in biological terms, Wilson declined to address the politics of including humans in a zoological text. Instead, his chapter on humans is introduced with minimal commentary:

Let us now consider man in the free spirit of natural history, as though we were zoologists from another planet completing a catalog of social species on Earth. In this macroscopic view the humanities and social sciences shrink to specialised branches of biology; history, biography, and fiction are the research protocols of human ethology; and anthropology and sociology together constitute the socio-biology of a single primate species. (*Sociobiology: The New Synthesis* 547)

In Wilson’s view, sociobiology is a search “for the human biogram” and should reveal “to what extent the biogram represents an adaptation to modern cultural life and to what extent it is a phylogenetic vestige.” (*Sociobiology: The New Synthesis* 548) Thus, even in 1975, sociobiology was described as a contribution to nature / nurture dialogues, attempting to trace aspects of human behaviour as *either* biological *or* cultural. Wilson displayed a prescience regarding the philosophical ramifications of his new field, noting that “when we have progressed enough to explain ourselves in these mechanistic terms... the result might be hard to accept.” (*Sociobiology: The New Synthesis* 575) Even before such progression, the demotion of fiction to the status of ‘research protocol’ would appear to devalue the cultural.

One year on from *Sociobiology*, Richard Dawkins relocated the ‘mechanisation’ of human social behaviour at the genetic level. *The Selfish Gene*, published in 1976, prompted a change in how natural selection was understood. Traditional interpretations of Darwinian theory held that the unit of survival was either the group (species) or the individual. However Dawkins based his theories of selfishness and altruism on the interests of the *gene* as the survival unit (*The Selfish Gene* 11).¹² In his account, primitive replicator molecules likely built chemical or protein-based ‘survival machines’ around themselves to protect their stores of the molecules necessary for replication. These ‘survival machines’ would have become more complex and evolved into what we now call individuals (*The Selfish Gene* 18-19). Thus the individual exists as a shell protecting – and acting on the programming information provided by (*The Selfish Gene* 52) – genes. Though not the central thesis of the book,¹³ Dawkins’ suggestion influenced the way evolution is understood as an explanatory narrative.

The purposelessness of evolution is, of course, already a feature of classic Darwinism, but it emerges all the more starkly when we abandon the organism-level perspective: we cannot help but project meaning onto the struggle of an antelope to escape the clutches of a lion, or the lion to feed its offspring, but to think of both of these creatures as puppets merely carrying out the imperatives of their genes powerfully crystallises the repulsive strangeness of a world without conscious design. (Slingerland 253)

Perhaps recognising how unsatisfactory gene-selection would be as an explanatory narrative, Dawkins’ chapter applying his ideas to humans advises that “we must begin by throwing out the gene as the sole basis of our ideas on evolution... the gene will enter my thesis as an analogy, nothing more.” (*The Selfish Gene* 191) Working under the reasoning that human culture excuses our species from being considered mere ‘survival machines’ (*The Selfish Gene* 188), Dawkins coined the term ‘meme’ to denote “a unit of cultural transmission” (*The Selfish Gene* 192) which makes the meme-maker suprabiological:

As each generation passes, the contribution of your genes is halved... We should not seek immortality in reproduction. But if you contribute to the world’s culture, if you have a good idea, compose a tune, invent a sparking plug, write a poem, it may live on, intact, long after your genes have dissolved in the common pool. (*The Selfish Gene* 199)

This anti-reductionist sentiment appears to soften the almost fatalistic tone endemic to the other chapters. Dawkins’ blithe suggestion that “we have the power to defy the selfish genes of our birth” (*The Selfish Gene* 200) complicates the book’s legacy of determinism by implying that humans – who are programmed by genes – are also somehow ‘higher’ than our coding.¹⁴ The misty-eyed hypocrisy inherent in this approach – that humans are

biological but also mystically / artistically better – is not widely echoed in the literary texts in this study,¹⁵ and would appear to be, perhaps surprisingly, a feature unique to apologetic biologists.

In the 1990s and 2000s, the spiritual and philosophical effects of neo-Darwinism (of which Dawkins was so conscious) have been pushed to the forefront. Philosopher Daniel Dennett, exploring the implications of the Darwinian revival in his 1995 book *Darwin's Dangerous Idea*, agrees with Dawkins' idea of the suprabiological meme-maker, comparing a meme's ability to make us act against our genetic interests to a virus' ability to manipulate its host (471). In Dennett's view, natural selection is a "universal acid: it eats through just about every traditional concept...dissolving the illusion of our own authorship, our own divine spark of creativity and understanding." (63) Despite the connotations of destruction inherent in his choice of metaphor, Dennett envisages the revolution in thought prompted by Darwin's discoveries as a progression from a 'skyhook' to 'crane' understanding of the origins of life. Religious explanations requiring faith act as 'skyhooks' because, like the *deus ex machina* in Greek drama, they "crank down a god onto the scene, like Superman, to save the situation supernaturally." (74) Natural selection, on the other hand, is a 'crane' explanation, detailing how complex species were constructed in small, incremental steps from "a firm base of existing ground." (75) Though cranes "have the decided advantage of being real" (75), they present a philosophical dilemma because they suggest that "our meanings are just as dependent on function as the meanings of the states of artifacts, and hence just as derivative and potentially indeterminate" (411). While the Nietzschean reaction to such mechanization of meaning would be to conclude (somewhat bitterly) that "no meaning was *given* to the universe from on high" (Dennett 182; italics in original), Dennett sees in his conception of post-Darwinian meaning "a vision in which *importance itself*, like everything else that we treasure, gradually evolves from nothingness." (184; italics in original) This relocation of meaning *in* the evolutionary process, rather than *in spite* of it, seems a much more plausible way to counter charges of reductionism in determinist biology.

Steven Pinker's 2002 opus *The Blank Slate* again endorses the renaissance of human nature, and again attempts to show "why new ideas from the sciences of human nature do not undermine humane values." (*The Blank Slate: The Modern Denial of Human Nature* 193) Though he laments the insistence of social scientists and psychologists upon viewing the human subject as a cultural, malleable ball of 'Silly Putty' (*The Blank Slate: The Modern Denial of Human Nature* 6; 20; 25), Pinker's arguments for the human as biological creature steer away from determinism¹⁶ and towards a tone of universalism. Pinker's human is subject to "universal mental mechanisms" (*The Blank Slate: The Modern Denial of Human Nature* 37) that generate basically similar types of customs and behaviours across cultures (*The Blank Slate: The Modern Denial of Human Nature* 39). However, aware that such universalist claims could elicit ideological fears, Pinker identifies and rebuts key anxieties that commonly arise during debates on genetic determinism. He argues that evolutionary biology cannot 'excuse' the darker side of human nature because identifying the adaptationist origins of socially unacceptable behaviours (in his example, rape) is not tantamount to justifying them (*The Blank Slate: The Modern Denial of Human Nature* 162). Furthermore, because genes are probabilistic (*The Blank Slate: The Modern Denial of Human Nature* 177), to blame behaviour on biology is "a confusion of *explanation* with *exculpation*." (*The Blank Slate: The Modern Denial of Human Nature* 179; italics in original) A similar confusion exists when biological determinism is cited as a cause of nihilism or depression: "people who are depressed at the thought that all our motives are selfish... have mixed up ultimate causation (why something evolved by natural selection) with proximate causation (how the entity works here and now)." (*The Blank Slate: The Modern Denial of Human Nature* 191) Pinker's rejection of the tabula rasa is thus profoundly optimistic: "our understanding of ourselves and our cultures can only be enriched by the discovery that our minds are composed of intricate neural circuits for thinking, feeling, and learning rather than blank slates, amorphous blobs, or inscrutable ghosts." (*The Blank Slate: The Modern Denial of Human Nature* 72)

The effect of such texts on attitudes within the humanities, though significant, has been slow. Many mediating writers have argued for what is variously called "consilience" (Gottschall *Literature, Science, and a New Humanities* 19; E. O. Wilson *Consilience* 10) or

“vertical integration” (Slingerland 9) between the humanities and evolutionary biology. Typically, the integrative model envisioned positions biology as a base or trunk from which a newly informed humanities could sprout (Pinker *The Blank Slate: The Modern Denial of Human Nature* 31; Gottschall *Literature, Science, and a New Humanities* 20). However, integrationists have encountered resistance and progress has been slow. Indeed Dawkins laments on the very first page of *The Selfish Gene* that “the subjects known as ‘humanities’ are still taught almost as if Darwin had never lived.” There are several reasons for the enduring chasm between humanities and evolutionary biology. As Slingerland argues, even now most educated people who otherwise accept the tenets of Darwinism are reluctant to apply them to the human mind: “evolutionary or natural scientific models of human behaviour and cognition seem profoundly alien and implausible to most people, and this contributes significantly to our core resistance to a vertically integrated approach to the humanities.” (251) In addition to this general cognitive inability to grasp the enormity of the evolutionary process, Barash and Barash note that part of the resistance may stem from a fear of what Julian Huxley termed ‘nothing butism’ – the idea that if we are animals, we are nothing but animals – which may threaten the authority of humanities research (250). Further obstacles to consilience are found within the recent traditions of humanities scholarship which have denied the validity of scientific inquiry. According to Jackson, a lingering poststructuralist scepticism of empirical knowledge has kept Darwinian theories from making much headway, particularly in literary studies (323).¹⁷ Attempting to overcome this bias, Dissanayake grounds her arguments in “a down-to-earth species-centered orientation that is foreign to the Parisian literati and other mapmakers of the poststructuralist universe.” (194) However even within a species-centric approach, there often remains a fear, rooted in the Social Darwinism of the past, that biological analyses could be used to further sexist or racist ideological agenda (Easterlin 241). Social constructivism, too, has diminished the role of human nature; Gottschall complains that “literary scholars in the liberationist era have agreed that the human animal is almost entirely dominated and defined by nurture.” (*Literature, Science, and a New Humanities* 18) Tooby and Cosmides make a similar complaint of the social sciences in general, arguing that the ‘Standard Social Science Model’, recognising cultural differences, “concludes that “human nature” (the evolved structure of the human mind) cannot be the cause of the mental organization of adult humans, their social systems, their culture, historical change,

and so on.” (25-26) However, those humanities scholars who are keen to find alternatives to the regime of poststructuralism and social constructivism that has dominated for the past few decades have taken advantage of the influence of these popular science texts to introduce synergies between evolutionary biology and humanities.¹⁸ In particular, theories of art and literature have emerged which place them in an evolutionary context, and in doing so, imbue them with a renewed validity as ‘selected’ human traits.

ART AS ADAPTATION

“Literature and the other arts do indeed have an adaptive function... understanding this adaptive function is a prerequisite to understanding our specifically *human* nature.”

(Carroll "Human Nature and Literary Meaning: A Theoretical Model Illustrated with a Critique of *Pride and Prejudice*" 78; italics in original)

“‘So, that’s what art is, for the artist,’ said Crake... ‘A stab at getting laid.’”

(Atwood *Oryx and Crake* 168)

It is estimated that the average Briton spends around 6% of their waking hours consuming dramatic performances (Nettle 56).¹⁹ If we are to adopt the Darwinian maxim that a species will adapt to act in a way that ensures its own survival, then – even if Britons are more-than-average inclined to consume narratives – that statistic still strongly implies that stories are in some way advantageous to survival. Indeed, given that the 6% statistic applies to only one form of narrative (dramatic performance), stories may be even more innate than it would, at first glance, suggest. A very recent (approximately 15-year-old) school of thought has sought to explain this innateness by endowing artistic endeavours with the status of either evolutionary adaptations in their own right, or of by-products of other adaptations.²⁰

Though the concept of artistic expression as adaptive function is relatively new, its roots lie in a mid-20th Century visual art theory which embraced psychology and neuroscience in an attempt to position artistic expression and appreciation as integral components of human cognition. Rudolf Arnheim led this trend with his 1966 collection of essays entitled *Towards a Psychology of Art*. Though, at this early stage, the practice of art production was not explicitly labelled as an adaptive function in the Darwinian sense, it was theorised that “art

is not the hobby of making reproductions, a game quite independent of other aims and needs, but is rather the expression of an attitude toward life and an indispensable tool in dealing with the tasks of life.” (41) Support for this viewpoint is found in Gestalt psychology, which preaches that:

Vision is not an isolated mechanism intent on recording stimuli for the recording’s sake. The senses developed rather in the course of evolution as a means of coping with the physical world... According to this view, animals or young children are able to react to, say, triangular shape regardless of variation of size, proportion, or orientation” (144).

Visual art which is based around geometric shapes (what Arnheim terms ‘primitive art’) may therefore have developed in order to “make the sensory environment understandable by presenting it as well-organised form.” (42) Arnheim concludes his argument by comparing the relationship between art and vision to that between colourfully flowering plants and visiting pollinating insects; human art and colour – like the flowers – function as signals, and aid in “coping with life in the physical world.” (332) Thus, though the argument is not specifically couched in the language of Darwinism, it does promote artistic activities as “biologically essential” (42), creating a preliminary aesthetic theory which would be built upon in the 1990s and 2000s.

Ellen Dissanayake was among the first to elaborate on Arnheim’s theory of visual art as psychological tool, extending the scope of ‘art’ to include other aesthetic expressions such as rituals, dress, music and poetry.²¹ In her 1995 book *Homo Aestheticus*, she also goes one step further than Arnheim to claim that “with a Darwinian perspective... [art] originated from and played a critical role in human biological adaptation.” (xvii) Rallying against modernist art theory, which considers the art ‘object’ as “bloodless and bodiless” (26), Dissanayake argues that art should be recognised for the physical responses it elicits; that its ‘feel-good’ factor (the pleasure it brings) is an indicator that it may have evolved as an adaptive behaviour to “fill a fundamental human need, satisfy an intrinsic and deep human imperative.” (34) Though reticent as to what this need might be (44), Dissanayake notes that the ‘specialness’ of artistic objects and activities is apparent in the way they are packaged and practiced. Like childhood play, the arts are set aside as separate from everyday life (43). In her account:

Rituals and the arts are *bracketed*... A stage of some kind – a circle, a demarcated area, a museum, or platform – sets off the holy²² from the profane, the performers from the audience, the extra-ordinary from the everyday. (48)

Dissanayake interprets this bracketing as a way of ‘making special’ (42), and theorises that the act of marking certain objects or activities as ‘special’ may have evolved among early humans as a way to attach importance to critical tools (through decorations), wise maxims (through poetry), or successful hunting techniques (perhaps through rituals) (52). If art drew attention to wisdom or practical methods which aided survival, it may have had its own unique survival value. Additionally, like Arnheim, Dissanayake sees in visual art some evidence for the idea of expression as mastery of environment. She notes that children habitually draw geometric shapes even before having attached symbolic value to them, and hypothesises that this may stem from an innate compulsion to create order (79-80).²³ Rather than speculating about the presence of an art ‘gene’ (22), Dissanayake instead lets her evidence for the inherence of the artistic impulse lead readers to the conclusion that “as *Homo aestheticus*, we really require beauty and meaning” (3).

Some possible reasons behind the requirement for meaning are proposed in Robert Storey’s *Mimesis and the Human Animal* (1996). Storey cites further evidence for the embeddedness of narrative stories in human cognition, noting that children can concoct basic narratives as toddlers (114). The overwhelming anthropomorphism of almost all stories is another clue that narratives perhaps hold some instructive function: “although it is theoretically possible to imagine oneself to be a groundhog, say, or a mole, in doing so one can only imagine how a human being would think and behave in the animal’s circumstances: thus the Kafkaesque cogitations of ‘The Burrow.’” (105) Because texts inscribe *human* behaviours and attitudes even when their subjects are not human, they are inevitably reflective of human concerns that are themselves products of biology:

The grammar of narrative is... fraught with the same ambiguities – arising from the same social ambivalences – that distinguish the biogrammar itself. Male versus female, self versus kin, kin versus non-kin, group versus group... comedy exploits those ambivalences as a source of incongruity, inviting the spectator to take pleasure in *Homo’s* own paradoxical allegiances. (103)

It is reasonable to extrapolate, then, that narratives function to convey some useful, significant message; perhaps, as in Greek oral epic, indoctrinating the audience with a

cocktail of socially beneficial ideals (113). Indeed, Storey draws upon Dissanayake to claim that art is bracketed off “so that its commentary upon the world may seem saturated with recoverable significance.” (107) Tragedy, in particular, conveys instructive morals. The tragic protagonist, Storey notes, has a “deviant narrativic competence” (147): they know that their actions are wrong but they act nonetheless. This prevents the audience from responding empathetically and instead draws their attention to the avoidability of the tragic consequences. Thus, “‘avoidable’ tragedy is one cog in the cultural ‘mechanism’ of human social selection.” (150) Again, the implication is that if narrative is instructive in a way that may aid survival, it is not unreasonable to posit that our tendency toward narrative is a selected trait.

In the past decade, the notion of art as biology has become sufficiently established for attention to turn to the finer question of whether art is itself an adaptation, or merely an evolutionary by-product. The debate had been prefaced in the writings of Stephen Jay Gould – much of whose body of work attempts to reclassify many supposed adaptations as by-products (Dutton *The Art Instinct: Beauty, Pleasure, and Human Evolution* 92) – and Steven Pinker, who argues that the arts press pleasure buttons that evolved for other reasons, just as cheesecake presses pleasure buttons that evolved to instil a fondness for fatty nuts and sweet fruit (*How the Mind Works* 526-7). Wayne Allen clarifies the by-product hypothesis by noting that “the functions for which structures and behaviours evolve are not always the only functions that the structures and behaviours perform.” (157) Thus, while the ability to appreciate a work of art may not be, in itself, adaptive, it may be derived from the capacity to create and interpret symbolic representations, an adaptation that was originally necessary to convey information between kin during the Pleistocene era (W. E. Allen 161). It may also be a side-use for the cocktail of biochemicals responsible for sexual arousal; Allen notes that these chemicals, adaptive in the sense that they aid reproduction, are at the root of shamanism and of rhythmic / poetic trance (161-3). Darwin himself noted the functionality of some artistic behaviour in birds: particularly song, which may be used to advertise food sources or attract mates (*The Descent of Man* 417), and dance, used by males to display virility and dominance to females during breeding season (*The Descent of Man*

430). This leads to the argument that artistic behaviour might be a form of 'preening' that evolved as a by-product of sexual selection.

Brian Boyd's *On the Origin of Stories*, however, argues convincingly for art as a bona fide adaptation. Responding to the by-product theory, Boyd notes that the costs of art production (in terms of required investment of time and resources) would have led to its elimination if it did not serve some critical purpose (83).²⁴ Boyd also notes and responds to the theory that art could be an aspect of sexual selection. The theory is flawed, Boyd claims, because it fails to account for clearly non-sexual forms of art-sharing, such as mother-to-child singing or the private reading of narrative texts (76). Instead, Boyd proposes that art fulfils a double adaptive function: it acts as both "training for a flexible mind" and "a social and individual system for engendering creativity" (86). In its first function, art is a cognitive rehearsal of survival techniques. "Art as cognitive play augments our capacities so that we can, at least in the domain on which each art focuses, efficiently produce ideas or actions" (95); for example, woven decorative clothing could give rise to practical woven eel traps (81). In its second function, art facilitates creative interaction between individual minds. Boyd notes that, though there is pleasurable creator-to-consumer engagement when, say, reading a novel, artistic responses are heightened when large audiences bond through common reactions to a single art source (105). However Boyd, like Storey, acknowledges that individual art forms also have their place as a form of social education. Narratives tend to focus "overwhelmingly on 'strategic information': on whether Jack is sleeping with Jill, not merely how soundly Jack is sleeping"; this kind of fictionalised information can then be used guide social decision-making (163). Thus the mind-to-mind bonding function of art can occur directly (through shared ideas and reactions) or indirectly (by educating individuals on social mores). Boyd argues that, though art may serve its function in different ways, and those ways may change over time, its status as an adaptation should be secure (206). This position seems more reasonable than the by-product hypothesis, which may have some relevance in explaining individual art types (for example shamanic trance as sexual / biochemical), but which fails to account for the fullness of the human attraction to a wide variety of arts – whether pleasurable or challenging, whether involving sexuality and display, or private intellectual contemplation.

Recently, the value of the adaptation / by-product debate has been questioned. Dennis Dutton argues in *The Art Instinct* that the issue of whether art is strictly an adaptation is tangential. Many of his claims are similar to those in *Homo Aestheticus* (the bracketing off of art (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 55); aesthetic pleasure indicative of evolutionary origin (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 100)); however, unlike Dissanayake, Dutton stops short of endowing art with adaptation status. In his account, the exact Darwinian nature of art is not as important as the fact that it is, fundamentally, biological:

A vocabulary of adaptations versus by-products cannot make sense of the ancient origins and present reality of aesthetic and artistic experience. To be illuminated by evolution, the arts do not all need to be glorified as Darwinian adaptations similar to language, binocular vision, or the eye itself. Neither should the arts be dismissed as by-products of a collision of human biology with culture. The arts intensify experience, enhance it, extend it in time, and make it coherent. (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 102)

Dutton's approach is not to clarify the exact evolutionary status of art, but to demonstrate a universal instinct for it. He calls for art to be classified "as a field of activities, objects, and experience that appears naturally in human life" (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 50) and identifies a set of universal 'cluster criteria' common to the field. In Dutton's model, the universality of certain artistic preferences (for example blue landscapes in visual art (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 15)) can be traced back to the practical requirements of life in the Pleistocene era - "the evolutionary theatre in which we acquired the tastes, intellectual features, emotional dispositions, and personality traits that distinguish us from our hominid ancestors" (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 23-4). For this reason, aesthetic values must be understood to be formed as much by prehistorical as by cultural determinants (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 204). However, he warns against the inclination to declare art as an adaptation based on no more evidence than a fondness for its advantageous qualities (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 87). Though he ignores the evidence beyond 'fondness' (particularly Boyd's), Dutton's insistence upon the universality of art opens doors to a recasting of world literature as a depository of prehistoric values – a view which would imbue literary studies with renewed relevance.

While much of the art-as-adaptation literature is based on visual arts, some discussion has been devoted to the adaptive functions of literary arts. Dissanayake notes that ‘special’ or ritual forms of language are demarcated from everyday language “not only in being more formed and patterned, but by using special elaborating devices to increase beauty, memorableness, and effectiveness.” (113) Just as decorations on tools may have functioned to signal their efficacy, so too decorated language may have evolved from the practice of repeating key phrases for emphasis (114). This may in turn explain the many anthropological surveys which have found oral poetry linked to magic, trances, prayers and charms, in which the ‘italicization’ of the language corresponds to a special function or intended effect (114-15).²⁵ The common linguistic structures underlying most languages are also cited as evidence for a universal literariness at the cognitive level. Chomsky’s notion of a ‘generative grammar’ suggests a universal neural predilection for a particular linguistic form which could underpin dissimilar languages (35). Dutton cites the neo-Chomskian idea of universal language rhythm given in Pinker’s *The Language Instinct* as a parallel to cross-cultural art appreciation (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 29). At the level of narrative, there have been repeated suggestions that fiction acts as a form of social instruction (Pinker *How the Mind Works* 541; Boyd 191): what Dutton calls “low-cost, low-risk surrogate experience” (*The Art Instinct: Beauty, Pleasure, and Human Evolution* 110). The narrative human can imagine highly complex scenarios given only very limited information (Boyd 189); this capacity for imaginative extrapolation enables a kind of ‘mind-reading’ that stories can facilitate (Dutton *The Art Instinct: Beauty, Pleasure, and Human Evolution* 110). Furthermore, at the level of literary aesthetics, Easterlin describes a dichotomy between schools of criticism which laud literary works either for their adherence to, or divergence from, biological blueprints (244). However she notes that, although linear narratives best exemplify the biological need for cause-and-effect (248), even the aesthetic she calls ‘postmodern antinarrative,’ is born from – and reinforces – the same start-to-finish structure (252). Thus, even literary works which appear to exclude themselves from biological explanation through experimental structure can still be described as biologically-driven in the sense that they exploit a cognitive predisposition to rearrange fragmented information into logical order.

In light of these many evolution-literature connections, it is reasonable to surmise that human beings are *at least* cognitively predisposed to create and consume stories. Whether this predisposition is an evolutionary by-product or, as seems more plausible, an adaptation in its own right, the recognition that fiction expresses and inscribes biological universals has led to a new school of Darwinist literary theory. If narrative is a biological habit, then this new school questions the extent to which characters behave biologically, and how authors recognise, interpret and comment on what it means to bear genes.

CHAPTER THREE

DARWINISM IN LITERARY SCHOLARSHIP

If one reads accounts of the systematic nonintrusive observations of troops of bonobo... one sees rehearsed all the major themes of the English nineteenth-century novel: alliances made and broken, individuals rising while others fall, plots hatched, revenge, gratitude, injured pride, successful and unsuccessful courtship, bereavement and mourning.

-Ian McEwan (11)

Among those who propagate the nascent branch of literary theory based on Darwinian ideas, it has not escaped notice that their work heeds a call made by seminal theorist Northrop Frye. Barash and Barash cite Frye's famous 50-year-old appeal for literary criticism to find "an organizing principle, a central hypothesis which, like the theory of evolution in biology, will see the phenomena it deals with as parts of a whole" (10). To view literary texts through the lenses of evolutionary psychology, they argue, is to satisfy Frye's demand using the subject of his own analogy (10). With this in mind, Literary Darwinism has been developed as both a philosophy and a methodology of criticism which seeks to reinterpret texts with the understanding that both biological *and* social/cultural influences are present in their composition and content. Reacting against purely social-constructivist literary criticism, and against false movements towards 'scientism' in critical methodology, Literary Darwinism borrows Wilson's concept of 'consilience' as a foundational principle. Thus, Ian McEwan's 19th Century novel-of-bonobos idea above is just one part of the equation: Literary Darwinism pairs this sense of the character-as-animal with a complementary sense of the animal as shaped by culture. The Darwinist critic recognises each literary character as "an anthropological *object*, as a probabilistic figure whose behavior may be said to betray a kind of biogenetic grammar." (Storey 63; italics in original) Acknowledging biogenetics as well as culture creates a critical approach that is faithfully and wholly Darwinian.

It is perhaps telling that Literary Darwinism did not develop until Darwinian ideas were 140 years old. As many proponents of the school admit, its inception was not prompted by the

availability of these ideas; rather by their suitability for overcoming issues with prevailing forms of criticism in the later decades of the 20th Century. Poststructuralist, social-constructivist and feminist critical methodologies prompted a gradual denaturalization of texts and characters during this time – forming a “liberationist era” which elicited “constitutional and reflexive pessimism about the ability of humans to really know *anything*.” (Gottschall *Literature, Science, and a New Humanities* 11; italics in original) A Darwinist approach promises to counter the “poisonous effect of poststructuralism in its brushing aside of the material foundations of existence” (Fromm 319). Additionally, Literary Darwinism has offered potential respite from the revolving door of methodological fashions. As Dutton complains:

By the second half of the twentieth century such weirdness and extremism had become a ticket to academic success, particularly in literary theory. From Freud to New Criticism through Deconstruction to postcolonial theory and varieties of social-constructivist feminism, the careerist pattern in literary theory has been to reduce all artistic value to a single essential set of factors and, conversely, to declare whole categories of putative aesthetic interests and features irrelevant or inimical to critical understanding. (“Afterword” 260)

If research in the Humanities was stunted by the tendency to view findings as culturally relative – and therefore never universally ‘correct’ – then a bio-cultural critical methodology could restore some validity to scholarship. Gottschall argues for a pluralist approach: “a consilient viewpoint that acknowledges the influence of biology *and* culture in human affairs... *is manifestly more moderate, holistic and inclusive* than the master narratives that have dominated literary analysis for most of its institutional history.” (*Literature, Science, and a New Humanities* 38; italics in original)

However it is important to note that, though Literary Darwinism emphasises consilience between biology and culture, its definition of ‘biology’ is not identical to that of biologists. Carroll is careful to define his guiding methodology as a marriage of “Darwinian *psychology* and literary criticism” (“Human Nature and Literary Meaning: A Theoretical Model Illustrated with a Critique of *Pride and Prejudice*” 76), and advises that any approach which would treat characters as real, biological creatures would “ignore the whole concept of meaning in literature.” (“Human Nature and Literary Meaning: A Theoretical Model Illustrated with a Critique of *Pride and Prejudice*” 76) Indeed, the Darwinian text analysed by

McEwan in the same volume was not *On the Origin of Species* or *The Descent of Man*, but *The Expression of the Emotions in Man and Animals*. This work, in its “anecdotal, unscientific” (9) prose style, applied the principle of an underlying relatedness to link the physical representations of emotions between humans and other species – in a manner more akin to a sociology or psychology, rather than a biology, text. Nettle’s arguments for the evolutionary roots of drama again betray a psychological element. According to Nettle, our ‘primate’ preferences dictate that dramatic narratives should communicate social information about both larger groups and subgroups; should portray characters in kin protection, status competition and mate selection activities with very high stakes; and should depict conflict arising from these activities (Nettle 67). The common thread between Carroll, McEwan and Nettle is the directive that Literary Darwinism should be concerned with the biological roots of human behaviour only insofar as they illuminate some aspect of human psychology. This approach has some basis in Neo-Darwinian theory, which stresses that genes encode “if-then rules” rather than firm behavioural directives – creating a flexible body of potential behaviours through “phenotypic plasticity” (D. S. Wilson 23). It follows that Literary Darwinist criticism should question how biological factors influence – rather than determine – elements of literary texts.

One of the most frequently cited pieces of Darwinist criticism is Joseph Carroll’s *Human Nature and Literary Meaning* (2005). As one of the founding figures of Literary Darwinism, Carroll echoes Gottschall’s insistence that the school must maintain an integrated approach – balancing evolutionary psychology with the recognition that culture (and, Carroll adds, individuality) must also be taken into account when determining the meaning of a literary text. In Carroll’s fivefold model, the Literary Darwinist must critique with an understanding of human nature; point of view (of author, character, audience); human universals; individual identity; and meaning through theme, tone and organization (*Literary Darwinism: Evolution, Human Nature, and Literature* 188). It is the fourth principle – that critics must allow for individual identity – which fortifies the method and forges a path for analyses which go beyond mere elucidations on the biological significance of characters’ behaviour. In Carroll’s view, “the behaviour that is depicted in literary texts does not necessarily exemplify universal or species-typical behavioural patterns, but species-typical patterns

form an indispensable *frame of reference* for the communication of meaning in literary representations” (*Literary Darwinism: Evolution, Human Nature, and Literature* 204; italics added). Theoretically, Darwinian criticism which does not rely exclusively on evolutionary explanations for motive should be fortified against the charge of oversimplicity. However, Carroll’s demonstration of his own principles, though briefly discussing individual character differences, falls back into a simple argument of resource acquisition, kin preference and mate selection. Much of Carroll’s argument relies on the grossly generalised and outdated assertion that “women want wealth and status in their men, and the men want youth and beauty in their women” (*Literary Darwinism: Evolution, Human Nature, and Literature* 207). Citing no more evidence than the ‘common’ opinion of relevant scholars, Carroll uses this assertion as the basis for much of his discussion on the marriage politics of *Pride and Prejudice*. According to Carroll, Austen uses the supposedly ‘common’ or ‘universal’ concept of evolutionary mate selection criteria as a counterpoint to highlight Elizabeth and Darcy’s relative high-mindedness – thus conveying the meaning that individual character, rather than status or beauty, should be the primary consideration when choosing a spouse (*Literary Darwinism: Evolution, Human Nature, and Literature* 207). However, Carroll also claims that Elizabeth’s final attainment of status through Darcy affirms the marriage-for-status norm. In this argument, Austen is implied both to use a supposed ‘universal’ as a counterpoint, and to affirm that same universal. Carroll’s argument ignores the fact that, writing in 1811, long before the advent of evolutionary psychology, Austen cannot have regarded mate selection criteria as biological or universal at all.

Other critics have taken Carroll’s hyperliteralism to even more foolhardy extremes. Literary Darwinism fails when critics forget Gottschall’s call for moderate consilience between culture and biology, and interpret characters’ behaviours as purely biologically determined. Barash and Barash, though writing more for lay audiences than for literary scholars, commit this error in their discussion of Albertine’s infidelity in Proust’s *Remembrance of Things Past*:

Marcel’s jealousy [is not] diminished by his discovery that Albertine was a lesbian. One might expect that insofar as sexual jealousy is reproductively driven, homosexual infidelity to one’s heterosexual partner would be of little account, but this fails to reckon with the powerful emotional undertow of motivations driven by evolution... sex

with someone else, even avowedly nonreproductive sex, cannot help conveying a threat of restructured affection as well as the prospect of further infidelity in the future. (33-5)

Acknowledgement of the individual characters under analysis is restricted to the first line. Not only is the subsequent discussion conducted without reference to the particulars of the text, it is also highly speculative and an extreme example of biological determinism applied by non-biologists. But even as biological determinism, it fails: there is no evidence presented for the evolutionary significance of 'restructured affection.' Such 'literary criticism' is wildly reductive and of little value.

Another weakness inherent in the method is the tendency to overstate the animalism of characters' behaviours. Barash and Barash again provide examples. They compare the pairing of male domination with sexual success in *Othello* to the societal values of silverback gorillas (17-20); warrior dominance in *The Iliad* to the behaviour of elephant seals (29-30); and male posturing toward other males in *Huckleberry Finn* to that of stallions (30). Such comparisons are as worthless as they are non-Darwinian. There is no distinction between the closeness of the human-animal relation and the prevalence of the behaviour; in order to demonstrate the evolutionary roots of behaviour, one would hope that instances of gorilla-like behaviour significantly outnumber instances of seal-like behaviour. Instead, the authors imply that, by finding *any* corresponding behaviour in the animal kingdom, the biologism of a character's actions can be proved. Though – again – this is literary scholarship aimed at lay readers, it nevertheless exposes a potential for oversimplification in Literary Darwinism. Abuse of the methodology can create the false conclusion that “the raw ferocity of the blood-soaked Homeric epics” is somehow evidence that “the human and animal estate are now, and have ever been, fundamentally identical.” (Barash and Barash 32)

One tangential approach which has appeared under the heading of 'Literary Darwinism'²⁶ is a form of quantitative analysis which seeks to reveal human universals across a large body of texts from diverse geographical origins. Gottschall, investigating the claims of feminist fairy tale scholars, used statistical analysis to measure male versus female heroism, passivism versus positive action, emphasis on attractiveness, and marriage motive, among

other factors, in world folk tales. While many feminist claims were confirmed, Gottschall's study disproved the common contention that marriage is disproportionately inscribed as a 'reward' or ultimate goal for female folk protagonists, finding instead that marriage was just as strong a motivation for male protagonists ("Quantitative Literary Study: A Modest Manifesto and Testing the Hypotheses of Feminist Fairy Tale Studies" 216). However Gottschall emphasises that a major revelation of quantitative analysis is the extent to which it reveals universal congruencies, in a way which is "out of kilter with a humanities culture that is currently intent on emphasizing the diversity among human groups" ("Quantitative Literary Study: A Modest Manifesto and Testing the Hypotheses of Feminist Fairy Tale Studies" 218). Beyond merely challenging one current humanities culture, quantitative analysis is touted as a potential solution to the revolving door of critical fashions bemoaned by Dutton. Gottschall claims that "there is little accumulation of knowledge in literary studies: the line of work runs from generation to generation in continuous circles, bending to intellectual fashions" – however quantitative analysis promises to produce "more reliable, durable, and intersubjective answers to the great variety of important questions that literary scholars ask and answer" ("Quantitative Literary Study: A Modest Manifesto and Testing the Hypotheses of Feminist Fairy Tale Studies" 219-20). Though cognizant of the charge that statistical analyses can be reductive, and that "in literary studies, complexity and nuance are bread and butter" (Gottschall "Quantitative Literary Study: A Modest Manifesto and Testing the Hypotheses of Feminist Fairy Tale Studies" 202), Gottschall maintains that, as in most social sciences, a blend of qualitative *and* quantitative research is necessary to obtain the fullest results.

The remainder of this study is composed of literary analysis which does not conform directly to either Literary Darwinist or quantitative methodologies.²⁷ The purpose of Literary Darwinism seems valid insofar as, historically, literary criticism has ignored the biological blueprints which inform authors, and hence characters and texts. However, most analyses produced by the field thus far have assumed that any reference to animalism or biologically-motivated behaviour is unintended; and therefore revealing about human nature. The analyses presented in Part Two assume the opposite. The most relevant way to use Darwinian theory in literary criticism is to analyse texts which engage with that theory –

whether directly or indirectly – so as to inscribe the anxieties surrounding the new place of humans in the natural world. A strict Literary Darwinist reading of a text may result in an understanding of its characters as animals, but analysis of Darwinian-inspired texts can reveal what the animalised human is thought to mean in the context of the post-humanist age.

PART TWO: LITERARY INTERPRETATIONS OF DARWINIAN THEORY

Thomas Kuhn defined scientific revolutions as “developmental episodes in which an older paradigm is replaced in whole or in part by an incompatible new one.” (92) Though evolution as a theory was not new, Darwin’s version meets the requirements of a revolutionary development in its abandonment of teleology as a basic principle (Kuhn 171). Any revolution which changes the way we view our place in nature will inevitably impact upon literature in a way that extends beyond simple thematic engagement. Because Darwinian evolution has become such a central and accepted aspect of our cosmogony, its total impact upon literature is impossible to isolate.

The genre of literary naturalism has, however, provided an umbrella under which to group texts which – from a broadly Darwinian perspective – situate their characters as products of a deterministic hereditary-environmental formula. Naturalism developed in part because of the changes that evolutionary biology prompted in our understanding of the human character; however as a genre it does not necessarily engage with or comment upon Darwinian ideas – it is informed by Darwin, but does not necessarily reflect the totality of anxieties inherent in his ideas. The texts chosen for analysis in the following chapters are not, therefore, chosen exclusively from the genre of naturalism. Instead, attention is focused on texts which inscribe specific reservations elicited by Darwinian science,²⁸ with particular attention to two broad types of fears. Chapter Four examines the fear of a potential breed of ‘mad scientists’ who might exploit the new science. Chapter Five discusses human degeneration in literary texts; protagonists as Murrissian ‘naked apes’ who devolve into beasts and hybrids. Finally, Chapter Six is an in-depth case study of Atwood’s *Oryx & Crake* and Beckett’s *Genesis*, which both encapsulate and combine the other two literary reactions.

Numerous critical works have engaged with other aspects of the Darwinian impact on fiction. Excellent accounts of sexual selection and its influence on relationships between characters are given in Beer’s *Darwin’s Plots* as well as in (*Darwin’s Plots: Evolutionary Narrative in*

Darwin, George Eliot and Nineteenth-Century Fiction) Bender's *Evolution and "the Sex Problem"* and *The Descent of Love*. Stafford's *The Last of the Race* provides discussion of the Darwin-inspired idea of the 'last' or ultimate human in literature. Barash and Barash's *Madame Bovary's Ovaries* offers analyses of Social Darwinist narratives. A more thorough directory of critical works on Darwinism in literature is provided in Cooke & Turner's *Biopoetics*.

CHAPTER FOUR

THE 'MAD SCIENTIST' DEGENERATION IN *THE ISLAND OF DOCTOR MOREAU* AND *BRAVE NEW WORLD*

The fear of 'mad scientists' was not unique to post-Darwinian fiction. In fact, Millhauser notes that the depiction of scientists in post-Enlightenment literature usually conformed to set types. While some poets engaged with science as a source of imagery and a set of potentialities to explore (287), any scientist depicted in prose works tended to be "either a harmless old gentleman... or in some way dangerous or evil." (293) Of course the evil 'mad scientist' became a cultural stereotype in Mary Shelley's *Frankenstein*. Shelley famously explored the hubris of the post-Enlightenment scientist in 1818, a full forty years before the publication of *Species*.²⁹ Here, the 19th Century scientist was said to "'have acquired new and almost unlimited powers; they can command the thunders of heaven, mimic the earthquake, and even mock the invisible world with its own shadows.'" (49) Victor Frankenstein's godlike power to create life results in a being at first lonely and inquisitive; it only becomes 'monstrous' and murderous upon the realization that "'God, in pity, made man beautiful and alluring, after his own image; but my form is a filthy type of yours, more horrid even from the very resemblance.'" (133) The actions of the 'monster' are therefore suggested to be a consequence of the sacrilegious transgression of the 'mad scientist.' Victor Frankenstein parallels the original creature's attacks when he destroys his attempt at a second creature. Indeed, Victor notes that "I almost felt as if I had mangled the living flesh of a human being." (175) With the blood of "living flesh" on his hands, he is directly as well as vicariously (through his creature) a killer.

Although Shelley and others created a body of blueprint 'mad scientist' character traits, the crazed doctor figure did not become a cliché until *after* Darwin published.³⁰ Though not based on the science of evolution per se, novels such as *The Strange Case of Dr Jekyll and Mr Hyde* and many of the works of Jules Verne could have been influenced by the vilification of Darwin in the popular press. The denigration of scientists in fiction became so

commonplace that Millhauser identified a much more refined and specific version of the ‘mad scientist’ stereotype: “a scientist who, through inordinate concentration on his special field, has perfected his mastery over a single discipline while gradually losing contact with moral, social, or practical reality, and thus becoming, according to the taste of the scenarist, either comic, malevolent, or fatally easily duped” (291). This chapter will examine two novels which engaged directly with the theory of evolution by natural selection and which posited that, in the wrong hands, the theory might be abused for malevolent and dangerous experimentation. In both *The Island of Doctor Moreau* (1896) and *Brave New World* (1932), ‘mad scientists’ are created by authors who are, themselves, sympathetic to science in general – however their characters transgress by creating quasi-human creatures who lose their complexity and revert to forms of primitivism.

THE ISLAND OF DOCTOR MOREAU

“The stubborn beast flesh grows day by day back again...”

(H. G. Wells *The Island of Doctor Moreau* 116)

As H. G. Wells composed *The Island of Doctor Moreau* in 1895, evolutionary theory was a site of fear and confusion. The 1880s and early 1890s had seen the public react divisively – and often anxiously – against vivisection and embryologists’ experimentations with cloning. On the one hand, animal experimentation was hailed as a miracle method which could shed new light on human biology, with vivisectors described in almost deifying terms (Vint 87). On the other hand, interference at the level of cell division by one embryologist created a cloned sea urchin; thereby eliciting a fear that tampering with the human could follow (Griffiths 79). Perhaps exacerbating public confusion, there remained a schism between biologists in the Lamarckian and Darwinian schools, resulting in a lack of congruity in the way evolution was taught and understood. Furthermore, new theories of inheritance complicated existing evolutionary theories and created multitudinous offshoot and hybrid schools of thought. Weismann’s Neo-Darwinism was one of the more dominant schools, arguing that ‘germ plasm’ (an early conceptualization of DNA) was unaffected by education or lifestyle, and therefore concluding that the Lamarckian idea of progressive evolution

(speeded via educational betterment) was without scientific grounding (Glendening 580). The rediscovery and reconsideration of Mendelian genetics in the 1890s similarly suggested that changes to inheritable (genetic) material occurred through mutations (Hamblin 215), and were thus less controllable than previously hoped.

Wells himself was familiar both with Darwinian theory, and with the many alternate and offshoot theories; particularly Lamarckism (Glendening 579). He studied under the Darwinian biologist T.H. Huxley (who represented science against Matthew Arnold's literature in the debates of the so-called 'Science Wars') and published on issues relating to evolutionary theory. Among his scientific texts were an 1893 biology textbook, an 1895 article on altering individual character via biological experimentation (Glendening 583), and an 1896 article which distinguished between human evolution by natural selection and cultural evolution by language acquisition (Hardy 199-200). In *The Time Machine*, published the year before *Moreau*, Wells extrapolated from contemporary class structures to hypothesise two future races of separately evolved humans (43). With this heavy background in evolutionary theory, both as a trained scientist and as a science fiction author, it is perhaps not surprising that Wells approached *Moreau* with a "passionate determination to make the evolutionary process yield its last dregs of human significance" (Morton 101). However, though he was a confirmed and lifelong evolutionist, the particulars of Wells' views underwent some change during the writing process. Influenced by Weismann and Neo-Darwinism, he renounced his belief in Lamarckism and the inheritance of acquired characteristics. In an 1895 essay, he declared his reunion with Darwinian natural selection (Glendening 581). The timing of the essay suggests that Wells changed his mind during the composition of *Moreau*; the implications of this change for the text will be explored later in this chapter.

It would be easy to surmise that Wells' phase of personal confusion contributed to his negative portrayal of the scientific mind in *Moreau*; however Dr. Moreau is not the only 'mad scientist' protagonist in the Wellsian canon. According to Millhauser, Wells typically portrays "a mind enamored of research as another mind might be enamored of a woman,

and as devotedly and as ruthlessly... but then the overtones are grim, and the consequences or side effects are likely to be disastrous” (297). Dr. Moreau is, however, an extreme example. He is aware that his research is non-traditional, calling the island “a biological station – of a sort” (*The Island of Doctor Moreau* 29). His assistant Montgomery goes so far as to call it “a kind of Bluebeard’s chamber” (*The Island of Doctor Moreau* 32). The exact nature of the experimentation is obscured from the reader throughout the novel. By observing the physical quirks of the animals on the island, and inferring from the pained cries of a puma coming from Moreau’s lab (*The Island of Doctor Moreau* 37-8), Prendick deduces that Moreau is engaged in some sort of human-animal splicing;³¹ however Prendick is admitted only one glance inside the lab and conveys no details of what he saw in his narrative (*The Island of Doctor Moreau* 70). Moreau’s lab itself is kept distant from the text: an authorial choice which, as in *Rappaccini’s Daughter*, shrouds the details of experimentation from view and propagates the notion of the experimenter as untouchable or mysterious (Millhauser 292-3).³²

However, despite the ominous secrecy that surrounds Moreau’s lab, Wells’ protagonist Prendick shows some initial sympathy for the plight of the shunned scientist. He remembers Moreau’s banishment from England to be a result of tabloid reactionism, and comments with some empathy on “the overmastering spell of research” (*The Island of Doctor Moreau* 34) which might understandably drive a scientist to pursue a clandestine line of experimentation. Furthermore, while Wells’ portrayal of scientific professionals is at times obfuscatory, it is not entirely condemnatory. Prendick and Moreau’s assistant Montgomery are both trained biologists (*The Island of Doctor Moreau* 11), and Prendick at least is depicted as a sensible, rational character. His scientific training is deemed relevant when Moreau and Montgomery decide whether he should be allowed to stay on the island (*The Island of Doctor Moreau* 31), and is therefore a factor in his survival.³³ Thus *The Island of Doctor Moreau* is not the kind of ‘mad scientist’ novel which, through its depiction of one scientist, demeans scientific progress in its entirety. Indeed Wells’ scientific writings often rebutted the claims of anti-vivisectionists, and Armstrong suggests that Wells’ reasons for vilifying Moreau had to do with his possessive isolationism regarding his work, “in contradistinction to the spirit of ‘scientific socialism’ that Wells espoused” (92; 86). The

novel, then, creates a complex moral spectrum in which a biological education might promote rationalism (Prendick), alcoholism (Montgomery), or depraved experimentation (Moreau). The danger lies in the scientist, not the science. Indeed Moreau's early explanations of his motivations place his research in the realm of useful medical science. "The study of the plasticity of living forms," (*The Island of Doctor Moreau* 71), as he puts it, is described as an extension of surgical grafting techniques which (by implication) could have medical applications. However the rhetoric employed – of "plasticity" and "animals carven and wrought into new shapes" (*The Island of Doctor Moreau* 71) – recalls that of the creation story of Genesis (2:7). Adam's formation from dust is even more explicitly referenced when Moreau justifies his infliction of pain: "Pleasure and pain – they are for us, only so long as we wriggle in the dust..." (*The Island of Doctor Moreau* 75) Moreau's madness, then – and his maliciousness – stem less from his career choice than from his unwillingness to pander to the animal feelings that he deems evolutionarily irrelevant (*The Island of Doctor Moreau* 74). His experiments amount to 'playing god': "the evolving of animals objectifies his wish to evolve himself, and his willingness to inflict excruciating pain... emphasises his intellectual and physical control over his victims and hence his exalted status" (Glendening 589). To cement his status, and to further elevate himself above those 'wriggling in the dust,' Moreau extends his project beyond the lab to create a new 'Edenic' society in which he plays the role of a merciless God.

The Eden-like qualities of Noble's Isle, where the events of the novel take place, are made plain in Wells' descriptions of the landscape: however the descriptions of lushness coexist with a selection of Darwinian and deteriorative terms which imply that the island signifies wild and rotting biologism as much as it does divine creation. While early descriptions stress "thick vegetation" and a bay engulfing Prendick in an "embrace" (*The Island of Doctor Moreau* 27), very gradually and subtly the landscape is darkened and Darwinised. As Prendick grows uneasy on the island, his perception of its appearance changes: "in spite of the brilliant sunlight and the green fans of the trees waving in the soothing sea-breeze, the world was a confusion, blurred with drifting black and red phantasms." (*The Island of Doctor Moreau* 38) From here, the descriptions of "luxuriant vegetation," "glittering water," and "luminous blue of the sky" (*The Island of Doctor Moreau* 39) are associated with terms

which are notoriously Darwinian. Nestled amidst these paradisiacal images, the word 'bank' is used twice: a term evocative of the famous "entangled bank" image in the *Origin*, which, with its overabundance of flora and fauna, is used to create a sense of wonderment over the diverse forms of life resulting from natural selection (*On the Origin of Species* 360). Similarly, Wells employs the terms "green confusion" (*The Island of Doctor Moreau* 43; 98) and "entanglement" to recall the same Darwinian image (Glendening 573; 84).³⁴ The island paradise is given a further portentously Biblical taint when Moreau reveals that he once formed a deadly snake-monster: "a limbless thing with a horrible face that writhed along the ground in a serpentine fashion." (*The Island of Doctor Moreau* 77) Finally, when Prendick finds himself alone with the Beast People, the character of the island changes from ominously Edenic to outright hellish. Lush vegetation becomes "weeds and reeds" (*The Island of Doctor Moreau* 116); and the fruit that once grew in free supply (*The Island of Doctor Moreau* 56) is now "speckled and half-decayed" (*The Island of Doctor Moreau* 117).

Wells' treatment of rabbits further establishes the island as a decaying Eden. As Armstrong notes, Wells wrote elsewhere of the accelerated adaptive power of the rabbit, and in *The Island of Doctor Moreau*, the introduced rabbits subvert their intended purpose by displaying aggression and corrupting the Leopard Man (95). However, the greater symbolic power of the rabbits lies in their role as failed Edenic subjects. Moreau (adopting the role of a god-figure) imports rabbits to his island and tells them, in language lifted directly from Genesis, to "increase and multiply... replenish the island" (*The Island of Doctor Moreau* 30). However rabbits quickly become a symbol of Eden destroyed. The humanised creatures' bestial – and illicit, under Moreau's law – taste for meat is sated on the rabbits, and Prendick finds one in a distinctly Edenic patch of fernery. His discovery of its body, "covered with shining flies but still warm, and with its head torn off" casts the island as a land of horrors in his mind; a land where "every shadow became something more than a shadow, became an ambush, every rustle became a threat." (*The Island of Doctor Moreau* 41) When Prendick shortly comes across his (and the rabbits') aggressors, he notes that they bear "the unmistakable mark of the beast" (*The Island of Doctor Moreau* 42); here, Eden takes on a devilish stain. A similar discovery later sends Moreau himself into a panic, his face matching the white of the rabbit's ribs,³⁵ and "his eyes roving among the shadows and screens of

greenery, the lurking-places and ambuscades of the forest, that bounded us in.” (*The Island of Doctor Moreau* 86-7)³⁶ Montgomery even unintentionally trains his servant M’ling to revert to meat-eating by teaching him to cook rabbit (*The Island of Doctor Moreau* 88).

In addition to being facilitators of beastly reversion and blood-thirstiness, the rabbits are repeatedly connected to Moreau’s experimentation. Prendick, apprehensive of becoming a test subject of Moreau’s, feels he could have been caught “as ready as a hospital rabbit for my fate” (*The Island of Doctor Moreau* 52). Even if he should escape into the jungle of the island, his lack of hunting equipment again casts rabbits (or the lack thereof) as symbols of his likely death (*The Island of Doctor Moreau* 53). Indeed, one of the greatest failures of Moreau’s experimentation is that the Beast People do not bear half-human progeny; and even this failure is linked to rabbits. When Moreau tries to manipulate their offspring, the resulting species demonstrates “a rabbit-like habit of devouring their young” (*The Island of Doctor Moreau* 85). Even after Moreau and Montgomery’s deaths, when the Edenic image is destroyed and the island bears no resemblance to a paradise, rabbits reappear; however this time, it is Prendick who kills them, casting himself in the role of the beast (*The Island of Doctor Moreau* 128).

If Noble’s Isle is a kind of Edenic paradise-becoming-hell, then Moreau is its God. He recalls his arrival on the island as if it was tailor-made for his purposes: “I remember the green stillness of the island and the empty ocean about us as though it was yesterday. The place seemed waiting for me.” (*The Island of Doctor Moreau* 75) In his explanations to Prendick – which Prendick recognises as sophistry (*The Island of Doctor Moreau* 73) – Moreau claims to be a religious man: “I fancy I have seen more of the ways of this world’s Maker than you – for I have sought his laws, in *my way*, all my life” (*The Island of Doctor Moreau* 74; italics in original). The stress on “*my way*” suggests some deviation from a strict interpretation of Biblical law; and indeed Prendick will later echo Moreau’s phrasing when he calls the Beast People “horrible caricatures of my Maker’s image” (*The Island of Doctor Moreau* 97). Moreau, rather than acting as a religious citizen, adopts the role of God on Noble’s Isle. He openly admits to his desire “to find out the extreme limit of plasticity in a living shape”

(*The Island of Doctor Moreau* 75). In creating his³⁷ hybrid human-animal creatures, Moreau becomes what Gonzalez calls a “lord of creation” ruling by the “whip and revolver” (53). His harsh treatment extends to Prendick also, and he turns violent when angered:

In a moment he had gripped me by the shoulder with a hand that was smeared red, had twisted me off my feet, and flung me headlong back into my own room. He lifted me as though I was a little child.

This sort of merciless authoritarianism has prompted some critics to read Moreau as a kind of Old Testament God (Aldiss qtd. in Gonzalez 57); an interpretation which is bolstered by Moreau’s imposition of a strict moral law on his Beast People. Echoing the Ten Commandments in form as well as in delivery, Moreau sends his law to his creatures indirectly – administering it via an Ape Man and, originally, a Moses-like Kanaka missionary with whom he claims the law originated (*The Island of Doctor Moreau* 79). In their recitations of the law, the Beast Peoples’ speech – which is described as “parrot-like” (*The Island of Doctor Moreau* 56) even when undirected – is channelled into chanting as a tool with which to constrain their behaviour:

‘Not to go on all-Fours; *that* is the Law. Are we not Men?
Not to suck up Drink; *that* is the Law. Are we not Men?
Not to eat Flesh or Fish; *that* is the Law. Are we not Men?
Not to claw Bark of Trees; *that* is the Law. Are we not Men?
Not to chase other Men; *that* is the Law. Are we not Men?’...
‘His is the House of Pain.
‘His is the Hand that makes.
‘His is the Hand that wounds.
‘His is the Hand that heals.’...
‘His is the lightning-flash,’ we sang. ‘His is the deep salt sea.’ (*The Island of Doctor Moreau* 59)

Moreau’s imposition of the law is a profoundly selfish act; intended both to enhance the efficacy of his own experiments by slowing reversion, and to protect the safety and authority of the island’s human residents. Montgomery likens the law to a form of hypnotism: “these prohibitions were woven into the texture of their minds beyond any possibility of disobedience or dispute.” (*The Island of Doctor Moreau* 80-81)

With his island established as a dark Eden, and Moreau its God, Wells deviates from his Genesis script by dividing the Fall from original sin and ascribing each to different sources. The original sin in Moreau is quite faithfully Biblical; if the Beast People are Adams and Eves,

and Moreau is the God who has prohibited them from eating a particular item (flesh or fish), then their 'sin' is to eat according to their biological impulses. The interpretation of the Beast People as Adams and Eves is well-supported. They exist early in the narrative in a state of manufactured prelapsarian innocence, and despite moral training from Moreau, deteriorate into a state of 'sin'. Moreau describes one of his beasts as having "begun with a clean slate, mentally" which he dressed with "some rudimentary ideas of morality" (*The Island of Doctor Moreau* 76). But this morality contravenes their natural impulses, and learning the taste of flesh earns them the wrath of their God. When Moreau gathers the Beast People together to punish them for consuming a rabbit, his dictatorial hold over them is evident. With merely a moment of accusatory eye contact, Prendick notes that Moreau (with trademark whip in hand) "seemed to be dragging the very soul" from the Leopard man (*The Island of Doctor Moreau* 91).

Though the Beast People's meat-eating echoes the Biblical version of original sin, the Fall can be attributed to Moreau. When the island 'falls' – that is, when the Beast People revert to their intrinsic animalism³⁸ and violence erupts – it is as a direct result of Moreau's failure to exercise scientific diligence and rigour. By neglecting to find a solution to the evident problem of reversion, by acting out of a personal interest rather than for any progressive end, and by disregarding ethical concerns, Moreau creates a perfect set of conditions for the fall to occur. Thus, when "the stubborn beast flesh grows day by day back again" (*The Island of Doctor Moreau* 116); when Prendick's one-time friend becomes "dumb, quadrupedal, hairy" (*The Island of Doctor Moreau* 123); when transgressing meat-eating beasts become "not afraid and not ashamed" (*The Island of Doctor Moreau* 125); Moreau is responsible for his own scientific failure and for the decline of the island as a whole.³⁹ Though the sin of eating is attributed to the Beast People, their eating is a mere product of instinct; it is Moreau who figuratively eats from the Tree of Knowledge. For Elbarbary, it is knowledge and genius that drive Moreau (*The Island of Doctor Moreau* 116); but it is a desire to accumulate knowledge *personally*, rather than contribute to a field, that makes Moreau a sinner. Prendick remembers that Moreau, when the scandal of his experiments hit London, "might perhaps have purchased his social peace by abandoning his investigations, but he apparently preferred the latter" (*The Island of Doctor Moreau* 34). Wells reinforces this idea

by referring to Moreau's creatures as "curiosities" (*The Island of Doctor Moreau* 48), and quoting curiosity as Moreau's key motivation (*The Island of Doctor Moreau* 95). Moreau's selfishness is even more evident when he scolds Prendick for killing the flesh-eating Leopard Man. The reader is left to assume that Moreau's desire to exert his power and punish the creature outweighed his (perhaps nonexistent) interest in Prendick's safety. If Moreau causes the Fall by sinning through knowledge, then Wells was perhaps ironically twisting one of his source texts. Vint suggests that Francis Bacon's *The New Atlantis*, with its plot of shipwreck and vivisection, may have influenced *Moreau* (86); however Bacon, in his pre-Darwinian belief in the elevating power of science, regarded the Fall as the moment when humans lost their dominion over animals by losing their knowledge of them (Fudge 92). Moreau's Fall, then, is ironic because it is precisely his *excessive* knowledge of animals that destroys his superiority. Armed with his post-Darwinian (and personally, his post-Lamarckian) pessimism, Wells inscribes a Fall which inverts the Baconian model and leaves the human and the bestial intertwined. As if to cement the idea that human dominion is a mere comforting fiction, Wells condemns Moreau's corpse to lie enmeshed with those of his failed monsters (Glendening 590; Wells, 2007, p. 109).

In his transgressive use of knowledge, Moreau resembles the Prometheus figure that Mary Shelley referenced in the subtitle of her novel. Gonzalez notes that Prometheus has a double-meaning, both for *Frankenstein* and for *Moreau*. In some classical Greek writings, Prometheus transgressed by stealing fire from the gods; in others, he moulded life from clay (51). In combination, these two actions suggest that the non-divine creation of life is associated with hubris. Perhaps playing with the idea of Moreau as Prometheus,⁴⁰ Wells links fire both to Moreau's wrath and to the eventual destruction of the island. One line of Moreau's law echoes the Promethean god-like power over fire: "He sends the Fire that kills" (*The Island of Doctor Moreau* 105). Interestingly, this line is not included in the Beast Peoples' original recitation of the law (*The Island of Doctor Moreau* 59), and appears just a few lines before the discovery of Moreau's body, mauled by one of his own creatures. If Moreau stole the ability to create life from the gods, then he 'sent' the 'fire' (artificial life-force; puma) that caused his own death. In this sense, Moreau is the god and Prometheus in one. Fire continues to feature as an ominous symbol after Moreau's death. The devolving

Beast People brawl around a bonfire (*The Island of Doctor Moreau* 110), and its “blood-red flames” turn out to be Montgomery’s attempt to prevent any escape from the island by burning the boats (*The Island of Doctor Moreau* 111). From this point, Prendick – alone with the Beast People – fears that, without Moreau or an intact Law, he will be killed; in this state of fear, he sees the Beast People once again crowded around a fire (*The Island of Doctor Moreau* 119). When the Beast People revert further, until “the last vestige of the human taint had vanished,” they are said to have “lost the art of fire... and recovered their fear of it” (*The Island of Doctor Moreau* 126). Immediately, fire becomes Prendick’s exclusive domain, and the moment of his salvation is associated with the bonfire that he lights upon seeing a boat on the horizon (*The Island of Doctor Moreau* 127-8).⁴¹

The result of the Fall in *Moreau*, at the simplest level, is death for all but Prendick. However there is also a deeper metaphysical outcome; one which, ironically, is deeply atheistic.⁴² The reversion of the beasts defeats not only Moreau’s intention, but also the wider notion that any civilizing ‘improvements’ (such as, perhaps, submission to a God) can overwrite biological impulse. Wells attaches this defeat to an existential lament that human beings are little more than animals caught in the trap of civilization. Prendick expresses this belief of the Beast People. He observes that Moreau’s greatest crime was not his experiments, but his demand that the Beast People obey a law which runs contrary to their instinct:

A strange persuasion came upon me that, save for the grossness of the line, the grotesqueness of the forms, I had here before me the whole balance of human life in miniature, the whole interplay of instinct, reason, and fate in its simplest form... Before they had been beasts, their instincts fitly adapted to their surroundings, and happy as living things may be. Now they stumbled in the shackles of humanity, lived in a fear that never died, fretted by a law they could not understand. (*The Island of Doctor Moreau* 95)

Prendick surmises that “a blind fate, a vast, pitiless mechanism, seemed to cut and shape the fabric of existence... the Beast People, with their instincts and mental restrictions, were torn and crushed, ruthlessly, inevitably, amid the infinite complexity of its incessant wheels.” (*The Island of Doctor Moreau* 96) Montgomery expresses similar sentiments, though he extends them beyond the Beast People to human beings: “‘This silly ass of a world,’ he said. ‘What a muddle it all is!... What’s it all for, Prendick? Are we bubbles blown by a baby?’” (*The Island of Doctor Moreau* 106) Even upon his return to London, Prendick sees the fellow-

men whose civility he once longed for (*The Island of Doctor Moreau* 97) to be little more than well-dressed animals:

I would go out into the streets to fight with my delusion, and prowling women would mew after me, furtive craving men glance jealously at me, weary pale workers go coughing by me with tired eyes and eager paces like wounded deer dripping blood... Then I would turn aside into some chapel, and even there, such was my disturbance, it seemed that the preacher gibbered Big Thoughts even as the Ape Man had done; or into some library, and there the intent faces over the books seemed but patient creatures waiting for prey. (*The Island of Doctor Moreau* 131)

The overabundance of animalistic terms here – ‘mew,’ ‘deer dripping blood,’ gibbered,’⁴³ ‘creatures waiting for prey’ – casts humans as another sort of Beast People.

The observations of purposelessness and human bestiality expressed by Prendick and Montgomery correspond to the element of Darwinian theory which repulsed many Victorian readers: the lack of teleology in natural selection. Prendick concedes that, were there some purpose to Moreau’s experiments, he might understand; however, like Darwinian evolution, Moreau lacks the element of teleology. Given that Wells was shifting away from Lamarckian optimism during the composition of the novel, and towards a belief in aimless, random Darwinian natural selection, it is possible that some of the existential feelings he placed in the mouths of Prendick and Montgomery echoed his own. Indeed chance and randomness are recurring motifs in the novel, and are often cast as controlling influences over the lives of both the human characters and the Beast People. As Gonzalez notes (and Montgomery emphasises), Prendick is saved by chance (Gonzalez 52; Wells, 2007, p. 19); and indeed variations on the word ‘luck’ occur four times on the very first page of Prendick’s account of his shipwreck on the *Lady Vain* (*The Island of Doctor Moreau* 7). The horrors of Moreau’s experiments are also a result of his “chance” choice of humans as the species with which the beasts were to be spliced (Gonzalez 54; Wells, 2007, p. 73).

Thus, though Wells chooses a mad scientist as an instrument through which to hyperbolically demonstrate the anxieties elicited by Darwinism, Moreau is not the root of those anxieties. His Promethean folly exaggerates, in the condensed atmosphere of Noble’s Isle, a Fall that has already occurred. For Wells, it is the purposeless randomness of natural

selection, as well as the lingering bestiality it locates in ‘civilised’ people, that make Darwinism such a dark theory. Without the comforting progressiveness of Lamarckian evolution, Darwinism casts humans, with all our ritualization and religious belief, as dressed-up Beast People. Glendening notes an “ambiguous mixture of assertion and uncertainty in the refrain, ‘Are we not Men?’” (586) As he transitioned from Lamarckism to Darwinism, Wells perhaps could not be sure.

BRAVE NEW WORLD

“Nothing is more easy than to tame an animal.”

(Darwin *On the Origin of Species* 10)

Despite his phase of disillusionment during the composition of *Moreau*, on the strength of his whole canon Wells was known as a “prophet of scientific optimism” (Bowering 98). Aldous Huxley wrote *Brave New World*, in large part, as a reaction against this optimism. Taking his cue from Wells’ *Men Like Gods*, Huxley imagined a society in which scientific humanism, secularism, and state parenting created a class of soulless human automatons, rather than the super-society Wells envisaged (P. Firchow 62; Bowering 98). Given that Huxley and Wells’ works were in opposition, their placement side-by-side in this chapter is perhaps ironic. However in their lives and social groups, the two authors were somewhat incestuously connected. Wells was taught by Aldous’ grandfather (himself nicknamed ‘Darwin’s bulldog’ because of his advocacy of Darwin’s views), and collaborated with Aldous’ brother Julian on a scientific text (P. E. Firchow 58 n1). Yet Wells was so insulted by *Brave New World*’s assault that he counter-attacked, calling it a “‘Bible of the impotent genteel’” (qtd. in P. E. Firchow 59). Despite their mutually disparaging dialogue, both authors’ novels are included in this chapter because they express anxieties over natural selection through the regimes of ‘mad scientists’ who – though themselves ethically dubious – are primarily vehicles for commentary on the inevitable devaluation of the place of humans and individuality after Darwin.

Just as Wells found danger not in Darwinian science but in the scientist, so too Huxley locates the threats of Darwinism in its social and political application by humans. Coming from a family of noted biologists, Huxley's engagement with and belief in Darwinian evolution is well-documented. Like Wells, Huxley had once planned to become a biologist, and again like Wells, scientists featured heavily in his fiction (P. Firchow 3). His letters give some clues as to his engagement with the subject: he studied it at least as early as his teens (Smith 41), and was interested in how new (as of 1925) theories of genetics might impact upon or refine the field (Smith 250). Evidently, Huxley was aware of the possibility of genetic alteration; his brother Julian recalled many discussions between them on the topic (P. E. Firchow 69).⁴⁴ However, his letters also give some indication that Huxley associated Darwinism with barbarism: describing the French literary scene, he once noted to a friend that "stringent economic conditions" had made the French "terribly Darwinian... [like] nature red in tooth and claw" (Smith 338).

This last letter was written in mid-1930, probably while Huxley was at work on his essay "Boundaries of Utopia," which – with its descriptions of genetic population control and unsatisfying leisure – is considered an important development in the direction of his thought leading up to *Brave New World* (P. E. Firchow 17). The opposing Darwinisms of the letter and the essay – red teeth versus "deliberate breeding" (Huxley "Boundaries of Utopia") – reveal some discrepancy in Huxley's attitudes to Darwinian theory versus its potential applications. Ironically, writing in the post-Lamarckian age, Huxley conveyed a quasi-teleological impression of natural selection. *Brave New World* is just one of Huxley's texts to contain the idea that Darwinian natural selection (or, generically, the perpetuation of successful mutations) would become a controlled process tending towards some idea of *perfection*, as defined by the controlling body.⁴⁵ This is not to say, however, that Huxley was anti-Darwinian; in his writings, teleological evolution occurs at the level of the *society*, not the individual.⁴⁶ For example, the breeding policies of the World State in *Brave New World* could, at first glance, appear to represent a total departure from biology as we know it. Huxley describes their practices – the sterilization of most women (*Brave New World* 10),

growing babies in bottles (*Brave New World* 7), artificially dividing lower-caste eggs to create dozens of embryos (*Brave New World* 3), and ‘decanting’ children into state control (*Brave New World* 9) – to invoke the ideas of Henry Ford rather than Darwin. With the exception of some animalistic references to the jarred embryos,⁴⁷ “the principle of mass production at last applied to biology” (*Brave New World* 5) seems to bear no relation to biology at all. However the Bokanovsky process, Neo-Pavlovian conditioning, and hypnopaedia together comprise a system of state-controlled ‘Darwinian’ evolution in which ‘mutations’ (predestinations based on caste) are applied and exploited to create a diversity of life similar to that of Darwin’s entangled bank. Where, in nature, a genetic mutation might be of benefit to successive generations, in the World State, any applied caste characteristic is of benefit to the stability of the State itself.

However for Huxley, the teleological drive towards ‘perfection’ (or, at least, the World State’s idea of perfection) differs significantly from the biological teleology of Wells’ utopias. In *Men Like Gods*, as in much Wellsian fiction, a super-intelligent race is created via eugenic breeding – an artificial form of natural selection. However the Utopians’ common genius leaves no working class. Instead of organizing themselves within a hierarchical labour system, the Utopians take on the work that interests them. In this system, for instance, there are no gardeners-for-hire: “He who loves the rose must then serve that rose” (*Men Like Gods* 145). But Huxley, in an essay written during the composition of *Brave New World*, mocked the idea that society just needed to “get rid of priests and kings, make Aeschylus and the differential calculus available to all, and the world will become a paradise” (qtd. in P. E. Firchow 61). If, as the pre-Darwinian philosopher Helvetius claimed, each infant’s mind was equal and had the capacity for brilliance if correctly educated, then Huxley believed that a society of geniuses bred on the back of this claim would lack the diversity to function (Meckier 3). Huxley also rejected Wells’ proffered solution of having some necessary lowly tasks performed by genius Utopians on a rotational basis (*Proper Studies* 281). His issues with Helvetius and Wells are encapsulated in Mustapha Mond’s discussions with John, the so-called ‘Savage.’ Describing the ‘Cyprus Experiment,’ Mond recalls that a test society consisting only of Alphas degenerated into strikes, unrest, war, and eventually a request to be governed by the World Controllers (*Brave New World* 196-7). Having shown the

Helvetian / Wellsian all-Alpha society to be unsustainable, Huxley suggests (through Mond) that the only viable solution is active retardation of the majority of the population: “‘The optimum population,’ said Mustapha Mond, ‘is modelled on the iceberg – eight-ninths below the water line, one-ninth above.’” (*Brave New World* 197) This again is teleology at the level of the society. Many *individuals* may appear devolved – notably the “simian” looking “Epsilon-minus semi-moron” (*Brave New World* 50) – but the society as a whole progresses towards ‘perfection.’

Similarly, Huxley departs from Wells’ approach to biological drives. Again in *Men Like Gods*, the Utopians ‘outsmart’ their animal natures in order to attain a kind of post-evolutionary amity. For instance, for the Utopians, “competition to possess, as the ruling idea of intercourse, was, like some ill-controlled furnace, threatening to consume the machine it had formerly driven.” The solution, then, was to curtail the “primordial fierce combativeness of the ancestral man-ape” (*Men Like Gods* 72). In this sort of society, evolutionary instincts are reversed by conditioning: “whosoever would save his life should lose it... whosoever would give his life should thereby gain the whole world.” (*Men Like Gods* 73). Huxley, by contrast, believed evolutionary instincts to be too well entrenched to be simply overwritten. The World State understands this, and provides its citizens with ‘utopian’ contentment by *over-sating* their biological needs. The need for group affiliation and religious experience is filled by Community Sings and Solidarity Groups (*Brave New World* 68); the need for sex is filled by state-endorsed promiscuity, helped along by the hypnopaedic aphorism that “‘everyone belongs to everyone else’” (*Brave New World* 34); the need for useful work is filled by a workday which, after the advent of labour-saving technologies, is not strictly necessary from an economical perspective (*Brave New World* 197). This creates an atypical literary dystopia in which the citizens of the World State are perfectly content. To them, life is *utopian*, however it appears *dystopian* to us because of the element of state control.

In this way, Huxley attributes his dystopian World State not to Darwin (or indeed to Ford or Freud) but to a network of ‘mad scientists’ who have, like Moreau, misapplied Darwin’s insights. However, while Wells imagined a hellish society stemming from one errant mind, Huxley’s ‘mad scientist’ is neither singular, nor considered errant in the context of their own

World State. Instead, and much more terrifyingly, Huxley universalises the errant mind and gives it authority, depicting a World State government whose advanced scientific prowess has allowed it to maintain a seat of hegemonic power over its genetically engineered subjects. From the outset, the scientific minds and government employees who contemporary and modern readers would consider (by our standards) ‘mad,’ are numerous and empowered. Huxley introduces the Director of Hatcheries and Conditioning, as well as his hundreds of fertilizing staff and his group of protégés, within the first two pages; these are followed by brain-washing infant nurses (*Brave New World* 15) and the Controller for Western Europe, Mustapha Mond (*Brave New World* 28). Indeed every main character – all of whom are Alphas and Betas – is involved in the perpetuation of the ‘mad scientist’ regime.⁴⁸ Bernard and Helmholtz work in hypnopaedia as Emotional Engineers, and as a Hatcheries nurse, Lenina helps to engineer new citizens.

The ‘madness’ of these characters is conveyed not through their demeanour, but through depictions of their societal values which place them fundamentally at odds with 20th Century morality. The Director and his students mock contemporary society by looking back on non-laboratory procreation as “smut” (*Brave New World* 19) and on attitudes to children and sexuality as laughable (*Brave New World* 27). Furthermore, the cultural products of the readers’ time are contraband in the World State, and Controller Mustapha Mond is shown omnipotently erasing them in favour of preserving his subjects’ blissful ignorance:

He waved his hand; and it was as though, with an invisible feather whisk, he had brushed away a little dust, and the dust was Harappa, was Ur of the Chaldees; some spider-webs, and they were Thebes and Babylon and Cnossos and Mycenae. Whisk, whisk – and where was Odysseus, where was Job, where were Jupiter and Gotama and Jesus? Whisk – and those specks of antique dirt called Athens and Rome, Jerusalem and the Middle Kingdom – all were gone. Whisk – the place where Italy had been was empty. Whisk, the cathedrals; whisk, King Lear and the Thoughts of Pascal. Whisk, Passion; whisk, Requiem; whisk, Symphony; whisk... (*Brave New World* 29)

Further offending 20th Century mores, the mad scientist regime forces women to take intravenous Pregnancy Substitutes (*Brave New World* 32), brainwashes its citizens with hypnopaedic moral instruction (*Brave New World* 20), and encourages them to drug themselves until there is “an impenetrable wall between the actual universe and their minds” (*Brave New World* 67).

Having illustrated the possibility of state-controlled Darwinism, Huxley strategically employs an impersonal narrator to make that nightmare seem imminent and inevitable. Firchow notes that Huxley employs the modernist trick of ensuring that “very little is heard; almost everything is overheard.” (15)⁴⁹ Where there *is* some commentary in the text, the narrative voice approximates that of an obedient World Stater, for example marvelling at the wonders of soma (*Brave New World* 66). In addition to minimalizing his authorial presence in the text, Huxley provides very little in the way of background or explanation, and juxtaposes different scenes in quick succession (P. E. Firchow 14-15). The overall effect is to give the reader the impression of having been dropped into a disorienting, dissonant, and above all *immediate* new society. Indeed, though Huxley specifies his temporal setting as 632 years after Ford (*Brave New World* 2), the unfamiliar measurement system, combined with the lack of historical narrative to illuminate the intervening years, minimises the impact of the futuristic setting. Huxley would seem to suggest that, because the socio-political and scientific events contributing to the New World (Fordian mass-production, Freudian psychiatry, Darwinian determinism, Pavlovian conditioning) were historical and contemporary at the time of publication, no explanation was needed to connect the readers’ world with the World State. The ‘New World’ is presented as an intuitive extrapolation from the 20th Century.⁵⁰

However there exists one major disconnect between the 20th Century and the World State. In Ford’s London, contemporary world religions have been wiped out. The Bible is one of the books locked away by Controller Mond (*Brave New World* 29), and although some aspects of Christianity are known to educated Alpha and Beta citizens (*Brave New World* 39; 46), it is presented as a curious antiquity and a source of comedy (*Brave New World* 141). The only character to respect any recognizable religious figures is John the ‘Savage,’ and his ‘Jesus’ is merely one character among others in the mash-up of Christian, Native American, World State and Shakespearean referents which make up his belief system (*Brave New World* 101; 11; 215).⁵¹ In place of organised religion (and, especially, in place of *diverse* religions), the World State instils in its citizens a three-pronged quasi-religious value system which

functions to preserve hegemonic political control rather than to promote personal spirituality. In each of its three aspects – corresponding approximately to the World State motto of “Community, Identity, Stability” (*Brave New World* 1) – the value system explores a post-Darwinian fear taken to extremes. Thus ‘Community’ becomes a “Social River” (*Brave New World* 70) in which individuality is unimportant; ‘Identity’ is determined by mass-produced genetic make-up; and ‘Stability’ is founded on soma and the erasure of knowledge. Together, under the umbrella of Fordism, these strands form a singular world religion which is not opted into voluntarily, but mentally implanted; and which is controlled exclusively by the ‘mad scientist’ network.

In the World State – perhaps predictably under a Fordian system – ‘family’ gives way to what is euphemistically called ‘community.’ With humans mass-produced like model T cars, the ‘mad scientist’ government network has the opportunity to ‘raise’ (mould) its subjects as it pleases. Buchanan argues that, “by keeping adults in a condition of infantile dependency on a larger social body, Huxley’s imaginary state has taken over the role of parent,” and that “the active suppression of the Oedipus complex is [their] principal tool of social stability” (76). The suppressed Oedipal complex creates a desire for the emotionless blankness of the embryonic state, and the bottle-womb is glamorised as the place where “the weather’s always fine” (Huxley *Brave New World* 66; Buchanan, 2002, p. 77). Similarly, those who have emptied their minds with soma are said to be “bottled”; on a “soma-holiday” (*Brave New World* 66-67). Under the Fordian value system, ‘Solidarity Services’ are used to ritualise the search for blankness and to create substitute-family groups dedicated to Ford. At such services, the Catholic sign of the cross and communion cup are replaced by the “sign of the T” and the “loving cup of strawberry ice-cream soma” (*Brave New World* 69-70), and Solidarity Hymns repeatedly emphasise community over individuality. Ritualised assertions such as “I drink to my annihilation,” “Ford, we are twelve; oh, make us one, / Like drops within the Social River” and “I am you and you are I” (*Brave New World* 70-1) hold much the same philosophical implications that Darwinism was feared to hold: that individuality was inconsequential in a system which follows its own unchangeable course. This troubles Bernard Marx as a relatively free-thinking renegade, and he bemoans that he and his peers are “infants where feeling and desire are concerned”; however, for Lenina, that just makes

them good subjects: ““Our Ford loved infants.”” (*Brave New World* 81) As far as the ‘mad scientist’ governmental network is concerned, however, Fordian infantilization promotes community which promotes stability. ““The social body persists although the component cells may change”” (*Brave New World* 84) – and subjects like Bernard who see through their conditioning may not be satisfied to remain ““just a cell in the social body”” (Huxley *Brave New World* 78). Thus, communal infantilization helps to keep subjects subdued, “dancing in the crimson twilight of an Embryo Store... in their blood-coloured and foetal darkness” (*Brave New World* 73).

The post-Darwinian nightmare of diminished identity is further examined through the somewhat ironic inclusion of ‘Identity’ after ‘Community’ in the World State motto. While, for readers, the two values might seem mutually incompatible if not exclusive, for World Staters “social identity is not established within family relationships, but within social classes and the world-community overall” (Kania and Maksimenko 29). Indeed, despite the absence of families, there is a link between identity and common descent. The principle of common descent – vital to Darwinism⁵² – is also critical to the caste system from which World State subjects glean their sense of self. The Bokanovsky process produces many thousands of ‘individuals’ from a single ovary (Huxley *Brave New World* 6), and Bokanovsky ‘siblings’ are ‘labelled’ so that “the two thousand million inhabitants of the planet had only ten thousand names between them” (*Brave New World* 31).⁵³ In this system, then, surnames and lineage do have *some* bearing on identity. In a wider sense, though, caste determines conditioning, which determines self. In addition to belonging to a particular surname-set, ‘individuals’ belong to a caste group which they are trained to differentiate from other (undesirable) castes through hypnopaedic conditioning:

‘Delta children wear khaki. Oh no, I don’t want to play with Delta children. And Epsilons are still worse. They’re too stupid to be able to read or write. Besides, they wear black, which is such a beastly colour. I’m so glad I’m a Beta... Alpha children wear grey. They work much harder than we do, because they’re so frightfully clever. I’m really awfully glad I’m Beta, because I don’t work so hard.’ (*Brave New World* 22)

Individuals are identified by caste just as a car might be identified by its model. And indeed the repetition of the caste conditioning mantras is another aspect of the Fordian religion. Just as they repeat key hymns during Fordian Solidarity Services, the World Staters repeat

their identifying caste mantras even as adults. Lenina, for example, constantly echoes her Beta conditioning: ““what a hideous colour khaki is”” (*Brave New World* 53); ““I’m glad I’m not a Gamma”” (*Brave New World* 54); ““I’m glad I’m not an Epsilon”” (*Brave New World* 64).

The third element of the World State motto – and of the Fordian quasi-religious value system – is ‘Stability.’ In fact, this would seem to be the ultimate purpose of both other elements. ‘Community,’ achieved through infantilization and religious ritual, creates compliance; and ‘Identity,’ achieved through ritualistic repetition of caste mantras, creates hierarchical order. However the mad scientist network uses several other tools to cement its own strength. Firstly, soma is used to subdue citizens by drugging them into a state of semi-conscious conformity. As mentioned, soma is a parallel to communion wine in the Solidarity Services; and it is doubly ritualised through hypnopaedic psalms. Thus citizens are trained to self-pacify with missives such as ““one cubic centimetre cures ten gloomy sentiments”” (*Brave New World* 46); ““a gramme is better than a damn”” (*Brave New World* 47); ““was and will make me ill... I take a gramme and only am”” (*Brave New World* 90). Because soma is hypnopaedically established as a necessary part of life, it is naturalised; and is not controversial – or even, arguably, *optional* – for its users. The benefits of this universal use for the state lie in how somatic ‘holidays’ mirror the values of Fordian society. In its effects on time perception and aesthetic experience, soma dissuades citizens from thinking about their own historio-political context. Under the influence of the drug, ““roots and fruits were abolished; the flower of the present rosily blossomed.”” (*Brave New World* 90) In a society for which ““history is bunk”” (*Brave New World* 29), this mental cleansing of ‘roots’ creates more agreeable political subjects.⁵⁴ The significance of soma as a political instrument is further illustrated by government and anti-government attitudes to its use. From the state’s perspective, hesitation to take soma constitutes “heretical” behaviour (*Brave New World* 129). Accordingly, John the ‘Savage’ asserts his separateness from the Fordian system in part via his refusal to take soma (*Brave New World* 139), and in his entreaties to others that it is ““poison to soul as well as body”” (*Brave New World* 185). However, if it won’t be taken willingly, the state imposes soma via vapour (*Brave New World* 188; 99); and an unseen hand eventually drugs John as well, leading to his implied suicide (*Brave New World* 228-9).⁵⁵

Ignorance is another instrument of political stability in the novel. The political religion of Fordism relies upon the careful management of knowledge; of written knowledge, on the one hand, and emotion knowledge on the other. The suppression of historical books is just one way in which the Fordian state stifles any intellectual arguments that might be made against it. Ironically, active retardation of scientific research is another method. Despite its own highly technological foundations, the World State knows that “every discovery in pure science is potentially subversive... all our science is just a cookery book, with an orthodox theory of cooking that nobody’s allowed to question” (*Brave New World* 198). Those who *do* question are swiftly exiled to an island (*Brave New World* 199-200); not unlike the island of the Cyprus experiment.⁵⁶ John, once more sceptical of the World State, does not acquiesce to its demand for ignorance. His refusal to take soma is a refusal to forget what he knows of history and literature; correspondingly, his tendency to quote Shakespeare becomes more pointed the more he rejects the Fordian censorship of knowledge. Into the vacuum created by the devaluation of scholarship, the Fordian state casts its Bible. The autobiography of Our Ford may truly be an autobiography, if we are to believe that he wrote it. However, Huxley makes a point of noting that it is published by the “Society for the Propagation of Fordian Knowledge” (*Brave New World* 191), and thus, presumably, has been tweaked to best portray the master of industry to his ‘machines’ (making the book more *auto* biography than autobiography).⁵⁷

While the Fordian belief system can be interpreted as a state-administered Christian parallel, there are two key points of departure. Firstly, citizens do not *choose* to believe and do not recognise their beliefs as being based on faith rather than fact. Ford, for the World Staters (and for Huxley’s readers) is a real historical (contemporary) figure. Because his existence is undoubted, and because his supremacy is reinforced constantly by the state-parent, there is no secularity. When Bernard departs from the Fordian lifestyle, he is regarded not simply as agnostic, but as a traitor: “an enemy of Society, a subverter... of all Order and Stability, a conspirator against Civilization itself” (*Brave New World* 129-30). Secondly, in keeping with their philosophy of perpetual comfort, the World Staters’ ‘religion’ has no history of sacrifice

or discontent. Ford's engineered humans, conditioned since embryonic against anything deemed 'sinful,' have never experienced a Fall. If their God is one of mass-production, and the worshippers themselves are built using Neo-Darwinian genetic mass-production, then there is no field of tension between mortal and God. There is also no Tree of Knowledge: with all forms of non-essential knowledge held back by the state, there is no way to transgress. Whereas, for "people in the time of Our Ford... knowledge was the highest good" (*Brave New World* 200), for the World Staters it is the enemy of happiness. In the absence of transgressive knowledge and Original Sin, however, there can be no spiritual maturity among the World Staters. Their prelapsarian innocence is really a state of retardation. Religious feeling is outsourced to a mind-altering drug: "Anybody can be virtuous now. You can carry at least half your morality about in a bottle. Christianity without tears – that's what *soma* is." (*Brave New World* 210) Without sin or knowledge, they are little changed in their adult states from the naked children frolicking in the bushes (*Brave New World* 26-7). The hedonistic excesses that placate the World Staters also distract them from developing into intellectually curious adults.

The only character who does experience a sort of Fall is John. The extent of his knowledge and curiosity is vast: he is self-educated in old-world culture and literature (*Brave New World* 113), knows of the new world through his mother's stories (*Brave New World* 137), and possesses a kind of intuitive spiritual wonderment which leads him to understand "Time and Death and God" (*Brave New World* 118). The extent of his knowledge makes him of "scientific interest" (*Brave New World* 123) to the World State and prompts his expulsion from the Eden of the Reservation into what he sees as the soulless wasteland of London. However he is by no means prelapsarian before leaving the reservation. A deep sense of guilt accompanies his attraction to Lenina as she sleeps in the rest-house (*Brave New World* 126), suggesting that John has been introduced to the concept of shame long before he leaves his Eden. The shame of his own sinful feelings, however, is insignificant compared to the shame of merely *witnessing* the hedonism of the new world. John's second expulsion – from London to a life of solitude in a country lighthouse – is a matter of choice. As he explains, "I don't want comfort. I want God, I want poetry, I want real danger, I want freedom, I want goodness. I want sin." (*Brave New World* 211) However even in this he is

denied: the new world imposes on his solitude and treats him as a show monkey. They surround him, “throwing (as to an ape) peanuts,” jeering when “the ape had spoken,” and forcing him to adopt “the posture of an animal at bay” (*Brave New World* 225). Thus John, even after two expulsions, is cornered by the new world into adopting a devolved manner.

For the Huxleyan citizen, then, the choice is either no Fall and a life spent in infantilised stupor, or repeated Falls and a life of denied spirituality. Ultimately, under the governance of the World State, this is not a matter of choice at all. The denial of a communal Fall moment is a political instrument, and the innocent citizen is much more easily controlled. If a few errant individuals discover sin, as John does, then the state is unaffected: ““after all, what is an individual? ...We can make a new one with the greatest ease”” (*Brave New World* 128).

CHAPTER FIVE

MAN AS BEAST IN *LORD OF THE FLIES* AND *GALAPAGOS*

By the mid 20th Century, natural selection had ceased to be the controversial theory of one scientist, and had become accepted fact. Correspondingly, mid- to late-20th Century literary interpretations of Darwinian theory shifted away from 'mad scientist' narratives and towards narratives which more deeply explored the philosophical implications of Darwinian theory. In these new, less reactionary texts, the danger of Darwinism is what it implies for the role of humans in the natural world. If we have come from apes, and have no special authority or unique soul over and above our biology, then we lose our sense of separateness. For the two literary texts examined in this chapter, the fear of lost superiority is expressed via literal or symbolic 'devolution.' In *Lord of the Flies*, civility is shown to be a thin window-dressing which tenuously obscures the ever-present bestiality of human nature. And in *Galapagos*, the devolved human is ironically validated as an improvement upon the 'big brained' *Homo sapiens* whose wars and emotional complications hamper survival.

LORD OF THE FLIES

It is not necessarily helpful to classify *Lord of the Flies* as a deliberately Darwinian or non-Darwinian text. On the one hand, the novel has been situated "in the long tradition of anti-science writing in England, where authors for centuries have equated scientific progress with de-humanization." (Oldsey and Weintraub 91) On the other hand, it has been argued that the brutality of the marooned boys is a condemnation of culture, not biology. If it were a Darwinian narrative, Levitt argues, the marooned boys would have landed as infants (without their cultural conditioning), and "the fittest would have survived disease and the elements with a little luck." (522) However the question of whether the novel is intentionally 'Darwinian' is not as important as the fact that it articulates a key anxiety prevalent in the period following the acceptance of natural selection. As it depicts the break-up of the boys' society, *Lord of the Flies* charts a regressive movement away from civility and humanity, and towards a primitive state of barbaric animalism. This picture of

reverse evolution hyperbolically illustrates the fear that, if we come from beasts, some aspect of the beast remains. For Golding, the post-Darwinian human had no hope of ever avoiding original sin, because sin – savagery, brutality, bestiality – is built into our biology.

Golding claimed to have been bored by Darwin, and denied that anything other than his own experiences provided inspiration for *Lord of the Flies* (Biles 30). However, his claim betrays the fact that he had *read* Darwin, and indeed, like Wells and Huxley before him, Golding came from a scientific family and studied science at university (Baker "Golding and Huxley: The Fables of Demonic Possession" 315). Though he did not engage with Darwinian theory in the direct way that Wells and Huxley did, Golding's language is frequently so undeniably Darwinian that some doubt must be cast on his claim of no influence. Like Huxley, Golding uses Darwin's chosen word 'tangle' (and its derivatives) to describe the natural landscape. This might be considered a coincidence, were it not for the sheer regularity of Golding's repetitions of the term. Rather than evoking the sense of wondrous diversity in the Darwinian use of 'tangle,' Golding uses it to denote confusing and treacherous wildness in the landscape (28; 114; 48; 92). He also applies the term consistently to the boys' bodies, specifically their hair, therein linking the idea of wildness to them also.⁵⁸ Nodding again to Darwinian rhetoric, Golding recasts the entangled bank of *The Origin of Species* as "a bank covered with coarse grass, torn everywhere by the upheavals of fallen trees, scattered with decaying coco-nuts and palm saplings." (10) Golding also likens Jack, his most brutal character, to an ape on more than one occasion (53; 165). On the basis of this evidence it must be assumed that Golding was at least *cognizant* of Darwinian language and theory, if not referencing it as a major source. However, for the purposes of this chapter, the best way to read the novel is as an *indirect* engagement with Darwinian theory – the product of a mind educated in the post-Darwinian age, rather than necessarily a deliberate commentary.

But though Golding did not necessarily *deliberately* comment on Darwinism, he certainly communicated a pious distaste for the decay of spiritual order. Baker calls Golding "a Christian moralist who would not let us transcend original sin"⁵⁹ ("Golding and Huxley: The

Fables of Demonic Possession" 311); and indeed his interview with Golding justifies the impression:

Unless we control ourselves, we sin. Our nature is to want to grab something that belongs to somebody else, and we have either to be taught or teach ourselves that you've got to share, you can't grab the lot. And for God's sake, history is really no more than a chronicle of original sin, I would have thought. (Baker "An Interview with William Golding" 134)

In keeping with his personal religious perspective, Golding scatters the imagery of Genesis throughout *Lord of the Flies*. Like Adam and Eve, the boys are dropped into an unfamiliar natural environment; they try to "subdue" the earth, to "have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth" (2:28), and they are cloaked in the menace of the snake or 'beastie.' However unlike Wells and Huxley, Golding does not use original sin as an ideational framework through which to condemn some aberrant scientific hubris. Rather, Golding applies original sin as the Bible does – conveying the idea that sin is innate to human nature. The Darwinian spin is the reimagining of this innate sin as a kind of residual animalism: "a beast we carry in our genes" (Levitt 522). Thus, while Wells and Huxley posited that evolutionary science would prompt the 'Fall,' for Golding, the science is simply a retroactive explanation for a fall that is both perpetual and inevitable.

The boys' fallen state is thinly camouflaged by the trappings and conditionings of their former lives. Aside from a few moments of fantasy, they are never depicted in their pre-crash 'civilised' state in England: and their Englishness, though cited as a reminder of their duty to maintain decorum, does not ensure that they will. Ironically, the call to order is sounded by Jack, the very character who will most resolutely ignore it: "'we've got to have rules and obey them. After all, we're not savages. We're English; and the English are best at everything. So we've got to do the right things.'" (47)⁶⁰ Jack again displays the greatest fall from grace in his appearance. Clothes become a recurring symbol of civility in the novel – as the boys' bodies are partially covered, so too their brutal natures are only partially held back. Arriving at the first assembly, "some were naked and carrying their clothes: others half-naked, or more-or-less dressed" (19). Only Jack and his choir of future hunters maintain their dress at this stage, wearing "black cloaks which bore a long silver cross on the left breast and each neck was finished off with a hambone frill." (21) However their elaborate

dress serves only to embellish their fall into savagery: Jack encourages them to abandon their cloaks (25), and they soon adopt a new 'uniform' of masks of clays and charcoals (68), and smeared blood (77). The masking leads to questions over the meaning of a human visage: as Ralph asks, "if faces were different when lit from above or below – what was a face? What was anything?" (85) Eventually Jack abandons the last of his humanity with the last of his clothes (155). At the moment of his rescue, Jack's two remaining articles of dress are a cap, symbol now only of his tyrannous leadership, and murdered Piggy's stolen glasses (222). Only Ralph remains humanely "conscious of his filthy appearance" (221). Their betrayed Englishness is noted by the rescuing naval officer: "I should have thought that a pack of British boys – you're all British, aren't you? – would have been able to put up a better show than that" (222). Though Englishness, Golding suggests, is not enough to mask the essential animalism of human nature.

The conch, too, acts as a symbol of tenuous civility. However, like the boys, the conch is a product of the biological world whose organisational power is merely an imaginary adornment dressing a sharp natural form. Despite Ralph and Piggy's estimation that it is a treasure, the language surrounding the discovery of the conch acts to debase it. They find it among "weeds" (16), and must spit in it to create sound (17). It is given an air of elephantine brutality when described as "a gleaming tusk" (18), and indeed its colour is later compared to that of the stick-mounted pigs' skull (204). However the conch holds greatest symbolic power in the way the boys honour or disregard its significance as a tool for order. At first they *overvalue* it: choosing Ralph as chief mainly because "most obscurely, yet most powerfully, there was the conch" (24) in his hands. Thereafter, when possession of it determines speaking rights (36), respect for the conch indicates respect for social order over brutality and survival mentality. At first even a wave of the conch brings silence; however even at this early stage, the suggestion of a fire creates sufficient excitement to render the conch useless (41). As the boys' unity breaks down, the conch is still respected as a symbol, but general order is not. During one meeting, physical tussles break out over possession of the shell, and Ralph senses that "the world, that understandable and lawful place, was slipping away." (99) Jack's emphatic "'Bollocks to the rules!'" (100) seals the disintegration of the group, and Ralph again understands this in terms of the conch: "'If I blow the conch and they don't come back; then we've had it... we'll be like animals.'" (101). In the moments

before its destruction, the conch still holds some residual power: though the fact that Jack's boys come to Ralph when it calls (193) and fall silent for Piggy when he holds it (199) is perhaps attributable more to conditioned habit than to order and respect.⁶¹ Eventually its "fragile, shining beauty" is "exploded into a thousand white fragments" (200), and the deliberateness of the destruction (both of the conch and of Piggy, whose murderers would have seen him holding it) signals the end of tribal order – a fact Jack is quick to advertise.

As the boys' Englishness, clothing and conch are destroyed, their animalistic savagery becomes more apparent. Two recurring motifs indicate the regressive evolutionary stages that the boys go through. Firstly, the use of the term 'savage' reflects the prevailing opinion that tribal people might occupy a lower rung on the evolutionary ladder. This was and remains a controversial idea. Darwin wrote of the possibility that different races might be classified as different species, and expressed a belief that racial groups displayed mental differences – primarily "in their emotional, but also in their intellectual faculties" (*The Descent of Man* 196) – though he also stressed the superficiality of such differences (*The Descent of Man* 207-8). However as Waters argues, in 1950s England, panicked reactions against post-war immigration repopularised the idea of the racial 'other,' and the 19th Century custom of referring to socially transgressive Britons as 'savages' was revived (230). Thus Golding's use of the term invoked ideas of racial hierarchy as well as a general sense of threat and decivilisation. Early in the narrative, savagery (in adjective form) surrounds the notion of a hunt. At first this is play-savagery only – a mere distraction, as Jack says, "'until they fetch us'" (32) – and they stop short of killing a piglet (33). However after their first kill, "with lifted spear" and "blood on his hands," Jack leads the boys' new choral song: "*Kill the pig. Cut her throat. Spill her blood.*" (75) Their triumph is phrased in Biblical language: "they had outwitted a living thing, imposed their will upon it, taken away its life like a long satisfying drink." (76) This moment of attaining dominion over a beast is contemporaneous with their failure to be rescued, and even Ralph, incensed over the extinguished source of smoke, has his voice turn for a moment "savage" (76). As the group loses unity and rationality, and arguments over 'beasts' signal "the breaking-up of sanity" (96), Ralph senses that "the world, that understandable and lawful world, was slipping away." (99) This 'understandable' world can be read as the so-called 'civilised' world – hereafter there is a schism between Ralph and Piggy's 'civilised,' fire-based rescue plans, and Jack's 'savage'

hunting party. When Ralph asks: “‘What are we? Humans? Or animals? Or savages?’” (99) he inadvertently proposes a group division which will come to pass. Once Jack’s band of boys splits from Ralph’s, the term ‘savage’ becomes their identifying title (176; 93; 94; 96; 99; 202-3; 05-6; 15). Hereafter their hunting activities begin to be linked to biological drives. Their play re-enactment of a hunting trip evokes violent male competition when the group physically hurts Robert as the play ‘pig’ (126); while sexual imagery pervades the description of the slaughter of a sow (149).⁶² At their most brutal, the boys become murderers. Whipped into a frenzy by their blood-thirsty mantra, their savage animal natures emerge red in tooth and claw and turn on Simon as ‘beast’: “At once the crowd surged after it, poured down the rock, leapt on to the beast, screamed, struck, bit, tore. There were no words, and no movements but the tearing of teeth and claws.” (168) After the murder, the boys (as seen through the still-‘civilised’ eyes of Ralph) lose their human identities. Seeing his former friend, he muses: “this was not Bill. This was a savage whose image refused to blend with that ancient picture of a boy in shorts and shirt.” (202)

The ‘savage’ label is one way in which Golding moves the boys down a regressive evolutionary ladder; secondly, animalistic descriptions of the boys, particularly of their movement, serve to liken them to creatures considered still *further* down the ladder. Yearning for the authority of an adult presence, the boys ask: “Isn’t there a man here?” (21) The question takes on a double-meaning as the boys resort to leadership squabbles which resemble ranking practices within animal societies (Lederer and Beattie 1319). Their human presence is further diminished as they are likened to a series of animal species. They become dogs (20; 46; 52), birds (22), insects (31), apes (53; 165), seals (71), cats (215), and ‘batty’ (57; 122; 73). Though the boys are likened indiscriminately to this wide variety of animals (and not in a linear ape-to-amoeba evolutionary regression), pigs are overrepresented. The boys’ movement through their new landscape is repeatedly described as a ‘trot’ (19; 60; 114; 31; 47; 53; 55; 86). When they turn on Ralph, Jack instructs the boys to “‘throw our spears like at a pig’” (208): Ralph, in return, plots his evasion strategy based on what a pig would do (217), and vows to leave any attacker “stuck, squealing like a pig” (212). Golding’s choice of the pig as the boys’ key animal counterpart has two functions. It contributes to the overall impression of their devolutionary arc; however it also emphasises that they *are* what they hunt. This notion is made overt when some of the boys act as pigs in

the play re-enactments of the hunts (126; 67), and especially when Robert is hurt. However their attacks on Piggy are also parallels with the pig hunts. Piggy's name victimises him as a 'hunted' animal, particularly as it is applied to him mockingly and against his request (23). He is also 'hunted' for the resource of his glasses. As, arguably, the most intelligent of the marooned boys, Piggy's glasses are a symbol of his intellect; however to Jack and his savages, they are a mere fire-making tool to be stolen (186). After the symbol of preserved rationality is taken, the whole 'civilised' group is crippled. Piggy, of course, is "expressionless behind the wall of his myopia"; but Ralph too is "blinded... with ashes" and Eric wears a "mask of dried blood" (187). When the pig-hunters finally kill Piggy, the mechanics of his death are described as akin to a hunted animal's. He is struck "with no time for even a grunt", and while dying, his "arms and legs twitched a bit, like a pig's after it has been killed." (200) Thus as the boys simultaneously *hunt* pigs and *act as* pigs, they metonymically represent their diminished place in the natural world: without civility, they are at once the hunters and the hunted.

In their island society, then, the anthropocentrism of their 'civilised' English upbringings has dissolved; accordingly, Golding provides no revised creation narrative or Adam / Eve parallels. As Oldsey & Weintraub note, "the Edenic quality of the island paradise is compromised from the beginning, for, although the essentials of life are abundant, so too are the essentials of pain, terror, and death" (97). And just as the island is no Eden, the boys are no Adams; as beasts themselves, they can hold no dominion over others.⁶³ However, Golding *does* address the Fall of Man and reconceptualise it as an inherent fallen *condition*, rather than an isolated event. This is symbolised in his use of snakes as a symbol not of corruption, but of perpetual threat. At first, as their rationality lingers, the older boys explain away the threat of the 'beastie' or 'snake-thing': "'You couldn't have a beastie, a snake-thing, on an island this size,' Ralph explained kindly. 'You only get them in big countries, like Africa, or India.'" (39) However they are proved wrong when fire – heretofore a symbol of hope and potential rescue (Lederer and Beattie 1320) – sends legions of snakes crawling into view (51). As fear penetrates, 'snake' becomes a "shameful syllable" (57), and the littluns can only talk in code of "'those twisty things in the trees'" (92) which populate their nightmares. Eventually even generically ominous noises become snake-like in the boys' perception (133).

However the real 'beastie' is implied to be man. In their devolved form, the 'fallen' boys (as well as a literal 'fallen man') exist as animalised beasts; and will kill, as a 'beast,' one of their own. Simon, who is canonised by critics as a "saint and prophet" (Oldsey and Weintraub 95) and "embryo mystic" (Lederer and Beattie 1320), sees that "maybe there is a beast... maybe it's only us." (97) Despite the failure of his friends to understand his meaning, Simon's hunch persists: "However Simon thought of the beast, there rose before his inward sight the picture of a human at once heroic and sick." (113) Of course he is right, and much of the inspiration for the mythical beast comes from the dead parachutist in the mountains. As Dickson notes, this parachutist is "literally and figuratively a 'fallen man'" (13); as a fighter in the war which downed the boys' plane, he represents the dehumanising savagery of conflict, and can be read as an adult parallel for the boys. In death he becomes devolved: "something like a great ape," his corpse is a monkey-marionette moved only by the wind, with a "ruin of a face" (136). However, by the time Simon discovers the harmlessness of the so-called 'beast,' Jack has adopted a beastly persona of his own. With painted face and spear in hand, Jack has become at this stage a sub-human alpha male: "power lay in the brown swell of his forearms; authority sat on his shoulder and chattered in his ear like an ape." (165) As the bestial ape quality transfers from the parachutist to Jack, the locus of fear for the mythical 'beast' is falsely imposed on Simon. Just as the boys had imagined Robert as a hunted pig, Simon becomes a hunted beast; though now their imaginative ritual lacks any playful element:

The beast was on its knees in the centre, its arms folded over its face. It was crying out against the abominable noise something about a body on the hill. The beast struggled forward, broke the ring and fell over the steep edge of the rock to the sand by the water. At once the crowd surged after it, poured down the rock, leapt on to the beast, screamed, struck, bit, tore. There were no words, and no movements but the tearing of teeth and claws. (168)

The bodies of Simon and the parachutist will both end up in the ocean (169-70); however as the original 'beast' and the scapegoat 'beast' drift away, the "demoniac figures" (154) of the painted boys remain as the true beasts. Thus Golding's 'Fall of Man' is not a result of knowledge but of bloodlust; of the inherent "darkness of man's heart" (223).

GALAPAGOS

“I have a canary-bird-in-the-coal-mine theory of the arts.”

-Kurt Vonnegut (W. R. Allen 76)

Kurt Vonnegut's canary song in *Galapagos* questions the 'fitness' of the human tendency to self-destruct. Like *Lord of the Flies*, *Galapagos* is the work of a World War II-era author who depicts a devolutionary process prompted (at least in part) by warfare; however, unlike Golding, Vonnegut conceptualises animalised humans as peaceful and happy creatures. Contemporary (1986) humans are cast as powerless and miserable characters unable – despite their big brains – to control their evolutionary trajectory, which is determined instead by chance. Their cumbersome big brains in fact exacerbate their misery, condemning them to fight one another, and to struggle with a flawed and overcomplicated approach to reproduction. For pre-devolution humans, war and sex are wedded in a biologically destructive culture which denies its own survival. Employing the language of Genesis, Vonnegut casts his future, post-devolution fisherfolk into a revised anti-Eden where no Fall is possible (and, correspondingly, no sin) because there is no Tree of Knowledge from which to eat. There are only fish, and with their skulls streamlined from a million years of swimming, the future humans' brains can hold no knowledge surplus to their survival requirements.

Vonnegut wrote and spoke on the subject of Darwinism as a believer but not an admirer. Like so many of the other authors in this study, he came from a scientific family: he trained in chemistry and his brother was a physicist (Rackstraw 53). However much of his work betrays a humanist's distaste at the implications of various scientific claims. *Player Piano* depicts a Huxleyan dystopia in which mechanization creates class conflict; *The Sirens of Titan* and *Slaughterhouse-Five* tie quantum revisions of time and matter to disorientation; and Vonnegut's play *Happy Birthday, Wanda June* casts murder as a Darwinian 'task' (W. R. Allen 26). Thus Darwinism is just one of branch of a scientific epistemology which, for Vonnegut, steamrolls humanist values. He spelled out his perspective in one interview:

I'm not very grateful for Darwin, although I suspect he was right. His ideas make people crueler. Darwinism says to them that people who get sick deserve to be sick, that people who are in trouble must deserve to be in trouble. When anybody dies, cruel Darwinists imagine we're obviously improving ourselves in some way. (W. R. Allen 76)

The merciless brutalism Vonnegut sees in Darwinism is similar to that he finds in war. As a former prisoner of war and witness to the Dresden bombings (Rackstraw 53), Vonnegut had first-hand experience of the way progression instincts could threaten survival on a global scale, and would ironically link war to sexual reproduction in *Galapagos*.

Vonnegut's science-heavy background is evident in the text, which is perhaps the most densely Darwinian of any in this study. Firstly, he engages with natural selection. This Law⁶⁴ is cited repeatedly as the reason for particular adaptations (81; 104; 285; 317; 19; 24). Further, the future descendants of modern humans are elaborately described in terms of how their characteristics evolved for particular functions:

It was the best fisherfolk who survived in the greatest numbers in the watery environment of the Galapagos Archipelago. Those with hands and feet most like flippers were the best swimmers. Prognathous jaws were better at catching and holding fish than hands could ever be. And any fisherperson, spending more and more time underwater, could surely catch more fish if he or she were more streamlined, more bulletlike – had a smaller skull. (320)

This 'devolved' animal-human species is thus directly attributed to the Darwinian processes. However Vonnegut's Darwinian references extend beyond natural selection and into lesser-known aspects of evolutionary theory. The concept of genetic drift – not Darwinian in origin, but part of the modern synthesis of Darwinism and genetics – is referenced also. Genetic drift describes shifts in the frequency of particular alleles in a population due to chance, rather than fitness (Hamblin 344). This would explain, for example, the distribution of blue eyes among future fisherfolk based on Captain von Kleist's genetic contribution (305). The word 'drift' is extended beyond its genetic definition to become a metaphor for purposelessness and randomness: 'drifting' rafts are theoretical deliverers of species to the Galapagos (4), and a "raft of vegetable matter" (23; 147) attached to another ship indicates that the *Bahia de Darwin* is the human equivalent of this kind of 'drifting' population mover.⁶⁵ Indeed, given the Captain's ineptitude, it *will* drift aimlessly, and deposit the progenitors of the future fisherfolk on a randomly determined island. Another obscure

evolutionary concept applied within the novel is that of population bottleneck. This occurs when an environmental event (such as epidemic⁶⁶ or war, or the combination that Vonnegut employs) creates a situation wherein survival depends on chance rather than fitness. The Santa Rosalia colonists survive because they are in the right place at the right time, despite the fact that they are “pathetically unfit” (Freese 168) according to Darwinian principles. Each of these three components of evolutionary theory – natural selection, genetic drift, and population bottleneck – contains some element of chance,⁶⁷ and Vonnegut uses all three in combination to comment upon the randomness that underpins the human experience; both at an evolutionary and an individual level.

Like Wells before him, Vonnegut strips his characters of control and casts them as “victims of the deterministic force underlying the chance mechanism of natural selection.” (McInnis 383-4) Most of the citizens of Vonnegut’s universe “were dying by the millions because they were unlucky” (298), and indeed there can be few depictions of apocalyptic events as ruthlessly economical as the single paragraph Vonnegut devotes to describing the plague of infertility that destroys modern humans (175-6). His surviving characters are constantly at the mercy of chance. It is mere “luck” that the Santa Rosalia colonists have enough food, simply because “nature chose to be generous” (297). It is “lucky” that Adolf von Kleist is spared the Huntington’s chorea gene, and “unlucky” that his brother Siegfried isn’t (146). The survival of the entire human race is similarly described in terms of a series of ‘lucky’ coincidences. The narrator Leon Trout, with the benefit of having witnessed a million years’ natural selection, is firmly in the habit of attributing everything to luck: “humanity was about to be diminished to a tiny point, by luck, and then, again by luck, to be permitted to expand again.” (132) He reports that extinction could have befallen the Santa Rosalia colonists if blue-footed boobies had been slightly smarter (109); or if a single crewman hadn’t deserted the *Bahia de Darwin* (154); or if a particular door hadn’t been opened (162). It was also “pure, gambling-casino luck that there are no carriers of Huntington’s chorea” (89) in the future society; “a lucky thing for humanity” (195) that no colonists would inherit James Waits’ bad heart; a “lucky break” (212) that no rats existed on the ship to eliminate their food supplies; good fortune that their temporary hearing loss from an explosion was not heritable (218); and so on. In fact Vonnegut extends the influence of chance beyond

biology and heredity, and applies it to the fate of the entire Earth. Thus Captain von Kleist expects to be killed in a random meteorite shower, which, if it didn't wipe out the planet, might at least cause World War Three (133)

In this deterministic universe, individuals cannot direct their own futures: "in the era of big brains, life stories could end up any which way." (103) The few things their 'big brains' *can* control will work to their collective disadvantage and threaten survival. The instinct for warfare and violence is one such neurological liability.⁶⁸ The war between Peru and Ecuador is said to have been initiated "to divert the big brains of [Peru's] people from all their troubles" (128), and though possession of the Galapagos is cited as justification, the war is motivated more by the Peruvians' pride in their well-equipped Air Force (155-6). The 'achievements' of weapons developers⁶⁹ make a mockery of the evolutionary process:

The Law of Natural Selection was powerless to respond to such new technologies. No female of any species, unless, maybe, she was a rhinoceros, could expect to give birth to a baby who was fireproof, bombproof, or bulletproof. The best that the Law of Natural Selection could come up with in my time was somebody who wasn't afraid of anything, even though there was so much to fear. (157)

Of course, fear in itself is a survivalist adaptation; so the militarised environment is doubly disadvantageous to survival.⁷⁰ Leon Trout's experiences in Vietnam also express the notion that wars between the 'big brains' are unnatural. Reflecting on his murder of a Vietnamese grandmother, Trout relates that "this episode made me sorry to be alive, made me envy stones. I would rather have been a stone at the service of the Natural Order." (134) The impression is reinforced when Trout says of his Vietnam weaponry: "Nature could never have been that predictably destructive in such small spaces without the help of mankind." (207) Smaller-brained fisherfolk have evolved past the "three-kilogram brains [which] were once nearly fatal defects" (9), and have no residual instincts towards violence. As Trout explains, their flippers are incapable of inflicting torture (155) or taking slaves (192); and their peaceful existence makes Trout wish he had "put down all my weapons and become a fisherman instead." (215)

A second undesirable 'big brain' trait is the complication of reproduction. Almost all procreation and parenting in the novel is in some way unsuccessful or detrimental to humanity. Biologically, the con artist James Wait is a product of incest, destined to become a "moral monster" (15). His formative experiences with foster parents are similarly damaging, and the so-called "child of the devil" is physically beaten (182). As a reproducer, Wait is successful: but as a father, absent (252). Captain von Kleist, who, as the only man in the Santa Rosalia colony, is solely capable of repopulating the planet, remains "determined not to reproduce" because of his potential genetic disease (289). The Hiroguchis produce a child with a genetic abnormality caused by that other big brain defect, warfare (59). Leon Trout is only ever the father of an aborted foetus (321), and derides his own father as an ineffectual parent (275). Mary is the most maternal character – nicknamed "Mother Nature Personified" (100) – and yet she remains childless (44). As insult to her infertility, she must lecture students on "how easily a teenage virgin could be made pregnant by the seed of a male who was seeking sexual release and nothing else." (131) For the devolved fisherfolk, however, mating and reproduction are simplified. Juxtaposing them against Mary and James' complex reproductive histories, Trout describes the mating habits of the future fisherfolk: "Men and women now become helplessly interested in each other and the nubbins on their flippers and so on only twice a year – or, in times of fish shortages, only once a year." (247) The decline of monogamous pairings runs parallel to the decline of parenthood, with fisherfolk infants forgetting their mothers after a nine month childhood (128; 67).⁷¹ The end of modern parenthood is encapsulated in a moment of symbolic transition between the human and fisherfolk societies, when an explosion (product of that first 'big brain' flaw) "snapped the white nylon umbilical cord which tied the future of humankind to the mainland." (235) Vonnegut would seem to suggest that 'cutting the cord' is advantageous to survival. Just as the Santa Rosalia colonists are set on course towards their island by this severing, and even lowered down to their island on the broken rope (285), so too their descendents will benefit from early independence.

Vonnegut's two primary big-brain liabilities – war and overcomplicated reproduction – are combined in two incidents which establish a conceptual link between the biological urges for sex and violence. In the first, a European prince hires James Wait (at this point a

prostitute) to assist his auto-erotic strangulation. The prince “wanted young Wait to strangle him with a silken sash from his dressing gown, and then to loosen the sash after having brought him as close as possible to death.” (177) This is clearly an established sexual preference: the prince has pre-cut lengths of rope in a drawer and pre-cut tape at hand for his mouth (178; 80). However the prince is not the only one who has a neurologically entrenched sex/violence link. Wait allows the prince to die, not out of any conscious malice or curiosity, but because “his big brain simply wasn’t working right at the time.” (180) In the second instance in *Galapagos* of the intermingling of sex and violence, two Peruvian pilots drop rockets as if their release is a sexual act. The first missile is said to be “madly in love with the radar dish atop the control tower” (204) which was its target. After the pilot, Reyes, releases the rocket “to consummate its love affair” (205), he experiences a kind of post-coital bliss: “He was happy. He was humble. He was awed. He was drained.” (205) There is a distinct eroticisation of “the moment of mating” (208), “when that Peruvian rocket put the tip of its nose, that part of its body most richly supplied with exposed nerve endings, into that Ecuadorian radar dish.” (207). And the eroticised missile drop is repeated by Reyes’ friend Cortez. Responding to Reyes’ claim that releasing a rocket “was more fun than sexual intercourse” (205), Cortez would affirm after his own drop that “*It is true.*” (233)

These two instances of sexualised violence question the efficacy of natural selection in the age of the big brain. If sexual and violent impulses have an adaptive function (facilitating reproduction and self-defence, thus improving the odds of survival and reproduction) then their modern mutations have reversed their purpose. The brutalisation of sex, and the sexualisation of violence, actively *cause* death in both scenarios. As Leon Trout comments, “What a survival scheme!” (178) Vonnegut seems to suggest here that the developments made possible since the evolution of our ‘big brains’ constitute a level of complexity that acts against the logic of natural selection. Thus, the perception of complexity as *progress* – a common misreading of Darwinian theory – is erroneous. Biological complexity (big brains) and emotional complexity (the mingling of interpersonal relationships with reproduction) create only confusion for the modern humans of *Galapagos*. And adding violent impulses to the mix, survival is threatened. In this way, “Vonnegut reverses the cliché of humanity marching ever onward and upward”: the fisherfolk become like the species Darwin originally

studied on the Galapagos Islands, in that “neither the strongest nor the most complex survived, but the fastest and best at adaptation.” (Morse 94)

As Vonnegut’s characters negotiate the transition away from complexity and towards a simplified, fitness-based evolutionary landscape, their humanity and individuality is demeaned. The narration of Leon Trout – who, having witnessed a million years of evolution, is perhaps understandably reductive in his attitude towards human characters – emphasises their genetic fitness as their redeeming or condemning quality. This runs contrary to the ‘rules’ of fiction according to Literary Darwinism: conventionally, in order for fiction to appeal to the Darwinian human, “the protagonists should make attempts to maximise their biological fitness” (Nettle 67); not be defined by it. This is clearly an authorial choice on Vonnegut’s part – he makes conspicuous use of Darwinian criteria to illustrate the decline in significance of the individual after natural selection. As discussed above, Vonnegut’s characters make no efforts to maximise their fitness or even to ensure survival, and yet Trout repeatedly characterises them in terms of their fitness value. The non-survival of some of the *Bahia de Darwin*’s intended VIP passengers is said to be inconsequential because “most of the women on the passenger list were past child-bearing age, and so not worth fighting for.” (198) Conversely, James Wait, a deplorable character by moral standards, is celebrated in Trout’s evaluative paradigm: “by Darwinian standards, as both a murderer and a sire, he had done quite well” (250); though his genetic heart problems would have made him undesirable as a procreator (195). When the colonists are partially deafened, Trout shows no sympathy, and only comments that “this defect, fortunately, was not inheritable.” (218) Trout’s disregard for humanistic values is juxtaposed against Mandarax’ pearls of quoted wisdom. As the “lofty sentiments” (63) of literary quotations are interspersed throughout the text, Trout continues to denounce “the spilling of useless, uncalled-for signals from our preposterously huge and active brains” (188). In her role as a biology teacher, Mary plays by the same rules of evaluation by fitness: “when Mary learns that there is a classification between favourable individuals and injurious ones... we learn that to evolve in a world dominated by these values, we must, like Mary, accept that classification.” (McInnis 360) However, even under this classification system, the ability to survive is no virtue: as Wait observes, “the only kind of person who can’t say that [they are

a survivor] is a corpse.” (258) But even corpses are not spared from Trout’s degrading commentary. Wait gets a particularly Darwinian eulogy:

He was some kind of male ape, evidently – who walked upright, and had an extraordinarily big brain whose purpose, one can guess, was to control his hands, which were cunningly articulated. He may have domesticated fire. He may have used tools. He may have had a vocabulary of a dozen words or more. (294)

The repeated funereal refrain – “‘Oh, well – he wasn’t going to write Beethoven’s Ninth Symphony anyway” (266-7) – reinforces the notion that the ordinary human is little more than an anthropological specimen.

As the genetic fitness imperative diminishes human complexity on the island, paving the way for a new simplified human species, a new creation narrative is constructed. The language of Biblical creation is employed repeatedly as a parallel to Trout’s narrative. He notes that “I might entitle my story ‘A Second Noah’s Ark” (5), and indeed, miniaturised versions of the Noah story (172; 275), the David and Goliath story (176; 201), populate the text. However, once the *Bahia de Darwin* lands at Santa Rosalia, *Galapagos* becomes primarily a retelling of creation. The Galapagos Islands, much like those of *The Island of Doctor Moreau* and *Lord of the Flies*, are described as a hellish version of Eden. Mary constructs a fiction of their island destination⁷² as “a sort of paradise” with “saints and angels to greet them” (248); however, in reality, “the bits of land were mockeries, without safe anchorage or shade or sweet water or dangling fruit” (17). They are a distillation of “hell” which is only turned “from worthless to priceless” (18) by the magic of Darwinian fame. But while Darwin validates the islands, Trout jokes that the fire of their volcanoes is evidence that “the gods are still angry.” (44) Thus, for the Galapagos Islands, Darwin is a figure of salvation and ‘the gods’ of vengeance. In this anti-Edenic environment, the colonists are explicitly cast by Trout as the characters of Biblical creation. Captain von Kleist is “a latter-day Adam” and Mary, on account of her infertility, “would not, could not, become his Eve. So she had to be more like a god instead.” (51) She is cemented as a god-like character when the six teenaged Kanka-bono women are said to believe her “capable of doing great evil as well as good.” (308) These Kanka-bono women, in turn, become Eve figures. In addition to living in awe and fear of the god figure, their youth and fertility (290) –

as well as, more obviously, the fact that they will give birth to the children of 'Adam' – cast them collectively in the role.

Once the creation characters are cast, Vonnegut reverses his Biblical source narrative. Instead of being cast *out* of their reversed Eden, the colonists are cast *in*. Then, instead of being themselves 'created' by an intangible god, the god-figure of Mary creates new life by artificially inseminating the Eves of the Kanka-bono women (292-3). As a further reversal, this is not depicted as an act of deliberate design. Mary believes that "it would be a tragedy if a child were born" (290), and Trout mockingly equates her actions to an irrational 'big brain' interior monologue: "'Here is a crazy thing we could actually do, probably, but we would never do it, of course. It's just fun to think about.'" And then, as though in trances, the people would really do it" (291). The Biblical version of Original Sin is also reversed. The Adam, Eves and god-figure of Santa Rosalia reach their anti-Eden *already* in possession of an "Apple of Knowledge" (63) in the form of Mandarax. Instead of an Eve consuming it, Vonnegut has 'Adam' (Captain von Kleist) destroy it by throwing it into the ocean (316). With the colonists' bank of information eliminated, the sin of knowledge is erased. Thus as they devolve into smaller-brained fisherfolk, they move away from Original Sin and become *postlapsarian* innocents. In this way Vonnegut, like Huxley, associates the downfall of human complexity with the *absence* of Original Sin. Whereas, in *Brave New World*, the World Staters did not sin because they were conditioned against it; in *Galapagos* the fisherfolk do not sin because, after the decimation of knowledge, they lack a moral framework of 'good' and 'evil.' Within their state of animalistic naivety and their simple lifestyle of peaceful fishing, they cannot transgress.

It is significant that the narrator, in the act of inscribing the human trajectory from sin to innocence, fulfils his own prophecy. Trout's father relates his son's belief "that human beings are good animals, who will eventually solve all their problems and make earth into a Garden of Eden again." (281) However it is not *humans* who will make themselves 'good,' nor is it any god. Indeed the fisherfolk, with their lack of familial structure, will disobey the one Biblical imperative that Mandarax quotes in the text: to "honor thy father and thy

mother” (65). Instead, in keeping with the notion that the gods darkened their Galapagos Island home while Darwin redeemed it, the fisherfolk are cast as a *Darwinian* -- rather than human or divine – success story. As Trout suggests, the sinful *Homo sapiens* was a broken creation; and “the Law of Natural Selection did the repair job without outside assistance of any kind.” (319)

CHAPTER SIX

A CONFLATION OF FEARS IN *ORYX AND CRAKE* AND *GENESIS*

Towards the end of the 20th Century, the reputations of biologists were once again sullied in the popular imagination. The media reaction to the cloning of Dolly the sheep in 1997 was predominantly disapproving, and conveyed the idea that “the sweet image of the lamb of God is transformed into the more evil image of the man-made monster, made by scientists who are playing God.” (Nerlich, Clarke and Dingwall 49) Furthermore, the development of genetically modified food gave so-called ‘Frankenstein’ science an air of immediacy (Nerlich, Clarke and Dingwall 38). In this context, fears over ‘mad scientists’ re-emerged in literary fiction. At the same time, the fields of cybernetics and artificial intelligence gave rise to the notion of the ‘posthuman.’ With molecular biology elucidating a view of the body as coded information, the idea arose that “the boundaries of the human subject are constructed rather than given.” (Hayles 1; 84) The possibility of artificially modifying the body meant that “Man will no longer be limited to a natural and 80liché80l evolution” (Baron 19). In this context, the fears of ‘mad science’ and devolution become entwined; the manipulating scientist/s and the manipulated (devolved) body are part of one dehumanising and politicised regime.

The texts examined in this chapter rearticulate the fears expressed in all four of the novels previously discussed, and combine them to create fictive worlds which cast the human race into the past tense. ‘Mad scientists’ have progressed beyond the stage of Moreau-like experimentation, and even beyond the stage of genetic *manipulation* of living people. Acting with political motives, they instead exterminate existing human societies and replace them with new, devolved hybrid species. In *Oryx and Crake*, the lab-bred Crakers exist in a state of prelapsarian naivety – much like Huxley’s *World Saters* – but without the neurological complexity required for normal human intelligence, civilisation or religious belief. And in *Genesis*, state-sponsored experiments with humanised robots lead to a super-intelligent hybrid breed of robotic orang-utans who overthrow the human race.

ORYX & CRAKE

“Understanding the imagination is no longer a pastime or even a duty but a necessity, because increasingly, if we can imagine something, we’ll be able to do it.” (Atwood "The Handmaid's Tale and *Oryx and Crake* "in Context"" 517)

“Nature is to zoos as God is to churches.” (*Oryx and Crake* 206)

Atwood has denied writing science fiction. She insists upon “a distinction between science fiction proper – for me, this label denotes books with things in them we can’t yet do or begin to do... and speculative fiction, which employs the means already more or less to hand” (“The Handmaid's Tale and *Oryx and Crake* "in Context"" 513). *Oryx and Crake*, in Atwood’s estimation, is the latter – and the ‘means’ already at hand are genetic manipulation. Thus in its application of Darwinism, *Oryx and Crake* resembles *The Island of Doctor Moreau*: in each novel, the general principle of genetic engineering acts as a springboard for ‘mad scientist’ speculative fantasy. However unlike Wells, Atwood inherits a form of Darwinism already imbued with “the ‘postmodern’ scientific mindset that openly flouts the ‘laws’ of nature posited by modern science and works to collapse boundaries among species” (Bouson 145). For Crake, then, the work of genetic manipulation does not carry the social stigma that it did for Moreau. However, Atwood layers her 21st Century version of Darwinian gene splicing with a sense of postmodern identity loss. The devaluation of the body as imperfect and improvable in Crake’s mind is associated with a societal attitude to the body as spectacle. This gives Crake’s research agenda an economic value, and accords him academic and corporate validation – as well as every imaginable resource – under the guise of enhancing the experiential spectacle of the body. Thus Crake’s magic (secretly) sterilising pill “was designed to take a set of givens, namely the nature of human nature, and steer these givens into a more beneficial direction than the ones hitherto taken.” (*Oryx and Crake* 293) However, the pill is merely a front, and Crake’s true project uses gene-splicing to go further than merely *steering* human nature. True to his maxim – “*think of an adaptation, any adaptation, and some animal somewhere will have thought of it first*” (*Oryx and Crake* 164; italics in original) – Crake artificially ‘improves’ the human form by acting as a pseudo-Darwinian god.

The notion that Crake exploits of the 'natural' as fractured and improvable is a cornerstone of posthuman culture. Hayles writes that, in the virtual age, "the body is disappearing: ideologically, into the signs of fashion; epistemologically, as the Cartesian consciousness guaranteeing its existence falls apart... and technologically" (193).⁷³ Certainly, in *Oryx and Crake*, the body is kept distant from the mind, and exists at a remove from the natural world. For Crake and Jimmy, this starts from a young age: their real-world identities are erased as soon as they enter the online world, where Crake sets about "erasing his footprints" so as to gain anonymous access to "the executions and the porn... [which] all came to look like the same event." (*Oryx and Crake* 86) When they aren't anonymous, the boys create new alternate identities. In their lives as gamers, they take on the roles of infidels, barbarians and autocrats (*Oryx and Crake* 77), and in the Extinctathon game, they create named personas in order to interact with other similarly disguised players (*Oryx and Crake* 80). In this way Crake's identity is divided; his 'real' name becomes subordinate and forgotten as it is dominated by his virtual self. Jimmy, too, loses his 'real' name to an imagined identity. As 'Snowman,' he is both "existing and not existing... apeline man or manlike ape, stealthy, elusive, known only through rumours" (*Oryx and Crake* 7-8). Oryx too is divided and multiplicitous. She has at least three names: an unstated birthname, 'SuSu' when purchased from her family (*Oryx and Crake* 129), and 'Oryx' as her Paradise Project species name (*Oryx and Crake* 311). Additionally, she either is, or is not, the girl from Crake and Jimmy's screenshot of a paedophilic film and from a news segment on trafficked girls (*Oryx and Crake* 91; 114)⁷⁴ and her comments, both confirming and denying, are delivered in "a storytelling voice" (*Oryx and Crake* 316) that makes her seem like a construction of Jimmy's imagined version of her life. When Jimmy wonders "[w]as there only one Oryx, or was she legion?" (*Oryx and Crake* 308) he elucidates Atwood's point that Oryx, just like Jimmy and Crake, is a split self whose fragmented slivers of identity cannot be rejoined into a singular whole.

In a society of fractured selves, the notion of family loses relevance. Jimmy's parents are made mere characters in his playtime parodies, becoming "Righteous Mom" and "Evil Dad"

(*Oryx and Crake* 60); and their complex marital problems are crudely dramatised in puppet shows which reduce each of them to a “Monday Special Fish Finger, 20% Real Fish” (*Oryx and Crake* 60). Jimmy’s father acts as though “auditioning for the role of Dad” (*Oryx and Crake* 52), and both parents relate to Jimmy impersonally, as though regulated by a normalising “Terrific Parenting checklist” (*Oryx and Crake* 58). Jimmy’s mother’s abandonment leaves him wondering: “wasn’t there supposed to be a maternal bond?” (*Oryx and Crake* 61) But the maternal bond is overwritten by an *image* of maternity which directs her efforts towards creating a hyperrealist Donna Reed persona: “her lipstick smile an echo of the jelly smile on [his] sandwich... what she reminded him of at such times was a porcelain sink: clean, shining, hard.” (*Oryx and Crake* 31-2) In her disappearance she is “a splatter of pixels” (*Oryx and Crake* 66), in her postcards she is a fictitious aunt (*Oryx and Crake* 67), and even in death she is an image. Jimmy learns of her execution via video, and Atwood peppers the discovery with cinematic terms: “pan to close-up... long shot of her crumpling to the ground.” (*Oryx and Crake* 258) Crake’s parents are similarly two-dimensional. His father was killed by a conspiring corporation (*Oryx and Crake* 183), and his father figure – a stepfather – is falsely called an uncle (*Oryx and Crake* 89). Crake’s mother appears only briefly, when he is implied to have infected her with “a hot bioform that had chewed through her like a solar mower.” (*Oryx and Crake* 176) Oryx’ family is also fractured. Like Crake, her father figure is an “uncle” who isn’t an uncle; though in her case, he is a human trafficker (*Oryx and Crake* 118). Oryx establishes a mental fiction of a loving mother based on her sale to the ‘uncle,’ simply because her brother was sold too (*Oryx and Crake* 121); and she begins to think of money as a more dependable form of love, because “at least those who wanted to make a profit from you would make sure you were fed enough and not damaged too much.” (*Oryx and Crake* 126) As she is literally “passed from one set of arms to another” (*Oryx and Crake* 130), she accumulates ‘families’ that treat her as an economic or sexual commodity, though the language of distance is built into the contracts that govern these sexual-economic arrangements: “These girls, said the wives, had been practically adopted, and were treated almost like one of the family. Jimmy loved those two words: *practically, almost.*” (*Oryx and Crake* 254; italics in original)

Whereas Atwood's characters experience a disconnection between body, self, and other, the mediated bodies that populate their world are *only* bodies. The players in pornographic films are described as "digital clones," and even their scripted identities are fractured into "layers of contradictory make believe... *I want to, I want to not, I want to.*" (*Oryx and Crake* 90; italics in original) The Noodie News and televised surgeries again make the body a site of spectacle (*Oryx and Crake* 81), and even death becomes an opportunity for entertainment, with executions and suicides theatricalised and rehearsed to please sponsors and audiences (*Oryx and Crake* 83). Death is subject to "exchange rates" (*Oryx and Crake* 79) in Crake and Jimmy's game 'Blood and Roses'; and in the economy of death, "individual rapes and murders didn't count" (*Oryx and Crake* 78). Even animals' bodies are demeaned: in addition to being spliced into engineered hybrid forms, their bodies are altered for utilitarian purposes. Thus 'pigoons' exist exclusively to grow human tissue (*Oryx and Crake* 22) and chickens are grown in labs as disconnected parts with diminished brain function (*Oryx and Crake* 202-3). By implication, as Ku argues, those who eat engineered chicken, or extend their lives using pigoon-grown tissue, "will become something less than humans... their humanity is more or less adulterated" (113). Jimmy-as-Snowman, looking back on the days of all these commodified bodies, wonders:

When did the body first set out on its own adventures?... It must have got tired of the soul's constant nagging and whining and the anxiety-driven intellectual web-spinning of the mind, distracting it whenever it was getting its teeth into something juicy or its fingers into something good. (*Oryx and Crake* 85)

Thus, in Snowman's estimation, the body – the Darwinian animal – is inherently incompatible with (or at least dragged down by) the humanist ideal of the soul. In this context, communion between souls is impossible. Jimmy considers himself merely a body to his sexual partners (*Oryx and Crake* 285), and even to the wolvogs (*Oryx and Crake* 109). His most significant relationship is with a woman who exists at first as a printed image, and finally as a ghostly presence (*Oryx and Crake* 110).

With the body divorced from the mind, soul, self, and other souls, the anthropocentric hierarchy is deconstructed. As bodies are replicated and spliced, 'human' and 'animal' become malleable categories: "the relationship between human and other species has

always been one of binary opposition and hierarchy... mimicry of human beings thus disrupts this ranking system.” (Ku 112) Crake, however, believes he can solve the problem of the debased human by creating a new creature to sit atop the animal hierarchy.⁷⁵ Using his network of Extinctathon Grandmasters, he simultaneously develops a new race of quasi-humans, as well as a delivery channel for a plague to exterminate the old models. The team’s collective name ‘MaddAddam’ alludes to their status as revised creationists: they are indeed a mad version of Adam, using their own species’ biological material to become both the creators and the (re)created. However only Crake is privy to the true extent of the Paradise Project, and, as the others are not aware of their pending ‘expulsion’ (extermination) from their own created Eden, it is only Crake that assumes the position of God.

The ‘Crakers’ – so-named by Oryx, not Crake himself (*Oryx and Crake* 311) – come from real human embryos (*Oryx and Crake* 303), but their genetic material is tampered with to such an extent that they can be considered only marginally human. However, the characteristics derived from their non-human genes are deemed to be ‘improvements.’ The simian colouring of the buttocks (*Oryx and Crake* 164), for instance, intended to advertise sexual availability, removes the angst of unrequited lust; of the “misalignment of the hormones and pheromones” common to human “hormone robots” (*Oryx and Crake* 166). Their scented urine, too, is an ‘improvement’ meant to deter predators, and is inspired by “a wide-ranging mammalian leitmotif” (*Oryx and Crake* 154). However, Jimmy-as-Snowman hints that there is something less than human about the Crakers. He calls their singing “beyond the human level, or below it... old, carboniferous, but at the same time newborn” (*Oryx and Crake* 105). This suggests that they are *of* the natural world but do not fit *within* it; old yet newborn, carboniferous but not carbon-based. In this sense, the Crakers are both sub-human, within an overthrown anthropocentric hierarchy, and super-human, in the sense of social functionality.

Social functionality is indeed Crake’s stated goal; in his claims that parents and political leaders might become clients buying the Craker ‘product,’ he emphasises that socially

desirable characteristics – notably, docility – are his objective (*Oryx and Crake* 304). Thus by Crake’s design, the Crakers are programmed to avoid existing human social and cultural ‘afflictions’:

[A]s there would never be anything for these people to inherit, there would be no family trees, no marriages, and no divorces. They were perfectly adjusted to their habitat, so they would never have to create houses or tools or weapons, or, for that matter, clothing. They would have no need to invent any harmful symbolisms, such as kingdoms, icons, gods, or money. Best of all, they recycled their own excrement. (*Oryx and Crake* 305)

However, as Jimmy points out, this last, seemingly distasteful aspect of his invention betrays the fact that his motive is not to sell designer babies; instead he wishes to redesign humanity because he feels he can do a better job than natural selection. In Atwood’s future, however, doing a ‘better job’ is a political task as much as it is biological; thus Crake’s agenda casts him as a “scientist-imperialist... [who] creates a grand game-like illusion” (Bouson 141).

In his ‘game,’ Crake is fixated on the notion of an ‘end.’ He hypothesises that, if one generation is removed from any species, its civilisation will be lost forever (*Oryx and Crake* 223). Additionally, he is motivated by the way humans attempt to fight that ‘end’ for their own genetic material:

‘Homo sapiens doesn’t seem able to cut himself off at the supply end. He’s one of the few species that doesn’t limit reproduction in the face of dwindling resources... impending death acts like an aphrodisiac... human beings hope they can stick their souls into someone else, some new version of themselves, and live on forever.’ (*Oryx and Crake* 120)

In his use of secretive species-splicing experimentation to manipulate the ‘game,’ Crake, like Moreau, is a textbook example of a mad scientist.⁷⁶ In keeping with Millhauser’s standard of the “aura of mystery” (292) around the mad scientist, Crake “remains somewhat opaque and therefore something of a textual enigma” (Bouson 142). His opaqueness also allows him to be read as a God-figure. Although “Crake was against the notion of God, or of gods of any kind, and would surely be disgusted by the spectacle of his own gradual deification” (*Oryx and Crake* 104), his behaviour suggests a need to dominate the natural. Once more following Moreau, he conducts his experiments more or less in secrecy, with no motives

other than personal curiosity and the arrogant desire to control creation; and indeed his created beings are referred to as his “Children” (*Oryx and Crake* 9). However, Atwood’s gamer-god is by no means a direct parallel to the God of the Old Testament. Crake is referred to by Snowman as a “God of Bullshit” (*Oryx and Crake* 102),⁷⁷ a “mutant” (*Oryx and Crake* 174), and an “alpha wolf” (*Oryx and Crake* 300); and refers to himself (jokingly, but suggestively) as a “sadist” (*Oryx and Crake* 174). Through these depictions Atwood paints a god-figure whose interests are malicious rather than paternal.⁷⁸

Accordingly, the Eden he creates is a mirage. Though idyllic in appearance, the Paradise dome is a “blind eyeball” (*Oryx and Crake* 297), hermetically sealed and adorned with “simulated dawn, sunlight, evening, night”; “a fake moon”; “fake rain.” (*Oryx and Crake* 302) Jimmy, accustomed to such hyperrealism, will later muse nostalgically about “how glorious it must have been” to watch a sunset on the Paradise screens: “you could get the full panoramic view, turn up the colour brightness, enhance the red tones.” (*Oryx and Crake* 276) After leading the Crakers out of the false Eden, “he has to make do with the real thing, just a slice of it” (*Oryx and Crake* 276). However, this ‘making do’ with the natural world seems to be Atwood’s device for overcoming the excesses of the scientific-corporate regime. As if to directly follow Baudrillard’s prescription for disempowering hyperreality, the Fall of Man (literally; of men via plague) in the novel’s re-enactment of Genesis will create an environment in which the reality of the earth-bound animal human is reasserted. Atwood seems to “reinject realness and referentiality everywhere, in order to convince us of the reality of the social, of the gravity of the economy, and the finalities of production.” (Baudrillard 360) Thus Jimmy (becoming Snowman) is cast into an unforgiving landscape where he is left “searching for a free meal among the leavings of catastrophe” (*Oryx and Crake* 152) and facing “the Great Indifference of the Universe.” (*Oryx and Crake* 260)

Thus the ‘fall’ in Atwood’s revised creation narrative is not that of the Crakers as Adams and Eves. It is instead an apocalyptic end-of-game attributed to Crake, as a representative of a society that has sought knowledge in biologically disruptive ways. The commodification and theatricisation of the body, as discussed, are examples of transgressive knowledge-creation.

Additionally, projects such as the 'pigoon,' 'Methuselah Mouse' (*Oryx and Crake* 22) and 'rakunk' provide a way to "feel like God" (*Oryx and Crake* 51) while turning a profit. In particular, the commodified science of Crake's era seeks to right biological 'wrongs': for instance ageing, with its connotations of sexual and reproductive irrelevance, is masked with "a genuine start-over skin... [who] wouldn't sell their house, their gated retirement villa, their kids, and their soul to get a second kick at the sexual can?" (*Oryx and Crake* 55) In this context, ethical science for science's sake is something the career scientist "can't afford" (*Oryx and Crake* 57). However, Crake's science goes a step further. Rather than selling the potentially very profitable BlyssPluss pill – which, with its unadvertised sterility effect (*Oryx and Crake* 292), is wildly unethical in itself – Crake chooses instead to (literally) destroy his market by implanting a deadly bioform in the pills. He wrongs all parties; his investors, Oryx, his MaddAddam colleagues, and Jimmy, not to mention the entire population of the world. Thus Crake's scientific agenda is unethical in the context of the novel's prevailing value system, as well as to readers. In destroying civilisation, his sin is not only to have eaten the Apple of Knowledge – but to have created it first.

When Crake engineers the Fall, he condemns his kind. Of course he condemns the human race to near-extinction, but he also condemns Jimmy to a lifetime of dehumanising animalism. Jimmy, after becoming Snowman, is "naked as the day he was born" (*Oryx and Crake* 10) – much like the Crakers. However, Snowman's nakedness is associated not with idealised functionality, but with animalistic hysteria. Where once, as a child, his "chimpanzee act" had generated popularity (*Oryx and Crake* 54), his Snowman-era animalism is desperate and primal: he "laughs like a hyena or roars like a lion... he grunts and squeals like a pigoon, or howls like a wolvog" (*Oryx and Crake* 10), and thinks of himself as a "caged, wired-up lab animal, trapped into performing futile and perverse experiments on his own brain." (*Oryx and Crake* 45) However Snowman is also condemned in another way. After a lifetime of being called 'son' by condescending authority figures (*Oryx and Crake* 63; 65; 175; 79; 97; 259), Snowman becomes the son-descendent of Crake's god. When he takes over responsibility for the Crakers he becomes an unwilling Jesus figure, leading them on behalf of an absent creator. Thus he "feels protective towards them" (*Oryx*

and Crake 153) and develops an urge to teach them: “Help them invent the wheel. Leave a legacy of knowledge. Pass on all my words.” (*Oryx and Crake* 339)

For the Crakers, the Adams and Eves to Crake’s God, Snowman provides a pseudo-Christian cosmological narrative. However, in light of the fact that their ‘god’ is mad, corrupt, and absent – and their ‘Jesus’ saviour is powerless and desperate – the Crakers’ cosmology is nothing more than a collection of absurdities. Their creation narrative is a pastiche of story fragments imparted by Oryx and Snowman; in fact this is less a linear story than an accumulated “stock of lore” (*Oryx and Crake* 8). However, the fact that they have any mental capacity for cosmology is contrary to Crake’s intent:

Crake thought he’d done away with all that, eliminated what he called the G-spot in the brain. *God is a cluster of neurons*, he’d maintained. It had been a difficult problem, though: Take out too much in that area and you got a zombie or a psychopath. (*Oryx and Crake* 157; italics in original)

Thus Crake fails even after the Fall. Like the believers of “crank religions” (*Oryx and Crake* 295), his Crakers seek and believe explanatory stories with no evidence other than the word of a respected figurehead. Snowman – whose own halting prayers of “‘I wish I may, I wish I might’” are directed to stars; “messages with no sender” (*Oryx and Crake* 97; 109) – bases his cosmology on a combination of ideas from the Judeo-Christian tradition, from his experiences, and from a flaky ex-girlfriend (*Oryx and Crake* 168). In his account, the Crakers were the product of cleansed chaos. The ‘chaos’ described by way of a bucket of muddied water (*Oryx and Crake* 103) is similar to the pre-creation earth of the Bible: “And the earth was without form, and void; and darkness *was* upon the face of the deep. And the spirit of God moved upon the face of the waters.” (Genesis 1:2) In Snowman’s revision, however, ‘chaos’ is a generic term used to whitewash the events surrounding Crake’s plague (*Oryx and Crake* 270). The deaths caused by Crake are re-imagined as the “Great Rearrangement” (*Oryx and Crake* 103); a revision which conveys Crake’s power but obscures his malice. Snowman notes with some displeasure that his “exciting lies... made Crake sound like Santa Claus” (*Oryx and Crake* 160). However Crake at this point is no longer anything more than an empty symbol. When Snowman pretends to talk to Crake through his “shiny, dysfunctional watch” (*Oryx and Crake* 8), he does so only to “reinforce his authority” (*Oryx and Crake* 161);

much like the 'uncle' who buys Oryx, whose gold watch – symbol, in his case, of wealth – achieves the same end by acting as a “badge of quality” (*Oryx and Crake* 117) with “a little voice inside it that knew everything.” (*Oryx and Crake* 128) For the Crakers, as for Oryx, a trinket becomes an absurd object of worship (*Oryx and Crake* 133).

For readers acquainted with Dawkins, the choice of a watch as a religious symbol conjures the notion of the 'blind watchmaker.' And indeed Atwood does imply that, god figure though he may be, Crake is not entirely in control of his Crakers. This is true neurologically; as discussed above, their capacity for religious belief develops despite its supposed excision. However, at a philosophical level, Crake's creations are excluded from the realm of the 'real.' This is an obsession of Crake's: his belief in the fluidity of biological and engineered reality is evident in his repeated debates with Jimmy (*Oryx and Crake* 77; 83; 200; 302). The Crakers 'inherit' their creators' miscomprehension of reality, though in a much more simplistic manner: thus they are confused by pictures on discarded bottles (*Oryx and Crake* 102). As hybridised creatures, they are themselves only arguably 'real.' Though human in form, the Crakers represent a devolved form of *Homo sapiens* which is at once superhuman, posthuman and dehumanised. Their superhumanity derives from their aesthetic and functional characteristics; their posthumanity from their technological origin; and their dehumanisation is evident when they are described as “animated statues” (*Oryx and Crake* 100). In this way, they are animated versions of the drawn ducks on five-year-old Jimmy's boots as he walks through poison (*Oryx and Crake* 15); they test and question the borders of the real versus the merely representational.

The real (natural, biological) human in this context is a fiction. The Crakers – but also the citizens of the scientific-corporate regime who preceded them – are so far distanced from their innate humanity that they cannot be explained in terms of *any* creation narrative. Snowman, trying to explain what toast is, illustrates this point. As a plant becomes bread, and is cut into slices, and exposed to electricity, and has butter applied to it, the transition from plant to toast becomes too convoluted and “cannot be explained by any rational means.” As Snowman puts it, “*Toast is me. I am toast.*” (*Oryx and Crake* 98) However, after

the plague forces him to live without the aid of civilisation, he must revert to his 'plant' form. Encountering other humans at the conclusion of the novel, Snowman observes that they each have "nothing except themselves." (*Oryx and Crake* 373) In this context, then – when the 'natural' landscape has been reasserted and civilisation stripped – the god-watch is merely a "blank face." (*Oryx and Crake* 374)

GENESIS

"Darwin pulled away the veil, but was too cowardly to stare upon the vision he had uncovered."

(Beckett 109)

Perhaps the most transparent⁷⁹ literary coupling of Darwinian theory and Biblical 'fall' rhetoric occurs in Bernard Beckett's *Genesis*. As the title implies, the Book of Genesis provides an allegorical framework through which post-Darwinian society is ironically idealised as a prelapsarian 'paradise.' Using a system of Darwinian extrapolation similar to that of *Brave New World*, Beckett describes a society which has strayed too far from its animal origins. In an enclosed environment protected from the ills of the outside, the God-players of this false Eden attempt to replicate creation. Beckett locates the blame for the downfall of humanity in the tendency to view citizens through the lenses of genetic determinism. Thus the abolition of families, the genetic profiling of children and the denial of empathy instincts all lead to a state of spiritual decay in which scientific progress is left unchecked, and the fruit of the Tree of Knowledge is hubristically consumed. Through this act, a cocktail of typical post-Darwinian fears is inscribed, combining the 'mad scientist' and man-to-beast devolution fears into a new fantasy of an elite orang-utan android hybrid species which is physically devolved, but sufficiently advanced intellectually to conquer the human race.

Though the Old Testament is one major source text, ancient Greek texts and figures also feature heavily. Beckett names his near-future leader Plato; Plato's lieutenant Aristotle (51); and his advisor Helena (15). The first two of these three are of course named for classical philosophers (Boardman, Griffin and Murray 238; 45), reflecting the decree of Beckett's Plato that only the Philosopher class should hold political power. However Helena's name – mentioned only briefly – breaks the trend. The Empress Helena was the woman credited with the discovery of the holy cross and nails of the crucifixion, and Beckett may have drawn upon Evelyn Waugh's novelised account of her life. In Waugh's *Helena*, the recovered nails are gifted to her son Constantine, who sets one into the head of his own portrait, fixes another to his hat, and has yet another melted down by a blacksmith to make a horse's snaffle (262-3). Though Waugh (uncharacteristically) treats the scene without satire, Beckett's Helena is perhaps meant to lend an air of sacrilegious arrogance to Plato's regime.

The orang-utan androids are also named for Greek figures. The Academy to which Anaximander seeks admittance is named for the school of metaphysical philosophy founded by Plato (Boardman, Griffin and Murray 252), which reflects the fact that the android society shares a consciousness formed by human ideas. Anaximander herself is named for an oral philosopher (appropriate, given that her exam is oral) who "taught that the world, and countless other worlds beyond our ken, came into being out of the Boundless and will eventually be absorbed back into it." (Boardman, Griffin and Murray 115) The defeatist tone of Anaximander's philosophy parallels the fatalism with which Beckett portrays human societies; both modern society (via plague) and his future society (via overthrow) are consumed by the 'Boundless.' Anaximander's tutor Pericles is named for a Greek leader who was associated with a transition from aristocratic to democratic government (Boardman, Griffin and Murray 136). This is a deeply ironic naming choice, since Beckett's Pericles is exposed as a silencer of those who might question or rewrite the aristocratic Academy's historical script (143). Analysing Beckett's naming choices amongst both the human and orang-utan android groups, a pattern emerges. The choices for all Greek-named characters (except Anaximander) juxtapose classical political-philosophical idealists and populists with Beckett's dehumanising statesmen and elitist academicians. Protagonist Anaximander is the only character who compares favourably with her Greek namesake. Her tendency to

empathise with Adam's humanity (36-8; 98) contrasts with her counterpart's dimly apocalyptic outlook.

Beyond simple name references, Beckett's version of Plato's Republic is based in large part on a glorification of 'the past' (ancient Greek civilisation) as a time of greater security; the conquering orang-utan androids believe that "The Republic was best understood by its motto 'Forward towards the past'." (15) Indeed Beckett's Plato draws many of his policies from classical Plato's *The Republic*; though the former employs the latter's ideals in point rather than in principle. For example, the stratification of citizens by aptitude (Plato 54-9) and the use of 'philosophers' as leaders (Plato 196) are both recommendations of the Greek Plato and policies of Beckett's Plato. However, he does not seek to produce the satisfied and stimulated citizens that his Greek namesake envisages. Rather, like his World State counterparts, he encourages ape-like obedience to the state. His dictums reflect his totalitarian rule: Plato's first dictum claims that "it is only in the State that the People may find their full expression. For the People are the State, and the State is the People." (50) And his second dictum, "Change Equals Decay" (51) endorses stable governance while implying that some 'original state' was preferable. Herein lies a clue that Beckett's Plato may wish to regress his society further than the 2500 years that the Greek references imply.

Anaximander relates: "Plato told the people that the Downfall had come about because people had strayed from their natural state." (15) What Plato apparently *claims* to mean by 'natural state' is "the glory of the great civilisations" (15), and indeed at a purely aspirational level, as the naming suggests, this may be his ideal.

However his rhetoric implies that the complications of the recent past could be avoided through a devolutionary movement towards a society of 'naked apes.' Just as the social organisation of apes features dominant alpha males (Morris 129),⁸⁰ and just as *Brave New World* features a dominant Alpha class, so too Beckett's Republic is an Alpha state demanding total submission. Thus, though Plato may have been referencing Greek civilisation, his preference for a 'natural state' of humanity – in the context of a novel which will replace humans with orang-utan figures – can also be read as a Darwinian plea. It is

important to note here that the formation of The Republic took place in an atmosphere of scientific conflict. Anaximander's oral history of the events in the lead-up to The Republic explains that tensions between (and within) scientific and religious ontologies reached a destructive crux which she calls the "Last War" (12). Split reactions to genetic experimentation (9), diminishing biodiversity (10), and climate change (13) contributed to the breakdown of diplomatic ties; and the vacuum of coherent meaning systems fostered a rise in religious fundamentalism and "belief in simple causes" (11).⁸¹ This period of global decline is couched in Darwinian terms: Anaximander describes "a thick *tangle* of permutation and possibility" and "such *complexity*" (11; italics added) as is beyond human comprehension. Indeed it is suggested that Plato may have been involved in the commercialised reduction of Darwinian complexity: he is said to have made his money in "the bio-cleansing industry." (13) In a Republic founded on its distance from the wars, scientific terrors and superstitions of the outside world, the idealisation of the 'natural state' reflects a desire to return to a simpler form of social and political life such as that found in early human or even pre-human societies. And because Plato glamorises the past and the 'natural state' in his foundational doctrines, the eventual devolution of human consciousness into orang-utan android form is ironically coded into, and predicted by, the rhetoric of the very state that will enable its own conquer.

But if the 'natural state' is Darwinian, then Plato's plea is hypocritical. As much as his Republic may claim to value naturalised humanity, it promotes policies which distance citizens from their instincts and drives. Beckett's vision of The Republic can thus be considered a kind of 'Darwinian extrapolation': in which the distance between the reader's modern civilization and the 'natural state' of the naked ape is hyperbolically *extended* to highlight the dangers of attempting to overwrite the animal in human nature. In the aftermath of a plague, and in a survival scenario, Beckett imagines a complex social structure which disincentivises the expression of basic evolutionary traits. In particular, The Republic quashes empathetic and maternal instincts in a way that will create Adam, the creationist parallel figure of the species which will conquer humankind. The eventual devolution of human consciousness into orang-utan android form, then, is doubly ironic in that the denaturalisation of humans (indirectly) returns them to the *appearance* of a

‘natural’ state at an earlier point in their evolution; however that appearance is really a futuristic “hunk of shit piece of metal with a monkey mask” (85).

The first tool of Beckett’s Darwinian extrapolation is The Republic’s denial of empathy. Soldiers are encouraged to shoot refugees from the supposedly plague-ridden Outside, and, if they cannot, to shoot each other (22). Adam is particularly brutal: killing his friend Joseph (32) – and several guards (133) – while claiming to “‘feel nothing’” (132) when taking a life. Though Adam is valorised in Anaximander’s narrative, he can only be considered a heroic figure in the context of orang-utan android society. For readers, as for Plato’s Republic, Adam is ultimately (though unintentionally) a destructive figure, training and enabling the artificial intelligence that will overthrow human society. Thus Adam’s brutality is a condemnation of The Republic that forced a “combative” young man to become a soldier (20), then congratulated him for killing a colleague (32). Adam’s lack of empathy and capacity to kill are presumably so strong that, by transfer of his consciousness to Art, he overwrites one of Art’s “foundational programme imperatives” banning violence against living beings (79). This violation of this imperative – the first of Asimov’s three laws of robotics – casts the story of Art and Adam into the tradition of robot narratives which explore the “unsustainable” fantasy of the purely servile automaton (Goodall 446-7). Art’s burgeoning gift for cruelty is demonstrated early on when he verbally – semi-playfully – threatens Adam: “‘Perhaps I mean to wait until you are sleeping, and then split you open with an ice pick.’” (77) He finally proves his imperative has been overwritten when he carries out Adam’s request to strangle him (138), though not before using the imperative as an excuse to have Adam facilitate his escape and his replication (132). Thus the ripples from The Republic’s denial of empathy instincts extend through Adam and into Art, and contribute to The Republic’s own downfall.

The second element of the Darwinian extrapolation – and The Republic’s second tool of denaturalization (one with distinctive *Brave New World* overtones) – is the repression of the family in favour of a more efficient system of social organization. By its decree, babies are

taken from their parents and raised by the state, to be classified by genetic profile – with termination an option if the child is unsatisfactory as a subject (15). There is some recognition that this is an artificial arrangement: commenting on the rule allowing children of a higher intellectual class to stay with their parents, Anaximander concedes that “nature has a way of exerting itself.” (48) However, penalties for parent-child contact among the lower classes are violently totalitarian (47), in keeping with the belief that “by removing the child from the family, and the partners from each other, [the government] could break down the usual loyalties, and replace them with loyalty towards the state.” (50) The only ‘parents’ sanctioned by the state, with the exclusion of the Philosopher class, are those who programme artificial consciousnesses. Philosopher William thinks of Art as his progeny: “Perhaps I write this with the bias of a too-proud parent, but I am sure my invention is capable of achieving much more.” (54) And Art, in turn, speaks of Philosopher William as his father (69). This highly denaturalised form of parenting casts a ‘mad scientist’ as the author of the devolved creature; Philosopher William is said to hold “no particular concern for the future of The Republic” (55), and his misdirected parenting instincts birth the android that will replicate into a human-killing army. The government as a whole is also implicated. When they assign Adam as a parent-programmer to Art (thus rounding out Art’s consciousness), they do so for unrelated political reasons, and “spent little time thinking of the implications” (55).

In this way, Plato’s Republic constitutes a kind of Huxleyan ‘mad scientist’ network. Perhaps because it was formed in the aftermath of instability and scientific overreaching, The Republic is premised on the principle that scientific expertise and political leadership are inextricable. Intellectual activities are reserved for a privileged class of Philosophers, chosen based on genetic fitness (15). The Philosopher class controls both government policy and scientific research; in this way they are again comparable to the Alpha Pluses of *Brave New World*. Their ‘madness’ is apparent not to their subjects, but to Beckett’s readers. When the Philosopher class develops robots which will supposedly replace an entire socio-economic class – but which instead kill over a dozen soldiers – Beckett depicts a group which displays the covert experimentation, (nefarious) moral purpose, and “blundering pomposity” characteristic of the mad scientist cliché (Millhauser 292-3). But the most obvious case of

mad experimentation, of course, is the creation of Art. The Philosophers' study of "'artificial replication of conscious states'" (70) might appear controversial to readers cognizant of the ethical issues surrounding artificial intelligence research. However Beckett hints that it is controversial even in the context of *The Republic*: Adam reacts with grandiose indignation to Art's assertion that he is "a more efficient means of transporting Thought" (96-7). In addition, some of Philosopher William's choices regarding Art's anthropomorphism mark him out as at least questionable, if not outright mad. Firstly, Art is imbued with a capacity for emotional manipulation. Anaximander notes that "the programmers are interested in getting Adam to interact with Art, and will use any tricks available to them." (72). She hypothesises in her hologram that Art may have been able to produce tears (71); a theory that would later be confirmed by the Academy's own hologram (138). Secondly, Philosopher William's choice to craft his robot after the image of an orang-utan is a seemingly unjustified quirk with ironic significance: "Art had been given the face of an orang-utan, wide-eyed and droopy mouthed; his stare restless, his toothy grin always mocking: all of it framed by a blaze of orange hair." (64) The word 'mocking' is apposite. Art's head,⁸² loaded with superhuman cognitive and reasoning abilities, is dressed in a mask resembling a 'lower' version of the human ape. Adam would appear to be effectively mocked by this; it is Art's head that he chooses to attack when provoked to violence (74). The androids are wise to the mocking power of their faces: "After the Great War, it had been decided that the androids would craft not just their faces, but their bodies too, in the image of the orang-utan. It was a collective joke, a deliberate sign of disrespect to the human species that had framed them" (138-9). In this sense, as the androids become dominant, they mock "the graceful, animal proportions of [Adam's] form" (139) by choosing a 'devolved' facade.

The concept of a pre-human face on a more efficient creature makes the devolution fear in *Genesis* a descendent of that in *Galapagos*. In both novels, evolutionary regression is anticipated not because some lingering animalism in human nature might reappear (as in *Lord of the Flies*), but because humanity is not 'fit' in its existing state. For Vonnegut, big brains are counterproductive, and animalised human forms are more suited to survival. And for Beckett, big brains create and consume their own Trees of Knowledge in a self-destructive loop. Knowledge in the form of technological advance caused the political

turmoil from which The Republic was sealed off; and within The Republic, knowledge in the form of artificial intelligence research is treated as a consumable rather than an abstraction. Robots employed to 'raise' children in nurseries; however this results in violence when seven children are killed (48). The next attempt at creating artificial intelligence results in a unit of self-replicating and destructive knowledge. Despite Philosopher William's Asimovian assurances – that androids "would never deliberately harm another self-conscious being" or "desire replication for replication's sake" (141) – Art does both, killing Adam and reproducing as an ape-android army which will kill off the rest of humanity. Thus *Genesis* is less a novel about human-killing androids, than it is a Biblical allegory about the propensity for humans to seek knowledge in self-destructive ways. However, humanity is not completely destroyed in the Great War with the android orang-utans; rather, it persists in a devolved form. Because Art's consciousness was derived from Adam's (and Philosopher William's), "something in Adam was destined to become eternal." (142) That this 'something' is presented in ape form is ironic in one more way than the mocking discussed above: with supra-biological replication mechanisms, they are superior in terms of survival capability. Adam's death at Art's hands is thus remembered by the orang-utans as a parodic revision of Original Sin (142), laughable precisely because in this revised creation narrative, the creator is the conquered – and there will be no expulsion from Eden.

Beckett's revision of the creation narrative is complex and looped. For humans, there is no creation story: the names of Adam and Eve suggest that Beckett will cast these characters into a creation narrative to mark the beginning of Plato's Republic as a new society; however Adam is by no means the first man in this society, and Eve does not feature beyond her rescue. Other Biblically-named humans in the novel (Joseph, Nathaniel, Rebekah) are never more than minor characters. Beckett's naming choices ironically highlight that there is no 'creation' for these characters. Instead, they are the creation figures for the 'species' that will supersede them. For the orang-utan androids, two versions of the Genesis story exist. The first – the Academy's – is a political re-telling which whitewashes over Art's selfish intentions and recasts him as a prelapsarian innocent (139-40). The second – Beckett's – entangles human and android characters in a circuitous narrative. In this version, like in the Bible's, there is first Adam; and then a part of Adam (his consciousness) gives rise to new

intelligent life (Art). Art then sins by contravening the laws imposed upon him by his creator (Philosopher William's laws against replication and harming another conscious being). However, in this fictive world there is no absolute God; only a Republic which aspires to fulfil the function. After the overthrow of The Republic, the orang-utan androids can stay within the Great Wall of their Eden (New Zealand). At this point, with their human-derived consciousnesses, they are able to recreate humanity in their stories and histories. Anaximander imagines herself engaged in "the sculpting of Adam" (63) when she created her holographs of him, and Art – essentially the 'Adam' of androids – verbally recreates both himself *and* the human Adam when he argues that he evolved first from the clay of life (91-3). Thus the creation narrative returns to itself; the androids constantly reshaping through retellings the humans who shaped them in the first place. The real clay here is story; from the clay of words, the android orang-utans construct, revise and reconstruct their own origins.

The Fall of Man here, in a literal sense, is the fall of mankind. In a Biblical sense, however, Beckett casts the Fall as a recurring Darwinian mutation. Where mutation, for Darwin, was a source of new heritable traits with the potential to improve a species' aptness within their environment; for Beckett, mutation is conceptualised as a kind of infectious menace. There are several moments which can be taken as falls in the novel, and each is likened to or described as a mutation. The decline of world stability – coterminous with the rise of The Republic's fear-based political stability – hinges on a belief that "the plague had mutated to a more virulent form" (51). Eve's (censored) clean bill of health is evidence against this (45); however mutation even as a *conceptual instrument* is an integral part of The Republic's ill-fated totalitarianism. Conceptual mutation becomes a more overt explanation for The Republic's downfall when Art forebodingly describes the capacity for ideas to mimic the mutative and heritable characteristics of genes: "The successful Idea travels from mind to mind, claiming for itself new territory, mutating as it goes. It's a jungle out there, Adam. Many Ideas are lost. Only the strongest survive." (94) Since Art is, by his own admission, "built by Ideas" (95), and indeed by those of the strongest minds in The Republic, he is himself a mutation of the human mind. Here again mutation will result in the fall of humanity. Finally, in the orang-utan android society, Anaximander herself is described

as a mutation. The Academy's examinations are a way to identify and eliminate androids who are considered 'mutated' in some way which could enable them to threaten the veracity of the official creation narrative. Anaximander's ability to think outside the official story⁸³ raises red flags. As Pericles explains, "From time to time a mutant emerges, one who is particularly susceptible to the thoughts of destruction... It is my job to find potential mutants and prepare them for the examination." (143) 'Examination,' here, is a code word for extermination. Where humans allowed mutation – real or politically engineered – to contribute to their downfall, the androids' approach is to eliminate it. Anaximander's mutation thus causes her own death / disconnection (144), but not the downfall of her 'species.'

CONCLUSION

When Darwin released *On the Origin of Species* to its Victorian audience, the 'state of nature' in which Adam and Eve were said to have lived was reconceptualised. What had been idealised within the Judeo-Christian tradition as a state of prelapsarian innocence was recast as an animalistic essentialism which crumbled the notion of man as a sub-angelic being. Edenic 'dominion' over the natural is precluded for the *Homo sapiens* who are now repositioned in the rubble of a collapsed god/human/animal hierarchy. Thus, the human union with the natural, which had been lost when man 'fell,' was now reimposed – but accompanied by an aura of brutality rather than holiness.

Post-Darwinian authors have recognised the connection between Darwin's 'descent of man' and the Biblical 'fall of man,' though the ways in which they have connected the two have not been entirely consistent. Some authors – for example Wells, Huxley and Atwood – have suggested that, when our self-knowledge becomes such that our own creation is scientifically explained, 'God' ceases to be one deity, and becomes instead a *position* which is filled by those with sufficient knowledge – even if those individuals have nefarious motives. Others such as Golding imply that, if humans are inherently animalistic, the Fall must be conceived of as an ongoing state of being rather than an event; and we exist as clothed savages perpetually proving our alliance to the bestial over the divine. For yet others – such as Vonnegut and Beckett – allegorical retellings of the creation narrative link the fall of civilised human society to fatal flaws in our evolved intelligence. In every case, however, the Darwinian human is an unsatisfactory beast.

The great irony in the literary reaction to Darwinism has been that it has reversed one of Darwin's own claims. He asserted that, for humankind, "progress has been much more general than retrogression; that man has risen, though by slow and interrupted steps, from a lowly condition to the highest standard as yet attained by him in knowledge, morals and religion" (*The Descent of Man* 172). However for the literary tradition which has mediated

his findings, the 'retrogression' of humankind becomes something of a consensus. Whether we transgress by accumulating too much knowledge; by allowing ourselves to slip into a regressed state of animalism; or by devolving into soulless posthuman forms; post-Darwinian fiction suggests that we have lost the taint of the divine and been stained with the mark of the beast.

NOTES

¹ Discussion here will be limited to Darwin's rhetoric rather than the scientific particulars of his works. Chapter Two of Part One will supply the scientific grounding necessary for readers to grasp how natural selection, survival of the fittest, and Darwinian chance have been applied in fiction; and where later literary analyses require more detailed explanations of his theories, they will be given alongside those analyses.

² Though Darwin claimed the absence of detailed evidence and references was an issue of space and that a more technical treatise would follow (Darwin *On the Origin of Species* 5), the inclusion of a glossary explaining scientific terms indicates that the lay reader was firmly in mind during the composition of *On the Origin of Species*.

³ Conversely, Kuhn argues that revolutionary writings in particular require solidly demonstrated applications and evidence in order to foster acceptance (46-7). Darwin would appear to agree when he writes, in the introduction to *On the Origin of Species*, that "no one can feel more sensible than I do of the necessity of hereafter publishing in detail all the facts with references, on which my conclusions have been grounded" (5-6). However when pressed to publish, the text he produced prioritised comprehensibility over evidential support.

⁴ However, Lavoisier's method of upheaval does not take the form of literary devices à la Darwin. As Anderson argues, Lavoisier's writings were among those which established science as a specialisation, through "the exclusion of recognizably literary discursive practices... and the imposition of others which are more strictly anti-imaginative" (747). The similarity exists in both writers' adoption of an unconventional written style to communicate their findings, which for Lavoisier meant primarily the removal of himself as 'author' (747) and the separation of other scientists' reasoning from their factual findings (749).

⁵ Oldroyd notes, however, that despite the similarities in their theories, Darwin neither agreed with nor valued Lamarck's contribution (29).

⁶ Recall that in *On the Origin of Species*, discussion was limited to animals and not humans.

⁷ It would take another twelve years for Darwin to apply his theories to humans directly in *The Descent of Man*.

⁸ Not all theologians reacted negatively to *On the Origin of Species*. Some accepted its findings on the proviso that divine creation explained what Darwin could not: the 'God-of-the-gaps' perspective (Oldroyd 248). Others, such as Charles Kingsley, came to the conclusion that God had created original beings instilled with the capacity for evolutionary change over time (Beer xxx). Bowler credits Kingsley's "idea that God works through law rather than capricious miracles" as "the basis for a general reconciliation" (180) between evolutionism and creationism.

⁹ Spencer was famously and flagrantly non-religious (Low-Beer 7), however his understanding of evolution as reaching toward some ideal (rather than adapting to changing environments as Darwin asserted) shows traces of Judeo-Christian thought.

¹⁰ Interestingly, despite the strongly Darwinian nature of his argument, Morris uses religious rhetoric in a way that marries the evolutionist account of human origins with the Biblical account. In his description, facing deforestation, "ancestral apes were forced to do one of two things: either they had to cling on to what was left of their old forest homes, or, in an almost biblical sense, they had to face expulsion from the Garden." (18) The laborious shift from fruit- to vegetable-gathering is similarly described: "he had now really left his forest of Eden." (21)

¹¹ Wilson did not coin the term 'sociobiology', but is known now as its chief populariser.

¹² The gene-selection idea was first proposed in detail by G. C. Williams in his 1966 text *Adaptation and Natural Selection*; however Dawkins popularised the idea with lay audiences. He acknowledged his indebtedness to Williams (11).

¹³ The purpose of the book was to "examine the biology of selfishness and altruism" (1), however in order to explain gene 'selfishness' (drive to perpetuate), the underlying principle of gene-selection theory had to be elucidated.

¹⁴ Pinker notes that Dawkins resisted applying his theories to humans (112); this might be seen as an echo of Darwin's caution in *On the Origin of Species*. However Dawkins' reluctance is at best perfunctory. He repeatedly uses analogies and examples that imply or specify humans as the species under discussion; for examples, see sections on Green Beard Altruism, 89; on Dawkins and rivals, 68; on divorce as a nonzero sum game for lawyers, 221-2.

¹⁵ Among the few exceptions to this rule are John's validation of culture in *Brave New World* (Huxley 211) and Jimmy's defence of art in *Oryx and Crake* (Atwood 167).

¹⁶ Pinker denies charges of reductionism by emphasizing that genes behave in a probabilistic rather than dictatorial fashion; and that environment also plays some part (48-9).

¹⁷ Ironically, some critics have argued against the inclusion of evolutionary psychology in literary theory because it is *not scientific enough*; its hypotheses can only be inferred rather than proven (Gottschall 24).

¹⁸ Cognitive science is another discipline being explored by literary critics for similar reasons, often in conjunction with evolutionary psychology; some critics working within this area have called for a diminished form of constructivism which would acknowledge how the physical characteristics of the brain have shaped the culture which in turn shapes individuals (Hart 325).

¹⁹ The calculation includes theatre, film and television, and does not include non-performance sources of dramatic stories such as written literature.

²⁰ The overview which follows is by no means an exhaustive account of work done in this field. For a more complete history of art adaptation theory, see Cooke & Turner (433-464).

²¹ Dissanayake's definition of 'art' is radically removed from that of much post-industrial Western aesthetic theory, which she claims is influenced by the commodification of the art 'product' (40). She includes as 'art', items or performances which have some utilitarian value but which are dressed up; for example decorated ceramics (39).

²² Her use of the word 'holy' is apt given that previous (abiological) explanations for the origin of art centred largely around the divine: art-as-gift or art-as-worship (33)

²³ Dissanayake also notes that much geometric art can be linked to phosphenes, the shapes that can be seen immediately after closing one's eyes (82).

²⁴ Dutton notes that the squandering of resources may actually be an integral component of sexual selection. Males who publicly waste resources do so to prove that they possess them in abundance, thereby increasing their attractiveness to potential mates (156). If this is true, then the human habit of investing resources in art could indeed be traced to sexual selective origins.

²⁵ In a chapter provocatively entitled 'Does Writing Erase Art,' Dissanayake makes the claim that "literacy is not unequivocally a good thing" (203), in part because 'scriptocentric' Western (especially postmodern) philosophy suggests "that we are *nothing but* the product of our language." (211; italics in original) In this respect though, she is referring to analytical-critical writings and not the literary arts.

²⁶ Another type of criticism, related in name but not in substance to Literary Darwinism, is Genetic Criticism. This school is concerned with exploring the origin of a text (Jenny 199) using alternate manuscript versions and bibliographic materials (Falconer 1-3). Genetic Criticism uses evolutionary theory to some extent as a conceptual framework (tracing back to a point of origin by studying relatedness) but, is not sufficiently based on Darwinian theory to warrant discussion here.

²⁷ Gottschall's call for integrated qualitative and quantitative methodologies seems reasonable; and future research along the same lines as this study could benefit from quantitative analyses which measure the occurrence of particular fears in post-Darwinian fiction. However, for purposes of simplicity, this study will employ qualitative methodology alone.

²⁸ A great number of novelists who worked with the concept of evolution in the 19th Century were influenced by the Lamarckian school, rather than by Darwinism proper. This thesis aims to illuminate how the currently accepted version of evolution (by natural selection, with no inheritance of acquired characteristics) has been inscribed in fiction. Therefore, works which are primarily Lamarckian-influenced, such as those of Joseph Conrad and Honore de Balzac, are outside the scope of this thesis. See also Chapter Four for a discussion of the transition from Lamarckism to Darwinism in Wellsian fiction.

²⁹ There is evidence, however, that Shelley had read and discussed the theories of Darwin's grandfather Erasmus (Pollin 98).

³⁰ There are some exceptions; for example some of Hawthorne's short stories written in the 1840s featured variations on the theme of the mad (or simply misguided) scientist.

³¹ Moreau's lab (nicknamed the House of Pain) can be read as "a direct imitation of Frankenstein's 'workshop of filthy creation'" (Armstrong 77).

³² It may be that, in this aspect, Wells was connecting the work of Moreau to that of the real-life Victorian vivisector Claude Bernard. Vint has suggested that Bernard may have been an inspiration for Moreau, in that he too created an aura of "a new priesthood" around his work; exemplifying the qualities of "objectivity, detachment, distance, narrow and specific focus" which were "turned into sadism" in *Moreau* (2007, p.87).

³³ Indeed, though Moreau is the one conducting supposedly Darwinian (species-blending) experiments, Prendick makes a better parallel for Darwin in terms of biography. He claims to have been taught by Wells' own one-time teacher, the Darwinist T.H. Huxley (29); but despite his training, he is said to have little

knowledge of medicine (111) – the same field which Darwin studied with an admitted attitude of indifference (F. Darwin, ed. 36). The two also were linked to relatives in publication. Darwin published ideas pioneered by his grandfather (among others), while Prendick left his manuscript in the care of his nephew (5) – perhaps uncoincidentally named Charles (6). Though the similarities do not amount to evidence enough to declare Prendick a Darwinian parallel, they certainly refute the idea that Wells intended to paint Moreau exclusively as some sort of nightmarish Darwinian prodigy.

³⁴ Glendening provides an excellent account of Wells' uses of entanglement imagery in *Moreau*. These extend beyond descriptions of island flora, and indeed Glendening notes that a 'tangled' rope is at one point a cause of death in the novel (573).

³⁵ Wells' use of the specific word 'ribs' over the generic 'bones' constitutes yet another instance of Edenic language.

³⁶ If Moreau is threatened by the dead rabbit, he has only himself to blame. As the importer of the rabbits, Moreau is the manufacturer of the 'Eden' and the enabler of the beasts' bloodlust. Of course, he acts hypocritically by bringing meat to the island for himself, while teaching his Beast People to recite: "'Not to eat Flesh or Fish; that is the Law. Are we not Men?'" (61)

³⁷ They are, indeed, *his* creatures. Glendening notes the strong presence of ownership rhetoric in Moreau's references to the creatures in this chapter (589).

³⁸ Reversion is such a key part of the story that even modern versions, in which Moreau's experiments make use of genetic manipulation, depict the beasts' shedding of human characteristics (Griffiths 79).

³⁹ Prendick too shows signs of devolving into a beast. He is shown variously "upon all fours on the floor" (49); experiencing "animal comfort" (50); and running into the jungle, where he ends up again on all fours and bleeding (63). Following Moreau's death, Montgomery openly mocks Prendick's supposed humanity and calls him a beast (107). His growing animalism in parallel to the Beast People's reversion is, as Armstrong argues, a device similar to that used in *Gulliver's Travels* (78); just as Gulliver displayed traits borrowed from those proximate to him, so too Prendick – heretofore the representative of civility – is animalised by his association with the Beast People.

⁴⁰ Wells had read *Frankenstein* and even referred to the novel in an early version of *Moreau* (Glendening 589)

⁴¹ Interestingly, Prendick is not saved by a manned boat. Though he believes the boat to be manned at first, and tries to attract its attention, it drifts towards him filled with corpses. In its chance aspect, this is entirely in keeping with his first salvation from the Lady Vain dinghy, and consistent with Wells' theme of human lives protected or destroyed by randomness.

⁴² There are some traces in the novel of a mocking attitude to religion in general. The Ape Man is made to seem like a priestly figure, both in his role as recite of the law, and also when Prendick imagines a London preacher as the Ape Man (131). By making the Ape Man absurd, "jabbering the most arrant nonsense" and with a proclivity to "gabble about names that meant nothing" (122), Wells casts a mocking eye on religious leaders. Given that most were anti-evolution at the time, the use of an ape as the parallel figure is especially derisive. Also, Wells plays with the concept of the 'ghost in the machine,' an idea used to describe how the concept of the soul fits (or, rather, does not) within Darwinian evolution. Prendick describes himself in like terms during the first pages of his narrative: "I had a persuasion that I was dead, and that I thought what a jest it was they should come too late by such a little to catch me in my body." (9) If the 'ghost' in this case is just the wandering thoughts of an exhausted man, that gives little credence to the idea of an independent soul.

⁴³ This word choice is especially significant, given that the talk of the Beast People was described as "gibberish" (40).

⁴⁴ Wells finished *Moreau* believing that genetic improvement (i.e., enhancing future generations through heritable education and training) was impossible. However by the 1920s, eugenics had (controversially) popularised the idea of improving genetic material in a more direct (and heritable) way.

⁴⁵ Other texts expressing this idea include those Huxley worked on in the lead-up to *Brave New World*, particularly "Boundaries of Utopia" and his 'Preface' to J.H. Burns' "A Vision of Education: Being an Imaginary Verbatim Report of the First Interplanetary Conference." (Firchow 17; Meckier 3). His earlier novel *Chrome Yellow* (1921) expressed similar ideas of government population control, though without the genetic manipulation component. (Firchow 30)

⁴⁶ As if to clarify this distinction, Huxley at one point depicts Controller Mond censoring a piece of biological scholarship on the basis that it contains "explanations in terms of purpose... that might easily recondition the more unsettled minds among the higher castes" (154). Here, biological as opposed to societal teleology is considered "heretical."

⁴⁷ The embryos are bottled with stomach tissue from cows (6); the DHC compares their maturation ages to those of various animals (11); and some are referred to as fish because of their residual gills (13).

⁴⁸ The only exception to this rule is the only character not to live in Fordian society – John.

⁴⁹ Firchow also notes, however, that although Huxley was known as “hypermodern,” he was more accurately “an inheritor and passer-on” of the tenets of the modernist school (28). Thus, while his authorial distance from the text may be in part attributed to his modernist roots, it may also have been a conscious choice intended to disorient readers by throwing them headlong into the World State society with minimal authorial ‘guidance.’

⁵⁰ Huxley’s naming practices reinforce the idea: scholars have traced the majority of characters’ names to major and minor 19th / 20th Century figures in politics, industry, and science. Because the World Staters’ names are allocated randomly from a pool of 10,000, “the real people used as referents for World Staters’ names would have meaning for us, but not the ahistorical citizens of the World State” (Kania & Maksimenko 27). We are left to infer that their names had meaning for the pioneers of their society – the ones who selected the pool of names in the first place. This reveals something about the heroes of the society’s founders. Thus, Huxley’s inclusion of a minor character named Darwin Bonaparte (223) does not imply that Darwin is only a *minor* influence on the novel (or, for that matter, that Napoleon is a source), but that Darwin and Napoleon were both sufficiently influential on the New World’s founders to have their names included in the pool. The fact that the name pool seems to be composed largely of names recognizable to Huxley’s readers (and is not, for example, padded with unfamiliar names presumably originating from the six centuries between readers and the World State) would suggest that the roots of the World State lie in (Huxley’s) present and immediate past.

⁵¹ Despite the hodge-podge of religious referents he has picked up, John’s idea of a Christian God seems fairly conventional by 20th Century standards (203-11). However, to some extent, he seems to regard the word ‘God’ as an explanatory expression as much as a religious figure: “in the chaos of grief and remorse that filled his mind it was the one articulate word” (173; 182).

⁵² Darwin concluded in the *Origin of Species* that “animals have descended from at most only four or five progenitors” (356); this became known as the theory of common descent.

⁵³ Presumably, lower-caste Bokanovsky siblings share names; Huxley only writes that it is the job of “labellers” to record “heredity, date of fertilization, membership of Bokanovsky Group” (7). Meckier theorises that Gammas, Deltas and Epsilons are known by their caste name rather than by individual names, since their identical faces would make any form of individual identifying moniker obsolete (185-6).

⁵⁴ Linda, as a disagreeable political subject, is also kept “conveniently out of the way” on soma. Given the fact that soma erases her past and future (literally, by killing her), her doctor’s propagandistic claim that soma is a gateway to eternity is, in the non-Christian context of the novel, somewhat ironic (134).

⁵⁵ Huxley implies that John and the other ‘savages’ may have been subject to soma vapours on their reservation. Lenina is told that “‘they’ve got enough experience of gas bombs to know that they mustn’t play any tricks.’” (91)

⁵⁶ There is evidently no *one* allocated island to which to exile independent thinkers, as Mond presents Helmholtz Watson with a selection (201). However, the islands are said to house “the most interesting set of men and women to be found anywhere in the world” (199), presumably Alpha Pluses, which makes the islands comparable to Cyprus.

⁵⁷ All other writing is similarly produced, and the writers depicted in the novel work on hypnopaedic maxims and ‘feelies’: “‘Writing when there’s nothing to say...’” (194)

⁵⁸ In reference to the island flora, see pages 12, 15, 19, 28, 53, 85, 114, 130, 143, 148, 192, 214, 217, 219. In reference to the boys’ bodies, see pages 37, 58, 84, 121, 216. The word is also used in reference to the parachute of the ‘beast’: see pages 105, 161.

⁵⁹ Golding uses Original Sin even more explicitly as a framework for *Free Fall* (1959).

⁶⁰ The choice of Jack as the mouthpiece for this sentiment might have seemed incongruous; however Golding had established earlier that Jack’s interest in rules was more an interest in what might happen “when anyone breaks ‘em” (36).

⁶¹ Golding makes some use of the idea of conditioned responses in the novel. Forgetting a conditioned response indicates the final erasure of Percival Wemys Madison’s humanity (94; 222); in this way, Golding reverses Huxley. Conditioned responses are a non-stable component of a lost civility, rather than an ominous brainwashing tool within a hyper-civilised society.

⁶² The boys are “wedded to her in lust, excited by the long chase”; Roger is depicted “prodding with his spear” and “leaning with his whole weight” until “the sow collapsed under them and they were heavy and fulfilled upon her.” (149)

⁶³ Even when playing with tiny transparent sea creatures, Henry attains only “the illusion of mastery” (66).

⁶⁴ The prevailing Law underpinning the Santa Rosalia society is capitalised, just as Wells capitalised the word when describing Moreau’s Law for his beasts.

⁶⁵ The ship that the raft attaches itself to, the *San Mateo*, is a sort of sister ship to the *Bahia de Darwin*. The desertion of *San Mateo*’s crew inspires the *Bahia de Darwin*’s navigator to leave also, which enables the ship to fortuitously ‘drift’ toward the Santa Rosalia (148-9).

⁶⁶ An epidemic might not always fulfil the requirements of a true population bottleneck. However the Santa Rosalia colonists escape the plague of infertility because of geographic isolation, not because of any genetic immunological advantage.

⁶⁷ Many Darwinists object to the characterization of natural selection as a chance process because success, not randomness, ultimately determines whether a gene survives. However as discussed in the previous chapter, relative to Lamarckism, and with the addition of Mendelian mutation, natural selection is *non-directional* and therefore interpreted culturally as random.

⁶⁸ The ‘big brain’ appetite for war and violence is also broadened to include a taste for self-destruction. The use of alcohol is cited as a possible indication that “we were trying to give evolution a shove in the right direction – in the direction of smaller brains.” (228) Mary’s contemplation of suicide (26) also conveys the impression that ‘big brains’ are self-destructive. In fact, the self-destructive tendency is attributed *exclusively* to big-brained humans; marsh-dwelling microorganisms are said to be impervious to attack, either from without or within: “the explosion didn’t bother them much, since they weren’t all that sensitive to sudden starts and stops. They could never have committed suicide in the manner as *Siegfried von Kleist, at the wheel of the bus, intended to commit suicide, with a sudden stop.” (234)

⁶⁹ Vonnegut calls them “scientists” – then, ironically, “humanitarian statesmen” (156); here, his cynicism over the glorification of science is again evident.

⁷⁰ Vonnegut parodically expresses the same sentiment when Captain von Kleist makes an absurd claim on television that Ecuador’s submarines never surface (120); in the Captain’s fantasy, the military deprives even *itself* of oxygen.

⁷¹ Selena and Hisako’s overparenting of Akiko marks an interesting transition phase between dysfunctional and minimal parenting practices (312).

⁷² As if to further distance the colonists from any sort of comfort, they will not reach even this false paradise; they miss their intended destination of Baltra and land on Santa Rosalia by accident.

⁷³ Interestingly, Crake’s fridge magnets express the decline of Cartesian existence: first “I think, therefore I spam.” (*Oryx and Crake* 209); and later, “I think, therefore.” (*Oryx and Crake* 301)

⁷⁴ This in itself compounds the issue of Crake’s multiple personas; he clicks through to his Extinctathon self via an image of Oryx-or-not-Oryx’ face (*Oryx and Crake* 215).

⁷⁵ Crake’s habit of listing the full order and genus information even for human characters (*Oryx and Crake* 182) is another form of hierarchical disruption. By placing the individual (in this case, Jimmy’s mother) at the bottom of an inverted pyramid of descending classifications, and by referring to her as a ‘subspecies,’ Crake denies her humanity.

⁷⁶ Bouson suggests that Crake’s birth name might provide a clue to his particular brand of mad scientism. Crake was named for Glenn Gould, a pianist who is believed to have had Asperger’s Syndrome. Thus Crake is associated with the symptoms of the syndrome: “narrowly focused, obsessional interests and prodigious feats of memory, but also poor social skills and a lack of empathy” (145).

⁷⁷ It is not absolutely clear whether Snowman is alluding to Crake here, though in the sense that he is searching for new ideas to add to the false Crakian creation narrative, the cosmology of Crake is impugned even if Crake is not.

⁷⁸ In reading Crake as a god-figure, it is interesting that Atwood describes his corpse as “vulturized” (*Oryx and Crake*, 335). This is the same word used by Jimmy’s one-time girlfriend Amanda Payne to describe her artworks of carcasses shaped into words. In her estimation, the destruction of the words by vultures was “like watching God thinking” (*Oryx and Crake*, 245); perhaps then Crake’s self-engineered murder is a way to make himself live on (as a god) through his own decay.

⁷⁹ The references to Biblical stories (and also to Greek history) in *Genesis* are not subtle, and most characters are somewhat conspicuously named after historical and Biblical figures. However given that the novel is marketed as ‘young adult’ fiction, this is perhaps intended to facilitate the interpretations of young readers who may not otherwise pick up on allusions to Biblical narratives.

⁸⁰ Morris' *The Naked Ape* has another point of relevance for *Genesis*. Morris hypothesises that an evolved preference for monogamous relationships reduces competition and jealousy between males and leads to greater social harmony (33). Anaximander recounts, as though reporting a gracious concession, that state-approved marriages were permitted in Plato's *Republic* (16), and more casual sexual relationships were meant to be kept under wraps (34). However, Adam is hinted to be promiscuous (26; 34); perhaps his failure to enter a monogamous relationship is related to his tendency to disregard and disrupt social harmony.

⁸¹ The conquering orang-utan androids have evidently progressed beyond such beliefs. One of Anaximander's errors in her oral examination is when she employs reductive rhetoric when discussing Adam's demotion as a causal factor; her examiner chidingly replies "If we were to believe in simple causes." (20)

⁸² Art's body is metallic (64).

⁸³ Even though Anaximander's added imaginings in the holograms are seemingly minor, they prompt the question: "Do you aspire to a career in the entertainment industry?" (74)

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