Recycled Alterity:
Familiar Dehumanisation in the Contemporary Fiction of Genetic Posthumanism

Anaise Mary Irvine

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Abstract

Genetic technologies are now sufficiently advanced to alter the human genome. Indeed, gene editing is already practiced in some countries for medical purposes. However, future directions for the use of genetic technologies are unclear. Scholars of the "posthuman" future tend to speculate that genetic engineering (and other technologies) will create superhumans, and the term "human enhancement" is used to describe the practice of "improving" the human form. However, recent fiction on bioengineering themes envisages not a programme of enhancement, but rather the creation of a new genetic class system in which cloned or engineered human-like organisms form an oppressed and abused minority. These organisms – which I term genetic posthumans – have emerged as protagonists in numerous novels and films, allowing for a humanising view of the interiority of the cloned or engineered mind. This humanised mind is then juxtaposed to the genetic posthuman's othered status. In order to establish the alterity of the genetic posthuman, storytellers strategically recycle modes of dehumanisation applied in historical race- or gender-based struggles. In each case, genetic posthumans are described in a manner recalling other oppressed outgroups: they are made secondary to unaltered humans, they are economically exploited, and they are treated as animals despite their evident humanness. This primes audiences to accept the purported differences of the genetic posthuman as social constructions rather than "natural" or biologically innate distinctions. This thesis proposes that contemporary genetic engineering fictions act as a corrective to the assumptions of posthumanist theory by positioning genetic posthuman characters as disadvantaged beings, using forms of dehumanisation made familiar by recent history. David Mitchell's *Cloud Atlas* (2004), Kazuo Ishiguro's *Never Let Me Go* (2005), and Margaret Atwood's *MaddAddam* trilogy (2003-2013) are examined as key examples of fiction in this area. Other novels, plays, and films are also analysed, including George Lucas's *THX 1138* (1971); Kate Wilhelm's *Where Late the Sweet Birds Sang* (1976); Ridley Scott's *Blade Runner* (1982); Fay Weldon's *The Cloning of Joanna May* (1989); Michael Marshall Smith's *Spares* (1996); Caryl Churchill's *A Number* (2002); and Michael Bay's *The Island* (2005). Each of these works contests the posthumanist assumption that genetic technologies will be used to improve the human form. Although human enhancement is a *possible* outcome of genetic engineering, these storytellers imply another scenario: that corporatized science could lead to the creation of economically useful, animalised, dehumanised creatures. These genetic posthumans could have human (or human-like) bodies and minds, but not human rights.

Dedication

For my husband, Alistair Stafford, who foolishly entered a relationship with me as I started a PhD – with thanks for spending the first few years of our relationship respecting my writing time, bringing me coffee, and taking my glasses off when I fell asleep in them.

For my parents Kay Kennedy and Bob Irvine, who raised me to be intellectually curious, and my sister Caitlin Irvine, who never let me get too lost in a book.

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Introduction

The manipulation and replication of genetic material has occurred for millennia with relatively little controversy. Any farmer who has ever selected the best livestock to breed has practiced a form of genetic engineering. Any gardener who has ever grown a plant from a cutting has effectively "cloned" the plant from which the cutting was taken. The genetic manipulation of living organisms is extremely common and can occur without any human intervention, as proved by the recent discovery that wild varieties of sweet potato contain naturally-transmitted bacterial DNA (Kyndt et al., 2015). Species which reproduce parthenogenetically (for example aphids) can even be said to "clone" themselves naturally, since they take no mates and thus introduce no new genetic information when producing offspring.

The artificial cloning of animal life is also now well-established. Hans Adolf Edward Dreisch turned a single two-cell sea urchin embryo into two single-cell embryos in 1885, Hans Spemann produced two salamanders from one fertilised egg by separating the egg into two cells in 1902, the nuclear transfer technique made famous by Dolly the sheep was first used by Robert Briggs and Thomas King to produce cloned frogs in 1952, and Steen Willadsen cloned a sheep from embryonic cells in 1986 (Panno, 2005, pp. 18-26).

Despite the prevalence of genetic technologies during the twentieth century, public attention and concern were mild. It was not until the end of the century that genetic technologies prompted widespread public debate.[1] Two events in the 1990s acted as focal points for a growing bioethical hysteria. In 1993, Dr. Jerry L. Hall, a fertility researcher at George Washington University, cloned a human embryo. His experiment was designed to test the viability of improving the supply of embryos for fertility treatment by clinically emulating the splitting that happens naturally in identical twins. When *The New York Times* reported the news, the article stressed the implications for improving fertility treatments and highlighted Dr. Hall's sensitivity to ethical concerns (Kolata, 1993). This balanced view rapidly deteriorated into hysteria as subsequent editorials and opinion pieces took a fearful and even outraged tone. Social anthropologist Debbora Battaglia surveyed the media

[1] There had been a period of public debate over eugenics (controlled human breeding to promote the proliferation of desirable traits and the decline of undesirable traits) from around 1910; though this waned after World War II, when its association with Nazi ideology made eugenics unfashionable. Public debate also flared over recombinant DNA technology (the combining of genetic material from different organisms) in the mid- to late-1970s, though the technology's potential consequences largely became known after (and because of) voluntary moratoriums on research instigated by professional societies of scientists (Turney, 1998, pp. 189-191). The fact that scientists pre-empted public outrage with their own shows of caution perhaps muted the eventual response.

response and summarised it as "images of clone armies with designated military functions, of baby farms, clone catalogs, and 'Frankenstein families' of spaced, identical children" (1995, p. 673). Battaglia points out that "more subtle expert opinion and the delicate issues of person and self… had virtually no place in the popular drama" (p. 674). Dr. Hall's experiment was not particularly novel; embryo splitting technology was over a century old by 1993. The experiment was also not particularly dangerous; no viable cloned embryos could be produced because the "originals" were deliberately chosen for their chromosomal defects. His work was significant and provocative not because the experiment itself was particularly new or consequential, but because it crossed a threshold. Dr. Hall cloned *human* embryos, and that made for dramatic headlines.

Just four years later, the hysteria over cloning technology was resurrected and inflated upon the announcement of a cloned ewe's birth. In 1997, the Roslin Institute Laboratory announced that they had cloned a sheep nicknamed "Dolly" by injecting an udder cell from an adult sheep donor into an unfertilised "host" egg cell from which the nucleus had been removed. The cells were bonded with electrical pulses, and the resulting egg cell (containing the genetic material of the donor) was implanted into a surrogate. The subsequent offspring was healthy and able to produce offspring of its own. Dolly was, to the untrained eye, a completely normal sheep. But her birth was a major news story, in a way that previous advances in cloning and genetic engineering had not been. *The New York Times*, for instance, published at least 36 articles mentioning Dolly in the year following the announcement of her existence; but only one article mentioning Steen Willadsen's cloned sheep in the *six* years covering the period of its cloning, publication, and beyond.[2] Dolly made the cover of *TIME Magazine*. Almost immediately, commentators questioned what Dolly's existence would mean for other animals, especially humans. She raised the possibility of resurrecting extinct species. She prompted sportswriters to wonder whether their star athletes could be duplicated. She stimulated discussions on potential applications in fertility science. She provoked horrified accusations of scientific hubris.

As in the Dr. Hall case, the Roslin Institute had not done anything completely new. Cloning was already possible, successful, and in practice for over a hundred years before Dolly, and on mammals for at least ten. However, the ethical furore over cloning only erupted with Dolly and not with any of

[2] *The New York Times* is used to demonstrate media interest in bioengineering science throughout this thesis because it is a standard publication choice for those studying science coverage in the news, and because its science coverage is highly influential on that of other mass media outlets (Clark & Illman, 2006, p. 498). This information is drawn from a search of *The New York Times*' digital archive for articles published between 22 February 1997 (the date of the Roslin Institute's announcement) and 21 February 1998 mentioning the words "Dolly," "clone," and "sheep," and from 1 January 1984 to 31 December 1989 mentioning the words "Willadsen," "clone," and "sheep." The wider window of time is used because Willadsen cloned the sheep in 1984, 1985, or 1986 according to different accounts; and published in *Genome* in 1989.

the cloned organisms that preceded her. Dolly's point of difference – a large part of the reason her existence provoked such diverse and emphatic reactions[3] – was that she was the first mammal to be cloned *from an adult cell*. Her genetic material was taken not from embryonic cells, as was the case in previous successful instances of cloning, but from the cells of a fully grown adult sheep. In 1997, for the first time, it became feasible to replicate an existing grown mammal.

Taken together, the Dr. Hall and Roslin Institute cases demonstrated, within just four years, that cloning humans was possible and that clones could be made of existing adults. The conceptual leap to cloning adult humans was intuitive and, in the media, near-instant. This was not merely a reaction toward or against a new technology; it had much wider implications. Dolly's existence, coming after the cloning of human embryos, implied that the cloning of adult humans was possible.

Although the media reactions to Dr. Hall and Dolly were not wholly negative, there was an intensity to the negative responses that bordered on hysteria. The possibility of cloning adult humans prompted much ethical hand-wringing, and within weeks of the Dolly announcement, President Clinton banned the use of United States federal funds for human cloning experiments. Britain banned human cloning entirely in 2001, and other governments followed. However, such prohibitions and research restrictions were often specific to the replication of entire human genomes. Modifying *parts* of a human genome was not, and is still not in many jurisdictions, restricted. At a policy level, the door to human cloning was largely closed,[4] and as at the time of writing, no reputable research teams have admitted to any attempts to clone whole adult humans. But multiple windows were left open. Research on technologies to manipulate the human genome is active and ongoing. In other words: human genetic engineering is happening now.

Gene therapy is a rapidly emerging form of medicine, with research underway into how a wide range of genetic diseases could be treated by altering the relevant portion of the patient's genome. Genome editing has recently improved in speed and feasibility due to the discovery of "spacers" in

[3] It is also possible that the "branding" of the Dolly case contributed to its notoriety. Previous cloning experiments had been conducted on nameless organisms and detailed in scientific journals; whereas Dolly was named for a famous singer and her existence was advertised in a press release.

[4] Specific policies and laws on human cloning vary. The United Nations adopted a non-binding Universal Declaration on the Human Genome and Human Rights in 1997, and then a revised Declaration on Human Cloning in 2005. The latter called on member states "to prohibit all forms of human cloning inasmuch as they are incompatible with human dignity and the protection of human life" (United Nations, p. (b)). In practice, countries have varying laws on human cloning, ranging from outright bans (for example in France, Germany, and Switzerland) to bans on reproductive cloning only (with therapeutic cloning allowed: for example in England, China, and Singapore). Some countries have no laws specifically related to human cloning, although in many cases they make human cloning economically unattractive by, for instance, restricting the use of federal funding on cloning research (in the United States of America) or making human cloning processes unpatentable (in New Zealand ("Patents Act," 2013)).

DNA sequences. These spacers, discovered in bacteria, allow for adaptive immunity by incorporating the DNA of invading viruses into the DNA of the bacterium. Since 2007, geneticists have been able to replicate the process by which bacteria incorporate virus DNA, making gene editing much simpler (Pennisi, 2013). It is now possible to target a particular DNA sequence, design RNA molecules to match that sequence, and use the RNA to deliver new genes into the existing DNA sequence. This process, called CRISPR technology (Clustered Regularly Interspaced Short Palindromic Repeat), has enabled geneticists to "edit" DNA quickly and efficiently. CRISPR technology has created a boom in gene editing. Many applications focus on medical gene therapy, wherein a "faulty" gene related to a disease is edited out of the patient's genome. In the United States alone, as of June 2013 there were 362 Investigational New Drug (IND) applications[5] related to gene therapy (Templeton, 2015, p. 1240). While much work in gene therapy is still under development, there are people alive now whose genes have been edited for medical purposes. For instance, gene therapy has been used to treat (and in many cases, cure) Severe Combined Immunodeficiency Disease (Cavazzana-Calvo et al., 2000).

Genetic technologies are also used in fertility treatments. So-called "three-parent babies" have been produced by in-vitro fertilisation using a process called cytoplasmic transfer. During IVF treatment, if the mother's mitochondria are unhealthy, mitochondria (including genes) from a healthy donor egg are injected into the egg of the mother. The nucleus of the donor egg is destroyed, and thus the donor's genetic contribution is minimised. When fertilised, the resulting embryo contains three sets of genetic material: that of the mother, the father, and approximately 0.1% to 1% from the woman who donated the egg from which mitochondria were taken. Seventeen children were born as a result of this technique between 1996, when a private fertility clinic in the U.S. began treatment, and 2001, when the Food and Drug Administration banned the treatment. Mitochondrial donation was legalised in the UK in February 2015 (Callaway, 2015).

Very recently, geneticists in China created the world's first genetically engineered human embryo. The research team used CRISPR technology to edit a gene responsible for a blood disorder (Liang et al., 2015). Like Dr. Hall's 1993 embryo cloning experiment, this was speculative work using non-viable embryos; however it is highly controversial because the gene editing was done at the level of the germline. In the more commonly accepted somatic cell technologies, a cell is extracted from the

[5] IND applications are required when pharmaceutical developers wish to transport experimental drugs, usually for use in clinical trials. If the clinical trial is successful, approval would generally be sought from the US Food and Drug Administration to sell the drug. The number of IND applications is a reasonable approximation of the number of gene therapy drugs in the later stages of the research & development pipeline.

patient, and the DNA within that cell is edited. Somatic cell gene therapies do not create changes to heritable DNA; thus only the subject (and not their offspring) has edited DNA. In germline editing, reproductive cells are chosen and changes *are* heritable. Germline editing is illegal (or discouraged by professional bodies of scientists via voluntary moratoria) in many countries. The work of the Chinese research team has been questioned as potentially unethical by other geneticists (ResearchSEA, 2015).

These types of treatments and experiments constitute human genetic engineering. Yet they have not prompted the same level of public outcry as the first cloned human embryo or Dolly the cloned sheep.[6] Perhaps this is a function of nomenclature: gene *therapy* is a much less threatening and more obviously curative term than genetic *engineering* or cloning. Whatever the reason, genetic engineering has not experienced the kind of watershed moment that cloning research experienced with the cloning announcements of the 1990s. The current social status of genetic engineering research has thus reached a kind of equilibrium. Research is ongoing, public interest is moderate, and although some aspects of the research are debated in terms of ethical processes (the use of stem cells or germline editing, for example) the overall project of genetic engineering (in its current form as therapeutic medicine) is far less controversial than the cloning science of the 1990s. It would be easy for a layperson, hearing news of developments in genetic engineering, to assume that all roads lead towards the improvement and enhancement of the human body.

This view, however, is not limited to laypeople. It is endemic to the field of posthumanism, a recently popularised field of enquiry which focuses on the emergence of a (generally) technoscientific "posthuman" future.[7] The 1990s and 2000s saw an exponential increase in the critical attention paid to the notion of the posthuman. Between 1991 and 2007, use of the term "posthuman" in print books increased by over 2500%.[8] With such a rapid popularisation, the bandwagon of posthumanist theory has driven over some fairly critical unchecked assumptions. Central among those is the assumption that efforts to modify humans will be intended to optimise the human subject. Very

[6] The major objection to gene therapy in mainstream media has centred on the use of embryonic stem cells. These objections are based on the source of the cells (a human embryo) rather than their application in gene therapy.
[7] The term "posthumanism" is used to describe two distinct concepts. It sometimes describes the decline of humanism and the rise of a less anthropocentric worldview; that is not the form of posthumanism that is relevant here. This thesis is concerned with the more common usage of the term, which denotes alterations to the human form. I use the term "posthumanism" and its variants to refer only to work that relates to human alteration. Many working in this area prefer the term "transhumanism," though this often denotes practice-based work rather than philosophical inquiry. I use the broader "posthumanism" in order to be inclusive of as many relevant theorists as possible.
[8] The term "posthuman" constituted 0.0000005791% of printed words in Google's catalogue of books published in 1991, compared to 0.0000151299% for books published in 2007 (*Google ngram viewer*, n.d.). The same approximate rate of exponential growth holds for the hyphenated version of the term, though the unhyphenated form is preferred.

seldom do posthumanist thinkers imagine that modifications to the human form could be intended to *disadvantage* the posthuman relative to unaltered humans. The assumption of improvement is reinforced by the proximity of posthumanist thought to transhumanist practice. Transhumanists advocate (and often experiment with) practical advances in the science and technology of human alteration. For example, Professor Kevin Warwick and colleagues at the University of Reading have implanted electrodes in human subjects' arms to allow the subjects' nervous systems to transmit messages to computers (Warwick et al., 2003). Indeed, because posthumanism often conflates genetics, robotics, digital and other technologies into a generic science of bodily alteration, cultural representations of techno-supermen – the Six Million Dollar Man, Robocop, the Terminator – colour understandings of genetic engineering with notions of technological enhancement. These figures invite conceptualisation of the posthuman as a powerful technowarrior, capable of defeating even the strongest human. Posthumanists do occasionally attend to the possibility of accidents or injuries occurring in the pursuit of the Übermensch, but in general, posthumanist thinkers assume that human modification will be performed for the betterment of the subject, and with the subject's informed consent and cooperation. I call this phenomenon the "enhancement assumption," and a fuller account of its pervasiveness in posthumanist scholarship is given in Chapter One.

This thesis is not intended to be a history or extended critique of posthumanist theory, nor a contribution to the field. Rather, it is an analysis of fiction which envisages a possibility not adequately addressed in posthumanist thought: that genetic engineering could *disadvantage* the posthuman subject. In *Icarus, or the Future of Science* (1924), Bertrand Russell wrote: "I am compelled to fear that science will be used to promote the power of dominant groups, rather than to make men happy." (p. 5). The literary works examined in this thesis recognise that enhanced beings could be seen as a threat to the dominance of unaltered humans. They explore the possibility that genetic technologies could be used to deliberately *inhibit* their subjects, reinforcing the dominance of unaltered humans.

For instance, in David Mitchell's *Cloud Atlas* (2004), clones are created with built-in disadvantages such as limited vocabularies and forced smiles so that they will make good servers for their privileged human customers. Similarly, in his novel *Never Let Me Go* (2005), Kazuo Ishiguro depicts a society which has chosen to create clones for organs despite having the technology to produce superhumans: "'It's one thing to create students, such as yourselves, for the donation programme. But a generation of created children who'd take their place in society? Children demonstrably *superior* to the rest of us? Oh no. That frightened people. They recoiled from that.'" (p. 259) In

Margaret Atwood's *MaddAddam* trilogy (2003 – 2013), the humanoid Crakers are, according to their creators' value system, an optimisation of human nature; however, they too are designed to be non-threatening and easily dominated by their human rulers. Mitchell, Ishiguro, Atwood, and others have produced a body of fiction which negotiates the creation of a class of humans whose purpose is to empower and serve unmodified humans. This is the fiction, not of enhancement, but of the posthuman Other. I contend that fiction acts as a necessary corrective to the largely unchecked optimism of posthumanist theory. If, as recent fiction seems to imagine, genetic engineering is moving towards the creation of a stunted genetic posthuman Other rather than an enhanced posthuman self, then existing theories of the posthuman will prove inadequate. This is an area in which authors can only speculate – but their speculations may be fruitful if they address a current gap in posthumanist thought.

Another meaningful contribution that fiction makes to the discourse on genetic engineering is its attention to the impact of genetic alterations on identity and personhood. To be genetically engineered is to have one's genome altered, and given the frequently-used metaphor that genes are "blueprints"[9] for living organisms, it follows that questions of identity and self-determination are at the heart of genetic engineering. Those who have received genetic therapies may already be grappling with the identity implications of their genetic alteration; if genetic engineering becomes widespread, its consequences for selfhood must be explored. Maria Aline Seabra Ferreira, whose 2005 book *I Am the Other: Literary Negotiations of Human Cloning* remains one of the few major works in the area of genetic engineering fiction, predicts that "the posthuman era [will be] dominated by the identity crisis of new, genetically engineered people" (p. 2). Genetically engineered people must, insofar as their modes of creation or alteration are seen to be synthetic, create a revised identity or model of humanness for themselves. The manipulation of human genes prompts questions about the very essence of humanness: am I human if a disease-prone gene is snipped from my genome? If I am cloned, am I diminished or doubled? Does genetic manipulation take something away from me? Does it make me more powerful? Is my clone an "it," a "you," or an "I"? If I am altered, am I still me? These are questions of identity and selfhood; questions which go to the heart of what it means to be human. Philosopher Jürgen Habermas (2003) insists that "normative evaluation [of genetic engineering] is not possible unless we ourselves adopt the perspective of the persons concerned" (Habermas, 2003, p. 53). Fiction provides the perfect medium for adopting that perspective.

[9] The blueprint metaphor may be frequently used, but it is outdated, now that genes are known to act in networks with one another and their expression can be influenced by environmental factors (Pigliucci, 2008).

Fiction has the speculative power, scope for complexity, and imaginative range to consider implications of genetic engineering that news media and posthumanist theorists have not adequately addressed. No human clones can (yet) relate their experiences, and no Sunday supplement newspaper feature or scientific journal article can (or would dare) speculate about the subjective experience of either *being* or *having been* genetically altered or replicated. Fiction has permission to speculate, and can enter the perspective of any character – even one with no analogue in reality. It is the form best equipped at present to explore the identity politics of genetic technologies because it enables what Robert Alter calls experiential realism: "the character's pulse beats and perceptions and shifting emotions are caught in the full tide of living from moment to moment, while at the same time the narrator who renders this immediacy retains the freedom to ironize, analyse, and judge what is going on in the character."[10] (1996, p. 185) Fiction, in Alter's characterisation, is a container for humanness. It is a home for emotion, perception, and pulse. Fiction is thus an ideal space for exploring the emotions, perceptions, and pulses of those whose humanness is doubted.

Cloud Atlas, Never Let Me Go, and the *MaddAddam* trilogy are part of a spate of recent novels and films that have explored the perspectives of cloned or genetically engineered characters. I call these characters "genetic posthumans": by which I mean human or human-like beings whose genetic code has been replicated, manipulated or designed from human genetic material by deliberate intervention so that the characteristics of the beings are significantly altered.[11] In many literary and cinematic examples, the genetic posthuman is a clone; in other words, it is a copy of an existing non-altered human being. In some narratives, the genetic posthuman is a hybrid human/animal creature or genetically designed humanoid. These genetic posthuman characters – often, recently, allotted the rank and prominence of protagonists – invite rumination on the extent to which genetic intervention impacts upon issues of identity. Because fiction delivers emotions, perceptions, and pulses, it *promotes* the humanity of genetic posthuman characters. These characters perform the work that Habermas demands: they allow readers to adopt the perspective of a genetically

[10]Alter uses this term in relation to third-person narration, describing the interior-exterior view that enables the conveyance of both the character's thoughts and feelings, and the commentary of a witnessing narrator. I use it here in an expanded sense. Much of the genetic engineering fiction examined in this thesis is written in first-person narration; though typically with some degree of retrospection. For example in David Mitchell's *Cloud Atlas,* Sonmi~451 recounts her past experiences to a historian; in Kazuo Ishiguro's *Never Let Me Go,* Kathy H. relates her childhood from the perspective of adulthood. The characters can thus relate their moment-to-moment experiences with the immediacy of having lived them, but also with the reflections of retrospective judgement.

[11] According to this definition, genetic posthumans may exist now. Patients who have received genetic therapy to cure diseases have indeed had their genetic code altered by deliberate intervention. If a disease is interpreted as a "characteristic" of a person, then patients who have had their genes edited would qualify as genetic posthumans.

engineered being, and thus make sensitive (if speculative) judgements about the impact of genetic technologies on human identity.

In order to demonstrate the need for care and respect – not only in the application of genetic technologies, but in the integration of unaltered and altered human populations – these works of fiction depict genetic posthumans as historically familiar and exploited Others living as outgroups in societies which privilege the unaltered human. The degree and type of abuse suffered by genetic posthuman characters varies widely. At the low end of the scale, in Caryl Churchill's 2002 play *A Number*, a cloned character experiences mild annoyance at the thought that his human rights have been breached. At the extreme end of the scale, in *Cloud Atlas*, an entire class of bioengineered humanoids is enslaved. Kevin LaGrandeur has noted the tendency for androids to be written as slaves (2013); clones and genetically engineered posthumans now appear to be written in a similar way. The difference, however, is in how this literature of exploitation supports or opposes assumptions. Robotics has commonly been understood as a field aimed at taking menial tasks off the hands of humans; whereas genetic engineering has been commonly understood as a way to improve or protect the human lot. Robots are often expected to be created to help humans;[12] clones or engineered organisms are not. Thus it may appear surprising that genetic posthumans have recently been written as disadvantaged people, given that there is little precedent for such an angle. However there *is* precedent for the ways in which authors and filmmakers communicate their disadvantage. There is a pattern of historicity in the representation of exploitation, recalling real historical instances of discrimination and oppression based on race and gender. The underlying message is surprisingly consistent: genetic engineering could easily become a tool of those with power, and could be used on those without.

The disparity between posthumanist and narrative visions of the socio-political trajectory of genetic engineering is not, however, a simple chasm between optimism and pessimism. Genetic engineering on humans is still (with the exception of a few medical interventions) largely speculative – something that might happen, something that belongs to the future. Despite this, narrative incarnations of genetically engineered posthumans are historically grounded. In representing genetically engineered characters as exploited figures, authors reference the exploited figures of the past by incorporating elements associated with race and gender inequality. This use of highly recognisable historical

[12] This is not to say that robotics has been without controversy. The fear of a robot uprising is common to android fiction, and Asimov's Laws of Robotics famously provide principles to reduce robots' potential for harming humans. Yet even Asimov's Laws carry an assumption of servitude as an underlying motivation for the creation of android forms, given that the second law compels robots to obey orders given by humans (1950).

exploitation acts as a shorthand. The purported difference of the cloned or engineered characters is established by aligning them with historical Others in a process I describe as "recycling alterity."[13]

There are three main ways in which genetic posthumans are given recycled (historically rooted and familiar) alterity. Firstly, they are presented through metaphors that position them beneath "real" or authentic people. Secondly, they are economically exploited in a manner which recalls historical instances of slavery and ownership. Thirdly, they are animalised and demeaned to the status of beasts via rhetorical tropes familiar from the historical animalisation of exploited races. In each of these ways, discussed further in Part Two of this thesis, genetic posthumans are made comparable to disadvantaged groups who, for reasons mis-"justified" through misinterpretations of their supposedly inferior genetic make-up, have been exploited throughout history. Thus genetic posthumans are written as a new enslaved race; [14] and genetic engineering regimes are positioned as a new kind of apartheid.

These are all forms of dehumanisation against which the pendulum of public sympathy has swung. In recycling unpalatable forms of alterity and applying them to cloned and genetically engineered characters, authors position the exploitation of the genetic posthuman as a familiar moral crime. The genetic posthuman, cast in parallel to abused historical minority groups, is packaged as the next class of social victim. In other words, the contemporary fiction of genetic engineering humanises subjects that may or may not qualify as *Homo sapiens;* that may or may not "pass," socially, as human beings. When authors write of genetic posthumans as a forthcoming exploited minority, they enact a kind of pre-emptive social engagement. Readers who recognise the injustice of past exploitations – slavery, discrimination against racial minorities, reduced legal status and privileges for women, and so on – can be expected to cringe at the similar patterns of dehumanisation inscribed in narratives of genetic posthumanism.

[13] The concept of alterity attains a certain irony when applied to clones, who are (in theory) genetic copies and thus not different from their "originals." However, a true genetic clone would not be identical to its original because of the influence of the environment and epigenetic expression. Furthermore, the way in which genetic posthuman characters are Othered in fiction generally hinges on their social status as altered or created beings, rather than on their genetic composition per se.

[14] This thesis places greater emphasis on racial alterity than alternative forms of Othering. This is because, in the fiction selected for examination, parallels between genetic posthumans and minority racial groups were most apparent. Gendered Othering is prominent in Fay Weldon's *The Cloning of Joanna May* (1989), and those interested in genetic technologies from a feminist perspective may find Maria Aline Seabra Ferreira's *I Am the Other: Literary Negotiations of Human Cloning* (2005) to be useful. Ferreira's work provides a view of how cloning impacts on reproductive and sexual politics, and how authors of fiction relate cloning to the place of women.

This thesis examines the contemporary fiction of genetic posthumanism in order to determine what genetic engineering means, philosophically, to a society negotiating its merits. I aim to demonstrate how fiction rebuts the enhancement assumption of posthumanist scholars by representing genetic posthumans as deliberately diminished beings, exploited and subordinated beneath controlling non-altered human populations. The major works of fiction relevant to this subject are David Mitchell's *Cloud Atlas* (2004)*,* Kazuo Ishiguro's *Never Let Me Go* (2005), and Margaret Atwood's *MaddAddam* trilogy (2003-2013); I devote a chapter to each to explore its particular mode of Othering the genetic posthumanism. Other novels, plays, and films are also analysed, including George Lucas's *THX 1138* (1971); Kate Wilhelm's *Where Late the Sweet Birds Sang* (1976); Ridley Scott's *Blade Runner* (1982); Fay Weldon's *The Cloning of Joanna May* (1989); Michael Marshall Smith's *Spares* (1996); Caryl Churchill's *A Number* (2002); and Michael Bay's *The Island* (2005). Although recent works of fiction are the main focus of this thesis, attention is also give to the precedents set by early works of bioengineering fiction such as Mary Shelley's *Frankenstein* (1818); H.G. Wells's *The Island of Doctor Moreau* (1896); Yevgeny Zamyatin's *We* (1924); and Aldous Huxley's *Brave New World* (1932).

Each of the contemporary works examined here supposes that a person, people, or species is developed based on genetic technologies. The creations may be clones, they may be hybrid species, or they may be genetically designed; but in each case they are non-cyborg posthumans. Each text examines the role and status of the genetic posthuman in a holistic sense. In other words, the clone or creation is treated as a character (often a protagonist), not a prop, and their thoughts and feelings are usually open to the reader. The genetic posthuman in fiction often embodies multiple variations on humanness: it is posthuman in the sense that it is engineered; it is subhuman in that it is usually dehumanised by human counterparts; and it is human in the way it is written. I will show how fiction recycles historical injustices as models for the imagined future exploitation of genetic posthumans, and how authors use these historical injustices as heuristic devices to promote empathy for genetic posthuman characters, and suspicion of their non-altered human abusers. In short: this thesis shows how contemporary fiction rebuts the enhancement assumptions of posthumanism by representing genetic posthumans as the next unfairly exploited minority group.

This work is necessary now because genetic posthumans, as defined here, have recently become a reality. There is now a population of individuals who have had their genes altered, or who have been conceived with the aid of genetic technologies. While posthumanists predict the imminent arrival of the genetically designed Übermensch, real human beings have been genetically altered and remained recognisably human. The scale of alteration has so far remained low, and there have been

medical justifications for genetic intervention. These technologies have not been afforded any great degree of media coverage, and some laypeople might be surprised to learn that intervention in human genetics has happened at all. As medical gene therapies and genetic fertility treatments become more commonplace, it becomes necessary to defend the humanity and validity of genetic posthumans. Human genetic engineering, as it stands now and as it appears to be progressing, bears so little relation to the cultural superhuman/posthuman stereotype of genetic modification that existing paradigms of genetic posthumanism will be of no relevance to the generation of medically altered individuals who comprise the first wave of genetically engineered humans. A new understanding of genetic engineering is needed – one which recognises that not all genetic engineering is about creating superhumans, and that altering one gene for medical purposes does not change a person's essential humanity. It is critical that conceptualisations of genetic posthumanism do not "rely on the natural as a guide to what is desirable or normatively right," as Nick Bostrom rightly criticises bioconservatives for implying (2005, p. 205). This kind of thinking would seem to condemn human genetic engineering, even at the medical therapy level, as a transgression against nature. This could lead to discrimination against those who have been genetically engineered.

Fiction is beginning to challenge the enhancement assumption, and demonstrate that any discrimination against genetic posthumans would be unwarranted. The fictional works studied here contribute to an early sociology of genetically engineered humans. As medical genetic engineering becomes more mainstream, models of social interaction between genetic posthumans and unmodified humans in fiction may influence the ways in which genetically modified people are treated. Fiction which humanises genetically engineered posthumans thus pre-empts and insures against discrimination for a class of people which is emerging now. Even fiction which does *not* wholly humanise genetic posthuman characters[15] still serves to scrutinise the motivations for genetic control of populations, and creates a precedent for questioning human motives in situations of human/genetic posthuman cohabitation. This thesis analyses works of fiction which partly or wholly humanise an Othered group of genetic posthumans in the hope that medical genetic engineering will not be interpreted as creating a separate category of subhumans.

Part One establishes a contextual basis for the literary analyses that follow. Chapter One surveys theoretical perspectives on the categories of human, non-human, and posthuman; while Chapter

[15] For instance Kate Wilhelm's *Where Late the Sweet Birds Sang* (1976) and Margaret Atwood's *MaddAddam* trilogy (2003 – 2013), which depict human as well as animalistic and mechanistic qualities in their genetic posthuman characters.

Two looks back to early examples of bioengineering narratives to determine literary traditions of writing alterations to the body. Part Two surveys a wide range of texts to identify the network of associations which recur in the fictional treatment of genetic posthumanism. Chapters Three examines how metaphors of secondariness are applied to genetic posthumans to establish their otherness, particularly by likening them to two-dimensional images. Chapter Four gives details of the biocapitalist worlds imagined by authors of genetic posthumanism, and shows how texts frame the posthuman as a slave or a product for human consumption. Chapter Five traces the frequent animalisation of genetic posthuman characters, and shows how their demonstrated humanity contests their animalised biostatus. Part Three consists of close readings of recent novels which give successful and sensitive portrayals of genetic posthuman characters. Chapters Six deals with Kazuo Ishiguro's *Never Let Me Go*; Chapter Seven analyses David Mitchell's Sonmi~451 narrative in *Cloud Atlas*; and Chapter Eight details Margaret Atwood's *MaddAddam* trilogy, with particular attention to *Oryx and Crake* (2003).

I have included a broad range of genetic posthumans in the scope of this study to reflect the broad range of genetic technologies currently developing. Human cloning appears unlikely to happen in the near future, and the post-Dolly furore over the ethics of cloning has, accordingly, died down. Other genetic technologies, however, have progressed. Accordingly, works of fiction featuring clones, genetically engineered humans, and genetically modified humanoids are included here. This marks a point of difference between this thesis and other studies of genetic engineering in fiction, which usually focus on clones.[16] A study of literary depictions of genetic engineering more generally is likely to be of greater relevance as genetic technologies progress.

While my definition of genetic posthumans is wide, my selection of literature is narrowed to focus on *science in fiction*. Information on genetic engineering, and interpretations thereof, is disseminated in all sorts of media that are not covered in this thesis. Non-fiction sources are of course very common; there is no shortage of newspaper and magazine articles, as well as non-fiction books, blogs, and so on, which discuss the implications (practical, philosophical, and otherwise) of genetic engineering. Genetic technologies are also a very popular theme in so-called "hard" science fiction, but this too is largely excluded. Hard science fiction tends to be written for a loyal following of readers who are more than averagely interested in the potentialities of scientific (and often, technological) innovation and research. As a genre, it is often exploratory and extrapolative.

[16] See for example scholarly works by Ferreira (2005), Jerng (2008), Marcus (2011/2012), and Koops (2013).

Speaking broadly (because the genre boundaries between science fiction and scientific literary fiction can be very hazy) a science fiction writer exploring a scientific principle will usually imagine its technological implications; whereas a literary fiction writer bouncing off the same principle will more often test its philosophical meaning or its impact on humankind.[17] Given that this thesis focuses on what fiction says about the meaning of science, literary fiction is more often useful than science fiction. This is not meant as a value judgement. I do not mean to imply that science fiction has less to say about bioengineering; merely that its generally technological focus is less useful to the questions raised in this thesis.

That being said, several works often categorised as science fiction have imagined the uses that may be made of bioengineering science, and it is feasible that some of the more mass-appeal literary treatments of biotechnology may have been influenced by their science fiction predecessors in terms of their premises.[18] I therefore include a selection of self-described science fiction works which deal with bioengineering, and I propose that the enhancement assumption of posthumanist thought is problematised in science fiction just as it is in literary texts. However there appears to be a much wider variation in the imagined future uses of biotechnology in science fiction than there is in literary fiction. The genetically engineered subject is a post-apocalyptic survivor in Kate Wilhelm's *Where Late the Sweet Birds Sang* (1976); a disposable off-world explorer in Ridley Scott's *Blade Runner*[19] (1982); an ordinary citizen in Fay Weldon's *The Cloning of Joanna May* (1989); an uneducated, naked body used for spare parts in Michael Marshall Smith's *Spares* (1996). Given this degree of variation, it is impossible to treat "genetic engineering in science fiction" as a stable or consistent set of representations. Therefore I focus on explorations of the interiority of genetic posthumans in literary texts, while referring to science fiction texts where they can provide extra dimension to the discussion.

[17] Take for example Michael Marshall Smith's science fiction novel *Spares* (1996) in comparison with Kazuo Ishiguro's literary fiction novel *Never Let Me Go* (2005). Both imagine a future in which human clones are produced to provide organs for transplant into unaltered humans. In both texts, the clone is considered a second class citizen. However, Smith takes the perspective of the clones' human guardian and focuses on his action-packed battle with the human authorities; whereas Ishiguro takes the perspective of the clones and focuses on their status and their experience as "donors." Therefore, Ishiguro's text contains more relevant musings on the subjectivity of clones. However, again, there are many exceptions to this rule; for instance, Fay Weldon's ostensibly science fiction novel *The Cloning of Joanna May* (1989) is intensely focused on identity issues over the technology of cloning.

[18] For instance, as mentioned above, Ishiguro's premise is very close to Smith's, but with a change in focus. David Mitchell's genomed servers in *Cloud Atlas* (2004) are also very similar to Aldous Huxley's lab-grown batches of identical workers in *Brave New World* (1932), which skates the science / literary fiction divide. Margaret Atwood's *MaddAddam* trilogy follows a group of bioengineered creatures trying to co-exist with humans in a postapocalyptic landscape, and in that sense closely follows Kate Wilhelm's *Where Late the Sweet Birds Sang* (1976).

[19] The reason that *Blade Runner* is discussed here rather than its source text, Philip K. Dick's novel *Do Androids Dream of Electric Sheep* (1968), is because Dick's posthuman characters are robotic rather than bioengineered. In Dick's book, humans create a slave labour force of androids. In the film adaptation, the labour force is made up of "replicants" (clones). The book's androids are almost indistinguishable from humans, as are the film's replicants. However, only the film brings the unique conceptual baggage of genetics to bear on its slave labour force.

I also focus mainly on fiction written since the cloning of Dolly the sheep. This is partly to ensure the relevance of the research, as genetic engineering narratives written since cloning has become real and well-known are likely to best articulate and negotiate the anxieties of a society on the cusp of genetic posthumanism. My choice to examine recent fiction is also intended to avoid replicating the work of others. Jessie Stickgold-Sarah's thesis *The Textual Body: Genetics and Dystopia in American Fiction* (2011) provides an excellent analysis of genetic themes in dystopian novels written in the 1970s, when recombinant DNA techniques were being developed and publicised. However, I also devote some attention (particularly in Chapter Two) to earlier bioengineering texts in order to trace the impact of literary precedents on genetic engineering fiction.

There are many contemporary novels featuring clones and genetically engineered characters which I have not examined in any depth. I have given preference to fiction which takes the perspective of genetic posthuman characters, or which pays special attention to their identity in relation to unaltered human characters. However, a growing body of fiction casts ethical doubts on the exploitation of genetic posthumans in a more plot-driven way; see for instance William Gibson's classic novel *Neuromancer* (1984), Bruce Sterling's *Schismatrix* (1985/1996), Paolo Bacigalupi's *The Windup Girl* (2009), and Steven Polansky's *The Bradbury Report* (2009). Many recent young adult novels also take cloning and genetic technologies as themes: see for instance *The House of the Scorpion* by Nancy Farmer (2002); *Unique* by Alison Allen-Gray (2004); *The Clone Codes* (2010)*, Cyborg* (2011), and *The Visitors* (2012) by Patricia, John, and Fredrick McKissack; *Beta* (2012) and its sequel *Emergent* (2014) by Rachel Cohn; *False Memory* (2013a), *False Sight* (2013b)*,* and *False Future* (2014) by Dan Krokos; and *Replica* (2013), *Resistance* (2014a), and *Revolution* (2014b) by Jenna Black. Young adult novels about genetic posthumanism are sufficiently numerous to demand their own separate research project.

I have selected my sample of genetic posthumanist texts to represent an emerging line of thought about the potential for genetic engineering which disadvantages the subject. I do not wish to claim that *all* recent fiction on genetic engineering takes this approach. There are counter-examples: for instance genetically selected humans are considered superior to naturally conceived humans in Andrew Niccol's film *GATTACA* (1997), cloned characters are dominant in the future society of Michel Houellebecq's *La Possibilité d'une île* (2005), genetic engineering is used to create useful interspecies diplomats in China Miéville's *Embassytown* (2011), and the superhuman abilities of characters in the action and comic book genres are often attributed to genetic technologies. The

sample of texts included here has been chosen to showcase an emerging trend in bioengineering fiction, and thus the sample may appear cherry-picked. The contemporary fiction of bioengineering is more diverse than it may appear here – fiction would not be doing its job if it stuck to one point of view. I do not mean to reduce all fiction on this topic to one stable set of representations, but rather to analyse one significant and recently prominent set of representations. Even within the sample of texts studied here, not all are completely consistent in the way they inscribe the genetic posthuman. *Most* in this sample position the genetic posthuman as a second class citizen in societies which privilege unaltered humans; but this is not always the case. For instance, the clones in *A Number* are not known to be clones at first, in the world of the play, and thus are not discriminated against. I do not wish to imply that there is one wholly consistent way of writing, staging, and filming genetic posthumans; rather, I have identified a remarkably common way of representing them, and I infer from that commonality an emerging set of anxieties about the potential abuse of genetic technologies.

Part One: Contexts

Chapter One: Slippage in the Categories of Human, Non-Human, and Posthuman

The genetic posthumans of contemporary fiction are not neatly categorised as members of human, non-human, or posthuman groups in a species sense. They tend to be multiply positioned: they are posthuman in that they have been cloned or genetically manipulated, they are treated (usually) as non-human subordinates, and they are shown to possess the complex thoughts and emotions associated with humanness. In order to comprehend their status, it is necessary to first consider the categories of human, non-human, and posthuman as *social* (not merely biological) categories, the boundaries of which are flexed and manipulated to accommodate socio-political agendas. "Human," in other words, must not be equated with *Homo sapiens.* The latter is a biological category; it is a species that has been named and defined. But the "human" is slippery. Its borders are unstable and have been shifted throughout history to exclude outgroups. There are many precedents wherein biological reasoning has been called upon to justify the exclusion of a particular group from the social category of the "human." These dehumanising campaigns are as much an input into the fiction of genetic posthumanism as genetics or posthumanism.

This chapter surveys philosophies of humanness and non-humanness that have governed historical ingroup-outgroup relations, and identifies patterns of dehumanisation that have been applied to shift the borders of the human. It traces the biological justifications that have been used to deny humanness, and describes the implications of inclusion in, or exclusion from, the human group – however it is defined. The chapter closes with a discussion of the prejudices of posthumanist theory, including the widespread (though not universal) assumption that posthumans are or will be "enhancements" over unmodified humans. This enhancement assumption leads to a body of critical work which negotiates the ethics, practicality, feasibility, and implications of "improving" human beings, without adequately addressing the question of what will happen if the posthuman project moves towards the deliberate deterioration and Othering of a dehumanised group.

"Human" and "Non-Human: Shifting Categories

In order to understand some characters as *post*human – whether they present those characters as being inhuman, superhuman, or subhuman – authors of fiction must surely have some

preconception about what it means to be human. They must also have some confidence that their readers will share a broadly similar understanding of humanness. Without a shared conception of humanness, literary explorations of its boundaries would lose their power. Formal definitions of humanness, however, are wildly inconsistent.

In 2006, a series of symposia was held at the Oxford International Biomedical Centre under the title: "What Makes Us Human?" The speakers in that series, and contributors to the subsequent collection of essays, presented a wide range of theories on the defining characteristics of humans. The quality that makes us human is imitation, according to parapsychologist Susan Blackmore; curiosity, according to biochemist Charles Pasternak; an understanding of cause and effect, according to developmental biologist Lewis Wolpert; and speech, according to geneticist Stephen Oppenheimer. In his essay, Oppenheimer described those who would endeavour to determine what makes us human as "those who would look for meaningful differences between chimps and ourselves." (p. 93) This is not an unsurprising view coming from a geneticist, but it reveals a key bias in the determination of humanness: that a group loosely labelled "we," "us," or "ourselves" qualifies as human, and some other group does not. This bias is evident in the title of the seminar series and the resulting book: *What Makes Us Human?* Clearly, the "us" of the title is human; that is apparently not up for debate. What this human "us" seeks to do, in discussing the category of humanness, is find justifications for excluding other groups that "we" presuppose cannot qualify as human.

Attempts to define and characterise humanness are inherently exclusionary. Humanness is *x*, and therefore group *y* is inhuman. Or, to rephrase the logic in the way arguments of humanness are often made: group *y* is inhuman, therefore "we" as humans define "our" humanness as *x*, with *x* being a quality that "we" possess and group *y* does not. Historically, popular *y* non-human groups have included various forms of monkeys and animals, foetuses, theological figures such as gods or angels, and mythical figures. No matter what the culturally fashionable *y* group, the common thread in definitions of humanness is that it has been binary. Human *or* non-human; *x or y*.

Just as the category of the "human" has been inconsistently defined, the category of "non-human" has shifted according to (often) social or political motives that have nothing to do with biology or speciation. Claude Lévi-Strauss famously theorised in 1952 that a group's perceived humanity (or lack thereof) is a function of social dynamics:

> Humanity is confined to the border of the tribe… many so-called primitive peoples describe themselves as "the men" (or sometimes – though hardly more discreetly – as "the good", "the excellent", "the well-achieved"), thus implying that the other tribes, groups or villages have no part in the human virtues or even in human nature. (p. 12)

In contemporary society, the tribe metaphor is not the most relatable; but in Steven Pinker's updated account, "[people] may respect the rights of the members of their clan exclusively or they may extend that respect to everyone in their tribe, nation-state, or species, but all divide the world into an in-group and an out-group." (2002, p. 39) The ethnographic buzzwords "ingroup" and "outgroup" describe the categories of bias that, in common parlance, might be termed "us" and "them." Recent work in social psychology has described a phenomenon called infrahumanisation in which members of an ingroup consider themselves to be more human than members of outgroups. This extends beyond Lévi-Strauss's "tribes" or racial groups and can occur within any system of social categorisation. Thus infrahumanisation can occur on the basis of socio-economic class, physical or mental capacity, gender, and so on (Demoulin et al., 2004). It leads to the formation of homophilous networks, which are so unvaried as to leave stereotypes and assumptions about outgroups largely unchallenged (McPherson, Smith-Lovin, & Cook, 2001). Infrahumanisation does not necessarily breed outright hatred or explicit claims of the outgroup's inhumanity; but it results in quiet, unchecked prejudice.

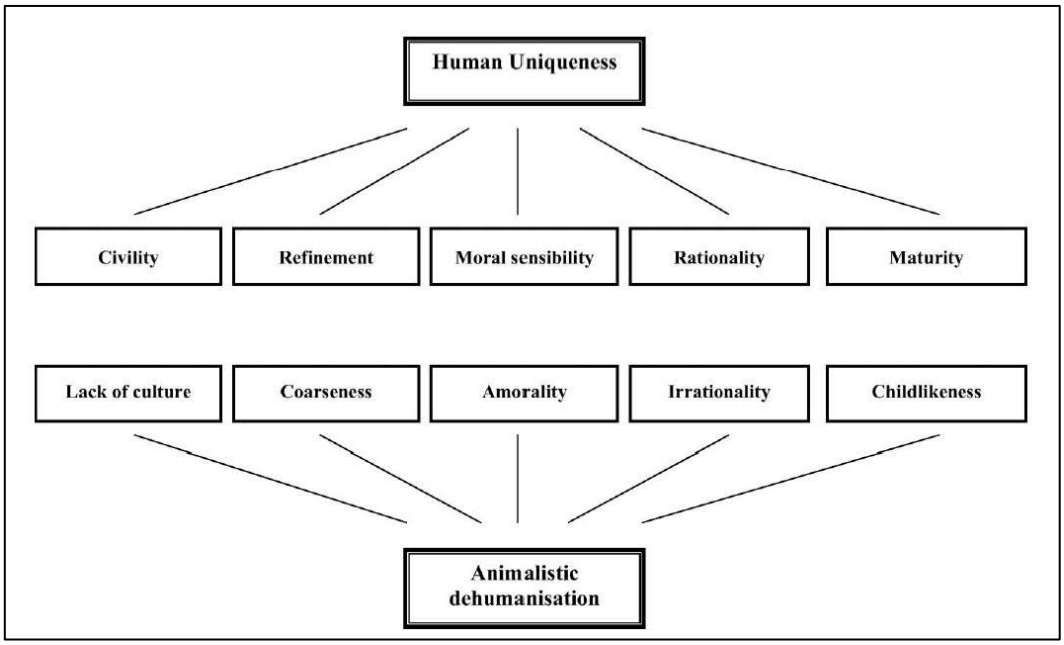
Where definitions of humanness are politically motivated, however, prejudice against outgroups is often cultivated by powerful ingroups. Historical moments of discrimination, prejudice, and genocide frequently feature characterisations of the targeted group as lying somewhere in between human and non-human; they are framed as quasi-human, animalised, or less-than-human. Sociologist Zygmunt Bauman (2003) designates the process of defining humanness as a fundamentally political endeavour:

> [D]efining human nature also means drawing a boundary around the "human," to make sense of the already drawn, or intended to be drawn, political boundary separating "human" from "inhuman" (or more to the point, from "inept at being human," "undeserving to be human," or "bound to be humanized"). (p. 127)

Thus the theoretically discrete and closed categories of human and non-human blur to create shades of partial human status. Defining the human for political purposes is *not* a process of observing and describing the biological characteristics of a group; rather, it is a process of deciding, from one's particular perspective and according to one's own particular motives, who qualifies as human and therefore, who is worthy of being treated as human.

Dehumanisation – treating a group as being less than human – is a recurring feature of racial, religious, and class discrimination. Psychologists Nick Haslam, Steve Loughnan, Yoshihisa Kashima and Paul Bain (2009) have theorised that dehumanisation occurs when an attribute regarded as

being human is denied (p. 56), and have designed a model that breaks down the various markers of humanness that can be refuted.[20] They designate two forms of dehumanisation.[21] The first involves the denial of culturally learned traits. When an attribute regarded as *uniquely* human (possessed by humans but not non-human animals) is denied, the dehumanisation is animalistic in nature. The trait that is denied is typically something that a cultured human would display – for instance refinement or socialisation (Haslam, 2006, p. 256). Therefore, to lack that trait is to be no better than an animal. For instance, refinement is considered a human characteristic; thus implying coarseness is a form of animalistic dehumanisation.

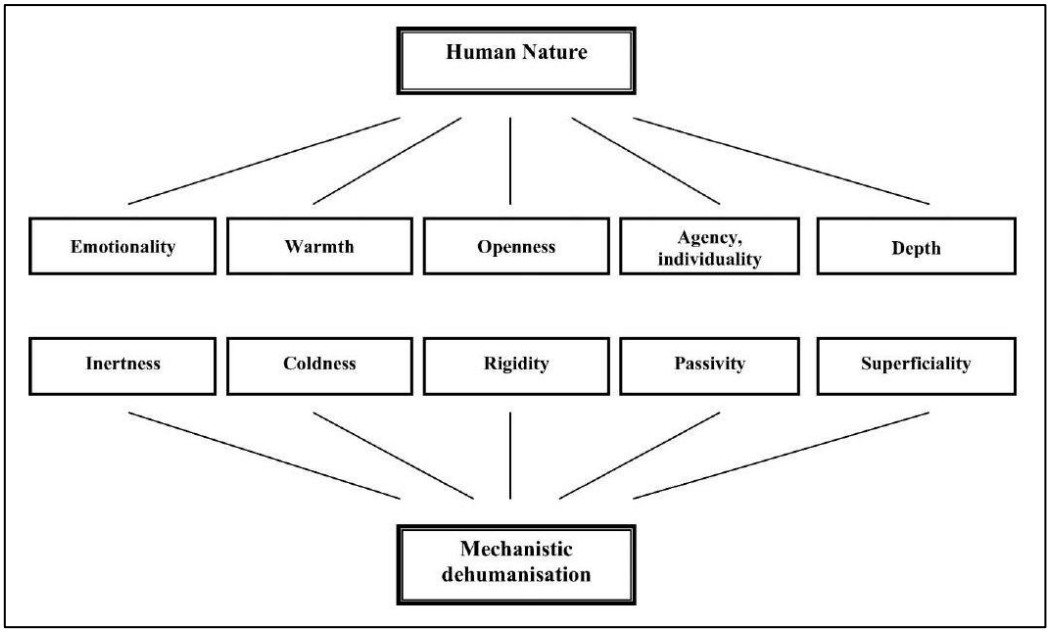


Source: "Schematic representation of human uniqueness and animalistic dehumanisation." (Haslam et al., 2009, p. 62)

The second form of dehumanisation in Haslam et al's model is mechanistic. Mechanistic dehumanisation occurs when an element of human nature (not necessarily unique to humans) is denied. These aspects of human nature are typically traits that are not culturally learned, but are considered inherent to human beings. For instance, warmth and emotionality are considered part of human nature, and thus designating a person as "cold" is a form of mechanistic dehumanisation.

[20] Haslam et al.'s is not the only model of dehumanisation, but it is the most useful in the context of a genetic posthuman/ unaltered human dynamic in that it includes the roles of both the dehumanised and the dehumanisers. It is also reasonably representative of the literature on how dehumanisation functions. Leo Kuper has summarised research on the dehumanisation of racial groups to identify several recurring features of dehumanisation campaigns, and these are generally in agreement with the Haslam et al. model. For instance, Kuper (2005) identifies animalisation, objectivisation, and a more general expression of a "falling-off in human quality" (pp. 13-14), all of which can be used to justify the oppression of entire racial groups (p. 37).

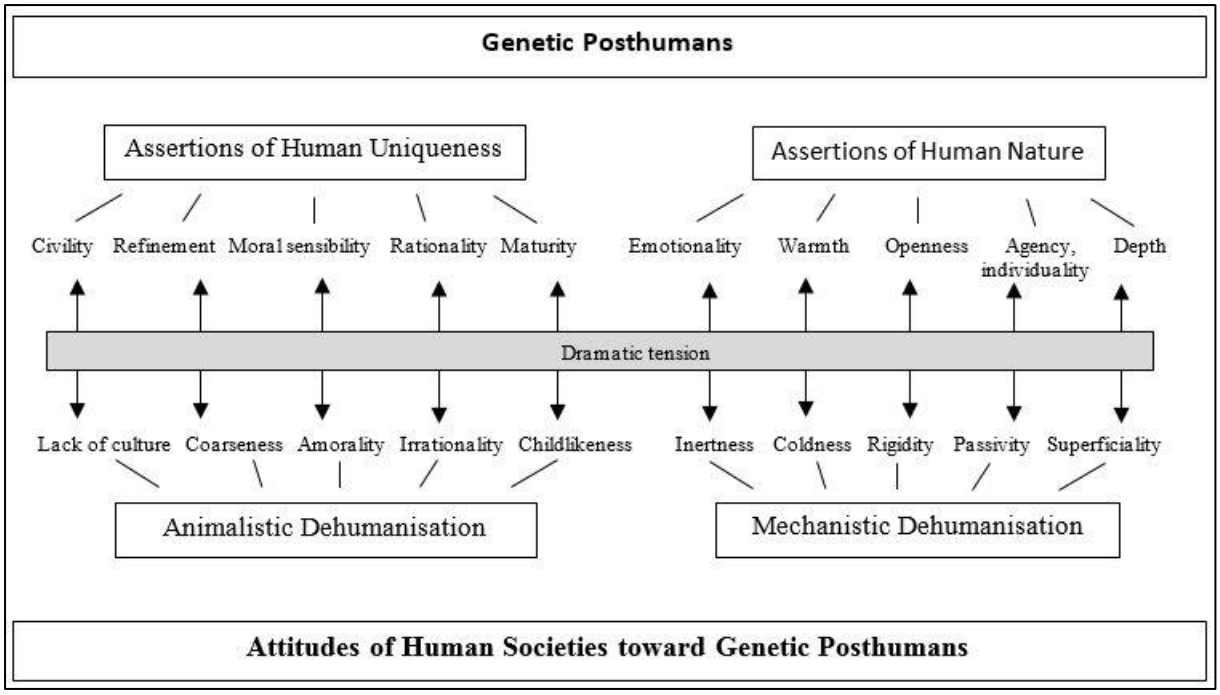
[21] Haslam et al.'s model is adapted from one published in Haslam (2006). There is very little difference between the two versions, but I have used this adaptation rather than the original because it slightly clearer in its wording.



Source: "Schematic representation of human nature and mechanistic dehumanisation." (Haslam et al., 2009, p. 63).

Although Haslam et al embed these models in a discussion of dehumanisation within human societies, their models hold for the speculated dehumanisation of posthumans as well. Loughnan, Haslam and Kashima (2009) have shown that individuals perceived as lacking in human uniqueness traits are seen as animalistic; while those lacking in human nature traits are likened to objects or automata. Logically, it might seem that mechanistic dehumanisation would apply to cyborg posthumans, and animalistic dehumanisation to genetic posthumans. On the contrary, genetic posthuman characters in recent fiction are subjected to both forms of dehumanisation. They are animalised, frequently and thoroughly, as Chapter Five shows in detail. But they are also deemed superficial as mere "copies" or "versions" of human originals, and are mechanistically dehumanised through their association with two-dimensional images (see Chapter Three). The forms of dehumanisation to which they are subjected span both of Haslam et al.'s models. Yet at the same time, authors imbue their genetic posthuman characters with innate human characteristics such as emotionality and rationality. In other words, authors construct a model of genetic posthumanism that is both fundamentally human and also socially dehumanised.

The figure below, which combines and modifies Haslam et al.'s models of dehumanisation, shows how contemporary genetic engineering fiction (to a greater or lesser degree) sets the humanity of genetic posthuman characters against the dehumanising attitudes of unaltered human characters.



Human characteristics of genetic posthuman characters and their dehumanisation by unaltered human societies in contemporary fiction. Adapted from Haslam et al's models of dehumanisation (2009, pp. 62-63).

Kazuo Ishiguro and David Mitchell, in *Never Let Me Go* and *Cloud Atlas* respectively, write from the perspectives of their genetic posthuman characters, and humanise them by imbuing them with the characteristics that Haslam et al. designate as "human." They are shown to be moral, rational, and individualistic, with great depth and a full range of human emotion. Unaltered human characters in the same novels dehumanise genetic posthuman characters by assuming that they are somehow lesser, by infantilising and controlling genetic posthumans, and deeming them untouchable. Other novels provide variations on this model. Margaret Atwood writes from outside the perspective of the genetic posthumans in the *MaddAddam* trilogy (so their humanity is not privileged in the narrative), but displays dehumanising attitudes in her human characters. She designates a human character (Snowman) as a symbolic ambassador to the genetic posthumans, and through his view of them, creates empathy for them. A wide range of other works of fiction (examined in Chapters Three to Five) depicts human characters diminishing the humanity of genetic posthuman characters, and in each case, the unaltered human is shown to be falsely privileged in their position of "authentic" humanity.

Biological "Justifications" for Dehumanisation

Every time a fiction author depicts the dehumanisation of a genetic posthuman population on the basis of their biology, they evoke the many real historical cases of dehumanisation that were based

on flimsy biological "justifications." Those wishing to draw the boundaries of humanness around themselves, excluding others, have often resorted to statements of biological difference and rhetoric of disease to try to lend credence to their categorisations. This type of physiological distinction establishes us-and-them grouping on the basis of what is visible, and like Lévi-Strauss' humanity which ends at the border of the tribe, physical classification criteria allow for easy (and, of course, subjective) identification of who "belongs" to the ingroup and who does not.

For instance, the famous nineteenth-century naturalist Louis Aggasiz tried to prove that there were sufficient physical differences between black and white races to support his theories of polygenistic creation[22] which in turn were used to justify slave ownership. He claimed this was an apolitical scientific endeavour despite the clear expressions in his private letters of his repulsion at the sight of the black Americans he encountered in domestic service (Wallis, 1995, p. 44). Similarly, J. H. Van Evrie tried to argue for slavery in 1859 by claiming, amongst other things, that African Americans lacked the ability to express emotion (cited in Roberts, 2008, p. 75). In apartheid South Africa, every citizen had to register as a member of a particular (government-defined) race. Physiological evidence was often used to determine those classifications – for instance, those whose hair was thick and curly enough to hold a pencil were defined as non-white, as were those with particularly pink cuticles. These characteristics were deemed evidence enough to justify their registration as coloured or native (groups which were frequently animalised), and that in turn was seen to justify the discriminatory policies and practices that would be meted out against registered non-whites (Posel, 2001, p. 105). In Nazi Germany, the religious and intellectual anti-Semitism of the Weimar Republic was transformed into a racial and biological anti-Semitism when race science[23] – or *Rassenwissenschaft* – began to promote physiological criteria for Jewishness. Officially, anyone with three or four grandparents who had been members of a Jewish congregation was deemed to be Jewish and required to carry identification papers. The writings of race scientists, however, contained lists of physiological characteristics that could be used to identify Jewish people, particularly the shape of the nose and cranium.

In each of these cases, status was denied to a group on the basis of some physiological difference which was taken to imply their lesser status. Physiological markers of difference are often coupled with rhetoric denouncing the "uncleanliness" of the group that is to be dehumanised, in what

[22] Linnaeus had previously categorised two species of humans: *Homo sapiens europaeus* (European) and *Homo sapiens afer* (African), describing each in terms of their perceived character as well as physical characteristics (Gould, 1981/1996, p. 66)
[23] Students at the University of Berlin could choose from twenty-five different race science courses; there were eighteen professorships in the field of "racial hygiene" across Germany. (J. Weinstein & Stehr, 1999).

genocide scholar Rowan Savage (2007) calls "a particularly vicious medicalised representation of outgroups as a biological threat" (p. 405). Metaphors of sickness, germs, and poor hygiene are applied to racial outgroups. By designating the outgroup as diseased or unclean, their segregation or murder becomes a matter of "public health." As early as World War One, German authorities ran widespread public health campaigns that were ostensibly aimed at all citizens, but which isolated Jews with such measures as Jewish delousing facilities and Yiddish-language hygiene pamphlets (Weindling, 1997). By the time of the Holocaust, much German race science stressed the genetic "impurity" of the Jewish population, using population movement and intermarriage as justification for their claims (J. Weinstein & Stehr, 1999).[24] Indeed, the disease rhetoric of German anti-Semitism was directly related to genes: non-Jewish German citizens were barred from marrying those who were *Erbkranken* (genetically diseased) under the Nuremberg Laws of 1935 (Savage, p. 418). The Holocaust was "justified," in part, by these pseudoscientific claims of impurity, and enabled by propaganda which played on physiological Jewish stereotypes. The genocides in Cambodia in the 1970s and in the former Yugoslavia in the 1990s also drew on disease and impurity rhetoric, with leaders in both cases using the term "cleansing" to describe the mass murder of racial outgroups (Savage, p. 427). Indeed, dehumanisation is such a key component of genocides that the group Genocide Watch lists it as the third stage of eight signalling a genocide; they note that dehumanising rhetoric extends into the final stage, which is often termed "extermination" by the perpetrators in order to frame victims as vermin (Stanton, 1998).

In the case of genetically engineered or cloned posthumans, there would not necessarily be a visible physiological difference between the posthuman and the unmodified human. However, discrimination on biological grounds would still be possible. In most of the works of fiction examined in this thesis, genetic posthumans are kept separate from unaltered humans. Their biological status informs their social status, and they are often actively segregated from human societies. In some cases, they are made visually distinct so that unaltered humans can recognise genetic posthumans visually. And in some cases, disease rhetoric is employed by unaltered humans to create feelings of disgust and enforce segregation measures. Whatever the mode of separation, human and genetic posthuman populations are almost always kept apart in fiction on the flimsy and historically familiar basis that they are biologically different.

[24] German race scientists apparently were not concerned with the logical inconsistency of hinging their judgements of impurity on the "wanderings" and "mingling" of Jewish people, while simultaneously claiming that a Jewish person was easily identifiable based on supposedly consistent physiological traits.

The segregation and exploitation of genetic posthuman characters on biological grounds is likely to strike contemporary readers as distasteful. Twenty-first century readers, aware of the evils of American slave owners, South African apartheid, the Third Reich, and other historical (biologically "justified") atrocities, will be predisposed towards suspicion of claims about biological difference. By having their human characters make such claims of genetic posthuman peers, authors recycle the alterity of historical outgroups into a pre-emptive case for the equality of genetic posthumans. They suggest that, just like historical outgroups which were unfairly Othered, genetic posthumans deserve the right to be considered human.

"Posthuman": An Emerging Category

Given the instability of "the human" as a category and a concept, modifications to "the human" are bound to be similarly contested. Everything this chapter has described so far – attempts to falsely close off "human" as a category, and attempts to shift the boundaries of that category to dehumanise particular groups – relies on an the assumption that there is a clear binary between human and non-human. Posthumanism contests this binary by introducing what could appear to be a third category: the posthuman.

Under the auspices of posthumanist theory, scholars from (usually) non-scientific backgrounds act to direct and limit the ways in which non-scientists discuss the application of technologies (including genetic engineering) to the human body. However, posthumanism brings its own values, judgements, and assumptions to discussions of cloning and genetic engineering technologies and their (predicted or actual) application on human subjects. Officially, posthumanism is defined as "the idea that humanity can be transformed, transcended, or eliminated either by technological advances or the evolutionary process"[25] ("Posthumanism," n.d.). In practice, there is so little consensus on definitions of posthumanism – on its limits and scope – that the word is often used carelessly to describe an unnecessarily narrow futurism. The Oxford English Dictionary definition of posthumanism can be split into two components: change and cause. Posthumanism is the idea "that humanity can be transformed, transcended, or eliminated" (change) and that that such changes are the result of "technological advances or the evolutionary process" (cause). I contend that posthumanist scholarship shows biases in its coverage of both the nature of the changes, and of their cause. Specifically, posthumanist scholarship usually assumes that changes are or will be

[25] The full Oxford English Dictionary definition goes on to include "artistic, scientific, or philosophical practice which reflects this belief" ("Posthumanism," n.d.).

improvements, and that causes are or will be mechanistically technological. These biases create expectations of a posthumanist future that does not adequately account for the particularities of *genetic* posthumans. Much posthumanist theory promotes an imprecisely futurist view of the posthuman as a biological *and* technological (organic *and* inorganic) being; whereas the genetic posthuman would be entirely biological and organic.[26] Posthumanism also usually focuses on the body and its potentialities, with little regard for what posthuman technologies could mean for individual identity or social structures. Accordingly, the central assumption of posthumanist theory is that the inevitable outcome of applying technology to the human form is simple improvement.

This is not to say that posthumanist theory is oblivious to the potential dangers of genetic engineering. However, where posthumanist scholars do imagine potentially deleterious consequences to genetic posthumanism, they often take a moralistic stance against genetic engineering in principle, rather than undertaking serious examination of its potential abuse. The likes of Rollin Hotchkiss, George Annas, Francis Fukuyama, and other conservative thinkers often argue that genetic alteration would be socially destructive, but they almost always do so from within the assumption that alterations would be chosen by the subject (or his or her parents) for some perceived benefit. It is very uncommon to find speculation within posthumanist theory about genetic alterations that would be imposed upon the subject for exploitative purposes.[27] The assumption that genetic alterations would be designed to benefit their subjects creates a major blind spot, which recent fiction exploits. Many of the works of fiction discussed later in this thesis serve to unpack the biases and assumptions of posthumanist theory. They focus on *genetic* alterations without combining genetics and other technologies in posthumanism's hazy futurism; in doing so, they can attend to the unique implications for human identity of genetic alteration and replication. They also attend to the possibility that genetic engineering and cloning could be employed to create something other than the assumed Übermensch favoured by many posthumanists.

Posthumanism and Visions of Enhancement

[26] Genetic posthumans would, of course, be created *using* technology, but technological input would not necessarily be evident in the being themselves. For instance, a mass-produced clone may be recognisable socially as a clone, but could still be a fully thinking, feeling, flesh-and-blood person. In the case of a patient who had received genetic therapy to treat a disease, no one but their medical team need know of their genetic alteration.

[27] Of course, posthumanism is a vast field and its adherents do sometimes recognise the potential for non-enhancement outcomes – some examples of this are given in this chapter.

When genetic control via eugenic breeding was proposed in the early twentieth century, it was heralded as a tool of enhancement. In 1908, *The New York Times* embraced Mendelian heredity as a new tool with which to "improve" upon nature: "with the knowledge now at his command, man may change the useful fauna and flora of the globe more to his purposes" ("Mendelian heredity,"). At the heart of the fervour over eugenic thinking was this prospect of betterment. Crops could be improved. Animals could be manipulated to produce more meat. Humans could become smarter, fitter, and more desirable as citizens. Under the influence of eugenic thinking, a sense of progress was built symbolically into the very language of genetics. Early media reports on the discovery of the double helix used metaphors like the "double staircase" ("Tracing the transmission of genetic material," 1958) and the "ladder" ("A pattern for perpetuation," 1959), both of which imply access to a higher level.

Posthumanism was founded on the very same notion of enhancement. The term "posthuman" originated during the eugenics debates in the early twentieth century, and appears in print in 1917 tied to the idea of the "perfectibility" of humankind. If humans could be optimised, this early argument went, they are not human but something post-human (Parmelee, p. 320).[28] Rollin D. Hotchkiss, coiner of the phrase "genetic engineering," showed concern for its potential ill-effects when he wrote about genetic technologies in 1965. But underneath his concern, the assumption that genetic engineering would aim for enhancement was evident: "In attempting to have the elements so mixed as to produce the noblest Roman of all one might unwittingly produce a Dogberry, a Caliban, or quite conceivably a mosaic monster" (p. 201). Hotchkiss's Shakespearean references suggest that the products of genetic engineering could be incompetent,[29] subhuman,[30] or beast-like. However, his statement reveals the underlying assumption that monstrous creations would only arise by accident. The aim of genetic engineering, he seemed to assume, would be to craft "the noblest Roman of all." Hotchkiss took for granted that genetic engineers would work to replicate or improve upon the finest human specimens available. Their creations would (except in the case of accidents) be human, only better.

In her seminal text *How We Became Posthuman* (1999), N. Katherine Hayles envisages a spectrum of potential directions for the project of posthumanism:

[28] Ironically, another early appearance of the term is in a 1927 encyclopaedia entry for demonology (Colby & Williams, p. 667). Perhaps these two early incarnations of posthumanism – in the context of perfectibility, on the one hand, and demonism, on the other – have contributed to the persistent notion that the posthuman is both optimised and not-quite-human.

[29] Like the bumbling constable character Dogberry in *Much Ado About Nothing* (1598).

[30] Like Caliban, the monstrous half-human character in *The Tempest* (1611).

> If my nightmare is a culture inhabited by posthumans who regard their bodies as fashion accessories rather than the ground of being, my dream is a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognizes and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity, one on which we depend for our continued survival. (p. 5)

Again, underlying her dream and nightmare is a unifying assumption: that the posthumans of the future will be creatures of privilege. They will have the power to choose how to treat their bodies, they will have the ability and luxury to sit back and philosophise about their condition, and they will inherit and update our understanding of materiality. Just as theorists of the human assume that some undefined "we" counts as human, so too theorists of the posthuman assume that "we" (or a future "we" called "they") are the subjects under discussion. Posthumans, it is assumed, will be *us*: optimised.

The assumption that posthumanist agendas will serve to improve the privileged is by no means Hayles's alone. In fact, it is remarkably widespread. Where theorists connect posthumanism to social inequality, they almost universally retain the notion of the posthuman as a figure of privilege. In most versions of this vision for the future, those who have been modified form a kind of genetic ruling class,[31] not dissimilar to that shown in the film *GATTACA* (1997). For example, bioconservative George Annas, writing in the *Boston Globe* about anti-human cloning discussions at the UN, assumed that "the 'improved' posthumans would inevitably come to view the 'naturals' as inferior, as a subspecies of humans suitable for exploitation, slavery, or even extermination" (2003). Asher Seidel (2010) imagines that the great posthuman perk will be an extended lifespan, and that "the nonextendeds are likely to be those whose cultural traditions and/or socio-economic circumstances have kept them at some remove from the immersion in what I loosely term 'the scientific and technologically mediated lifestyle.'" (p. 69) Seidel presumes that posthumanity will be a "joyful state" (p. 51) for those who can afford it. Even Francis Fukuyama, one of the most vocal critics of posthumanist technologies, does not give extended consideration to the potential for exploitation of modified individuals.[32] He objects to the possibility of entrenching inequality via posthuman technologies, but assumes that posthumans would be the elite: "social elites may not just pass on

[31] Though Nicholas Agar (2004) argues that genetic classism already exists in the form of career and life advantages bestowed upon those who are healthy and attractive; by this reasoning, catch-up genetic treatments for those not blessed naturally could *decrease* genetic inequality (p. 83).

[32] Fukuyama does briefly allude to the possibility of a manufactured underclass ("What will happen to political rights once we are able to, in effect, breed some people with saddles on their backs, and others with boots and spurs?" (2002, p. 10)) but does not pursue this avenue of investigation. Vociferous anti-cloning bioconservatives Leon Kass and James Q. Wilson (1998) also briefly consider the possibility of exploitative cloning, but they do not give the idea any credence because as Wilson imagines, cloned offspring would surely only be allowed within male-female marriages, wherein "parental constraint would prevent organ farming and the indiscriminate or political misuse of cloning technology" (pp. 72, 77-78)

social advantages but embed them genetically as well" (2002, p. 157). In a magazine opinion piece, Fukuyama claimed that embedded privilege could become a threat to human rights: "If we start transforming ourselves into something superior, what rights will these enhanced creatures claim, and what rights will they possess when compared to those left behind?" (2004). Though humanness, and human rights, are on the posthuman radar, the posthuman is assumed to be the holder of power. Even Nick Haslam, the scholar who co-developed the model of dehumanisation discussed earlier in this chapter, has written about posthumanism and dehumanisation (with Samuel Wilson) *while assuming* that any dehumanising effects would be a side effect of enhancing technologies; thus advocates and opponents of posthuman technologies are described as "pro- and anti-enhancement writers" (2009, p. 250) rather than pro- and anti-posthumanism writers.[33]

The enhancement assumption has become so widespread that the phrase "Human Enhancement," and its acronym HE, now routinely appear in discussions of the posthuman; indeed, both "HE" and "transhumanism" (which denotes an improvement-oriented posthumanist programme) are sometimes used interchangeably with "posthuman." In practice, the three terms are often lumped together[34] into the same discussion, and the prospect of non-enhancing posthumanism is forgotten. In some instances, scholars assume that posthumans are *by definition* improved beings. For example, Oxford philosopher Nick Bostrom (2005) writes of the citizens of the World State in *Brave New World*: "posthumans they are not. Their capacities are not super-human but in many respects substantially inferior to our own… to deliberately cripple moral and intellectual capacities [is] the exact antithesis of the transhumanist proposal." (p. 206). Bostrom's carelessness with terminology is not unusual, but it is misleading. In fact, *trans*humanism explicitly seeks to enhance, but *post*humanism does not. As the terms are conflated, the enhancement assumption becomes entrenched, and posthumanism becomes more and more blind to the possibility of anti-enhancement agendas.

This raises the question: what if the posthuman project does not proceed towards perfecting the human form? What if genetic engineering, biohacking, technological modifications, and so on are

[33] Wilson & Haslam's article is an excellent survey of the arguments for and against posthumanism in relation to their views of humanness; insofar as it is largely a survey piece describing the work of prominent posthumanist scholars, it probably cannot be expected to escape the enhancement assumption within which those scholars work.

[34] There is little consensus on individual definitions for the three terms. In general, posthumanism refers to an academic field concerning altered human forms; transhumanism refers to the practical efforts of enthusiasts to improve the human form, and human enhancement refers to the set of tools used by transhumanists. However these are not universally agreed. In fact even the group Humanity+, formally known as the World Transhumanist Association, tends to conflate the terms. They define posthumans as "possible future beings whose basic capacities so radically exceed those of present humans as to be no longer unambiguously human by our current standards" (Humanity+, n.d.). The Oxford English Dictionary definition of posthumanism does not require enhancement.

used, not as pathways to the ideal of the Übermensch, but as tools for the production of an underclass? This is a possibility barely acknowledged in posthumanist theory but commonly depicted in recent fiction that touches on posthuman themes. It is, furthermore, a possibility not outside the realms of reason. If the genetic enhancement of humans does not ever gain social and political support, then there may come a time when designing humans is possible, but not socially acceptable. The production of an underclass may then be the only avenue through which genetic engineering can proceed. If the public can mentally separate themselves as "human" from other humanoid creatures as "non-human" engineered or cloned beings, then genetic engineers may be channelled into working on beings other than the "us" of existing humankind.[35] If that happens, then their creations would surely be subject to some version of human control, and would likely be held below humans in a hierarchical power structure. This is, of course, more speculation than prediction. *Any* form of life creation or modification is bound to be contentious, and I do not hold a crystal ball.

Fiction authors also hold no crystal balls. But the fact that a significant number of them have recently written stories which challenge the notion of the posthuman as an embodiment of privilege must be seen as evidence of an emerging socio-cultural anxiety. In these recent fictions, the posthuman (and specifically the *genetic* posthuman) is not only post- but also *sub*-human. The sudden proliferation of this fictional scenario, against trends in posthumanist scholarship, suggests a fear that maybe "we" will not improve ourselves, but stunt others – and perhaps that act of stunting will constitute the dehumanisation of an entire class or species of posthumans. This is a new angle to the moral debates over genetic engineering, and it casts genetic engineering as a social justice and human rights issue. A stunted posthuman could sit somewhere in between human and non-human; this is fertile ground for storytellers.

Biology, Technology, and Entanglement

Exactly what the posthuman is or is not composed of has never been a matter of consensus. Because existing work on posthumanism generally assumes that all technological roads lead to enhancement, conceptual sitings of posthumans often consist of a simple hierarchy of superior posthuman over inferior unaltered human. This human-posthuman relationship does not hold true for the genetic posthumans of recent fiction, for two reasons. Firstly, as discussed, fiction does not assume that posthumans are enhanced, and in fact recently, often depicts posthumans as deliberately stunted

[35] Or, if no form of non-therapeutic genetic engineering is explicitly permitted, then some genetic engineers may choose to work outside the law – in which case, any form of modification could be feasible.

beings. Secondly, theoretical models of the posthuman are not specific to any particular *type* of posthuman. A posthuman being will be drastically different depending on the technology or technologies used in its creation; existing posthumanist theory tends to genericise the posthuman as a broadly bio/technological form, and does not adequately account for differences in posthuman technologies.

Posthumanist theorists variously believe that human bodies already have technological elements and are therefore already posthuman (Donna J. Haraway, 1991, p. 150); that "human" and "posthuman" are fuzzy and overlapping categories (Hayles, 1999, p. 6); that posthumanism is a conceptual process of "becoming" or transforming (Braidotti, 2013); and that the posthuman is something that could or will appear in the future, depending on what we do in the present (Fukuyama, 2002, p. 17; Pepperell, 2003, p. 172). What theorists don't tend to stake a position on is *how* the posthuman is created. There is often a general sense that the posthuman is part human, part technology; part body, part information; cyborgian and genetically modified; neurologically manipulated and cybernetically optimised. In other words, the posthuman in theoretical treatments tends to be an ill-defined creature based on fuzzy extrapolations of multiple contemporary technological capabilities. The posthuman is conceptualised as the humanoid result of *science*, generally, rather than of any one field. This is a problematic position because, depending on which kinds of technologies and sciences are used – and in which combinations – the resulting posthuman forms could vary wildly. An android posthuman, with artificial intelligence but no consciousness, would be a very different creature to a thinking, feeling human clone. By tarring all emerging forms of unfamiliar humanoid with the same "posthuman" brush, posthumanists overlook the specificities of each form of potential life. This thesis focuses on the genetic (i.e. genetically engineered or cloned) posthuman for this very reason. Genetic posthumans could conceivably have no inorganic or technological components whatsoever. They could, in fact, be indistinguishable from unaltered humans. Yet it is only in fiction that the specific case of the genetic posthuman has been adequately considered.

Posthumanist scholars cite several branches of science as potential modifiers of the human form, including computer science, robotics, genetic engineering, neurology, and cybernetics. While posthumanist theorists do occasionally acknowledge the different opportunities opened up by each strand of scientific enquiry,[36] they have not divided the field of posthumanism itself into science-

[36] Many authors of books on the subject use the posthuman promises of different branches of science and technology as a way to organise chapters (see for instance Dinello, 2005; Fukuyama, 2002; Koops et al., 2013).

specific strands. In other words, while there is a distinction between robotics and genetic engineering technologies in posthumanist thought, there is seldom a distinction between the robotic posthuman and the genetically engineered posthuman. In speculative discussions of the posthuman, biological sciences and cyborg technologies are conflated. It could be argued that this conflation merely acknowledges the possibility of interdisciplinary approaches to posthumanist research. But in doing so, it ignores the possibility of single-technology posthuman life.

Bringing this hazy picture into sharper focus, there are several ways in which a posthuman creature could actually be developed. When we talk about the posthuman body, we are talking about one of several possible types. Either we envisage a part-cyborg body, with or without artificial intelligence (Robocop, in the popular imagination); or we envisage a biologically engineered body (a clone, a hybridised species, a genetically designed or embryonically selected creature); or we envisage a body created from a multitude of technologies. While technological and biological types of modification *can* and currently *are* used to "enhance" individuals, the philosophical implications of technological and biological alterations are quite different. However, posthumanist theory tends to treat the two as part of the same programme. Robert Pepperell (2003) notes in his caveat on the use of the term "posthuman" that it is used not only to describe a human under transformation, but also to evoke the "general convergence of biology and technology to the point where they are increasingly becoming indistinguishable." (p. iv)

Compounding this fuzziness, many posthumanist scholars operate under the ill-defined premise that some "we" is already posthuman. In her highly influential "Cyborg Manifesto" (1991), Donna Haraway claims that "by the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs" (p. 150). Some scholars, following Haraway's lead, consider any inorganic body modifications (including prostheses and sometimes even wearable tools)[37] to be evidence of present-day cyborgs; under that interpretation, anyone who wears glasses or has fillings in their teeth would be classed as a cyborg (see for instance Manderson, 2011; Wise, 1997, p. 22). Still others accept the cyborg as an existing entity, but sensibly point out that humans have modified their bodies with inorganic prostheses and tools for millennia (see for instance Soper, 1999, p. 74). Given that the term "cyborg" is often used interchangeably with "posthuman," these notions of existing cyborg-ness complicate the posthuman even further.

[37] Artificial intelligence theorist Alexander Chislenko (1995) coined the term "fyborg" to distinguish between cyborgian prostheses and functional (fyborgian) modifications.

When Haraway published her manifesto in 1991, there was perhaps some value in creating such a broad understanding of the cyborg. The Harawayan cyborg acknowledges and draws attention to the destabilised borders between human and machine, between the real and the artificial, and raises (if imprecisely) the notion that technology applied to the body demands a new conceptualisation of humanness. Haraway's cyborg is thus an important concept for interpreting the work of "biohackers" who modify their bodies by implanting magnets, biosensors, lights, cameras, and other objects under their skin. However, the claim that "we" are already hybridised, hinged on the flimsy evidence that many people (not all) have some inorganic matter on their person, downplays the significance of the genetic modification and selection technologies that are now emerging (or are expected to soon emerge) for use on humans. To claim that *everyone* is already something other than human is to overlook the very real and distinct groups of people who are currently bordering on being *genetically* posthuman. Those who have been embryonically selected, or born to three genetic parents, are arguably (genetically) something other than traditionally human; yet they are not Harawayan cyborgs because they are not modified with inorganic materials. Given that genetic technology is already employed for medical and therapeutic use, and elective genetic alteration is on the biohacking radar (Biba, 2011), it is important to drop the notion that "we" are already (imprecisely) posthuman and begin to define the terms of genetic posthumanism more clearly. A vague and technologically conflated posthumanism will be ill-equipped to describe the unique experiences of those who have already been, or will soon be, genetically selected, replicated, or altered.

When conflating biology and technology in discussions of the genetic posthuman, theorists import the philosophical baggage of technology into potential posthuman subjects that would not necessarily carry technology as part of their body or sense of selfhood. A clone, for instance, is created with the help of technology, but is a biological unit indistinguishable from any other of their species. In theory, a human clone would not be intrinsically cyborgian, or even noticeably different to any other human being. Cloning, genetic engineering, and embryonic selection are of course forms of biological technology; however they do not necessarily produce technobodies, much less technoselves. The *tools* used to modify the human who is subject to these procedures are indeed a hybridisation of biology and technology. However the *resulting form* is no hybrid. It is posthuman, in the sense that it is formed from human-technology symbiosis, but it is not, in itself, technological. It is a body, a person, a being, with no robotic, cyborg, or technological components. It is exactly this kind of meaty, biological being which, as Sherryl Vint notes, has overtaken the cyborg in the

collective imagination of fiction writers in recent years (2008, p. 178). How can we evaluate the identity of the genetic posthuman if the very term posthuman implies technological components?

The Special Case of the Genetic Posthuman: Identity Issues

The non-specific, approximately bio/technological nature of the imagined posthuman leaves little room for sensitive discussion of the specific consequences of genetically altering or replicating human beings. The practice of changing or replicating genetic code carries immense philosophical implications for the identity of genetic subjects, and that impact should be sensitively considered, especially given that medical genetic therapies are already underway. Unfortunately, fiction authors are almost alone in their treatment of this subject – and where theorists address genetic posthuman identity issues, they do so with agendas.

No human clone has ever been produced or observed; thus any suppositions about human clones are all mere guesswork, informed by science fiction or, at best, inferred from an understanding of cloning technology. Somatic-cell nuclear transfer (SCNT), the method by which Dolly the sheep was cloned, does not give many insights into the implications for the identity of the cloned individual; however, it can be interpreted as a technology of partitioning. SCNT involves transferring the nucleus of a donor animal's cell (containing donor animal's DNA) into an emptied egg ready for implantation into a surrogate mother. Existing fertility treatments that approach genetic engineering, such as the highly controversial "three-parent" IVF treatments for women with unhealthy mitochondria, also require the components of cells to be erased and replaced.[38] Somatic cell gene therapy (SCGT) involves replacing genes in individuals with genetic diseases. On a conceptual level, these genetic technologies act upon partitioned wholes. Whole cells are split up into parts, and the parts are manipulated. Whole genetic codes are split up, and individual genes replaced. Logically, interpretations of genetic posthuman identities that were rooted in the science would privilege a reading of the altered self as a fractured or "edited" entity.

Instead, discussions of posthuman identity (where they exist) are often used as arguments for or against posthuman technologies. Bioconservatives, on one side of the argument, reject posthuman technologies on the basis of vague fears that "biotechnology will cause us in some way to lose our

[38] This technique was described in more detail on page 9 above.

humanity" (Fukuyama, 2002, p. 101).[39] This is, of course, a ridiculous assertion, given that "humanness" is such a slippery concept, and one which is socially and culturally as well as biologically defined. Transhumanists, on the other side of the argument, minimise identity issues as tangential or insignificant in comparison to the vast promise of posthuman technologies. Nicholas Agar (2004), for instance, argues that it is the scope of the change to a person, rather than the type of change, that impacts upon identity: "enhancement is no more likely to disrupt identity than is the treatment of disease" (p. 78). Agar claims, in other words, that a minor improvement in ability would do less to change an individual's identity than a major improvement in health. These simple pro and con accounts of posthuman identity focus on a scale of identity shift: immense (bioconservatives) or negligible (transhumanists). What they do not consider is that changes to identity are not straightforwardly quantifiable.

What is relevant to the issue of posthuman identity is not *how much* the identity of the affected individual differs from that of an unaltered human, but *in which ways*. For instance, imagine that three people suffer from exactly the same degree of heart disease and are cured. Person A receives a human heart via transplant, and makes a full recovery. Person B receives an artificial heart via transplant, and makes a full recovery.[40] Person C receives a pig heart via transplant, and makes a full recovery.[41] All three individuals experience the exact same *amount* of change (from diseased to cured), and to the exact same parameter (their health), but each of the three would have different impacts to their identity based on the knowledge of what their body now contains. If Person D had a robotic heart implanted that dramatically increased their aerobic capacity and gave them superhuman endurance, that person's identity would change in a different way again.

One of the few bioethicists to realise this is Carl Elliott (1999), who points out that identity issues are seldom taken seriously by his peers: "when bioethicists write about self-improvement, they generally concentrate on improvement and overlook the self." (p. 28) Elliott interprets genetic technologies as potentially affecting the subject's sense of authenticity, in that they transform the very nature of the person being amended (p. 29). But it is not just the actual genetic transformation that would impact upon the subject's identity. When modifications to the human form are made

[39] Scholars such as Bill McKibben, George Annas, and Jeremy Rifkin also broadly take this position. Again, the assumed posthuman is a "we" or "us" and not a "they" or "them." Consideration of genetic posthuman identity issues should take into account the possibility raised by the novels examined in this thesis – that genetic posthumans may not be a privileged or mainstream group.

[40] This has been possible since 1982, and in 2013, the first fully self-regulating artificial heart was implanted successfully (Lichfield, 2013).

[41] Transplants of animal organs into humans (known as xenotransplantation) have been performed experimentally but organ rejection issues have kept the technique from becoming medically feasible on a wider scale. The first transplant of an animal heart took place in 1964 but was not successful (Lederer, 2008).

using alterations to genetic code, any discussion of the resulting organism will be coloured by our cultural impressions of genetic code. A genetic posthuman is, conceptually, a "rewritten" version of something that was "naturally" human.[42] It can draw its identity from multiple perspectives. A clone, for instance, borrows its status not only from its "original" (the being upon which it was based, genetically) but also from the fact that is *un*original. Habermas makes this point in his book *The Future of Human Nature* (2003):

> Now, the more ruthless the intrusion into the makeup of the *human* genome becomes, the more inextricably the clinical mode of treatment is assimilated to the biotechnological mode of intervention, blurring the intuitive distinction between the grown and the made, the subjective and the objective – with repercussions reaching as far as the self-reference of the person to her bodily existence. (p. 47)

The genetic posthuman must grapple with having been "made" in a way that unaltered humans need not. To be genetically edited – regardless of the nature of the editing – is to be intentionally reconstructed, and that is quite intuitively an identity issue.

While Habermas and Elliott do give sensitive consideration to the question of genetic posthuman identity, they do so from within the enhancement assumption.[43] Habermas conceives of genetic modifications as enhancements purchased by parents for their unborn children – a system which he calls "liberal eugenics."[44] Elliott chooses the commonly-used phrase "enhancement technologies" to describe non-medical genetic alterations (p. 27).[45] In fact, almost all discussion of posthuman identity (including Fukuyama's and Agar's cited above) takes place within the enhancement assumption. This obscures the significance of identity issues, particularly for scholars (like Agar) who assume that the subject will appreciate and celebrate their alteration. The fiction examined in subsequent chapters tackles the possibility that real genetic posthumans may not match the superhuman techno-bodies imagined by posthumanist scholars, and may in fact constitute an exploited underclass. The identity of these exploited genetic posthumans is explored in fiction as it has not been in the existing scholarship of posthuman identity.

[42] Genetic information is not stable or fixed and is thus "rewritten" constantly; but the key point here is that human genetic engineering constitutes an intentional and interventionist rewriting of genetic code.
[43] Elsewhere, Habermas has written of human cloning as akin to slavery, but not because he conceives of the clone as indentured or owned in a practical sense. Rather, the comparison hinges on the notion that a clone would be created as a result of a free and conscious decision by someone other than him or herself (2001).
[44] But even assuming enhancement, he writes that the subject could not be presumed to consent to their genetic modification unless it prevented "extreme and highly generalized evils" (2003, p. 63).
[45] Elliott does briefly mention the possibility of "altering someone for the worse" but only as an aside (p. 29).

Chapter Two: "Are We Not Men?" Precedents in Early Bioengineering Fiction

No storyteller works in a vacuum. Contemporary authors of genetic engineering fiction draw upon the traditions shaped by their predecessors who contributed to a collective cultural understanding of what means to be biologically tweaked. When David Mitchell expresses concerns in *Cloud Atlas* about the economic exploitation of vat-grown beings, he does so in alliance with Aldous Huxley in *Brave New World* (1932). When Kazuo Ishiguro writes in *Never Let Me Go* about the intellectual inhibition of bioengineered individuals by the state, he does so alongside Yevgeny Zamyatin in *We* (1924). When Margaret Atwood describes the patchwork biology of the Crakers in the *MaddAddam* trilogy, she works in concert with Mary Shelley in *Frankenstein* (1818) and H.G. Wells in *The Island of Doctor Moreau* (1896). No narrative is a direct or unmediated response to any form of science or technology, because that narrative will have its own literary heritage which inevitably extends back much farther than the scientific principle. It is impossible to draw a single causal line between any recent work of fiction and the science of genetic engineering. It is more accurate to think of fictional works as being influenced by a field of scientific and literary inspirations.

At first glance, it may seem problematic that fictions which culturally negotiate a *new* scientific process (genetic engineering) carry the influence of texts written *before* that process could even be envisaged. Indeed, the predecessor novels examined in this chapter created a way of writing bioengineering that was not informed by an understanding of DNA.[46] For even the latest of these authors, the mechanics of heredity, let alone genetic engineering and cloning, were decades away from discovery; yet the types of bioengineering represented in their novels remain highly relevant to contemporary genetic engineering narratives. The relevance of early bioengineering novels to contemporary genetic engineering fiction reflects a parallel layering process. Authors build on the work of earlier authors; just as scientists build on the work of earlier scientists. In both instances,

[46] Of course there was some understanding of heredity, and how it might be manipulated, before the exact structure of DNA was known. While most of the authors discussed in this chapter would not have had access to information on genetics, some would have known enough about heredity to write in an enduringly relevant way about bioengineering. For example, H. G. Wells was well-educated in biology; he was in the process of giving up his belief in Lamarckian transmission for Weismann's germ plasm theory around 1895, as he wrote *The Island of Dr Moreau* (Glendening, 2002, p. 580). Those writing in the decades after the 1900 rediscovery of Gregor Mendel's pea experiments (especially Aldous Huxley, given that his brother Julian was a leader of the New Synthesis) would have benefited from the growing understanding of heredity in their era. There was an approximately accurate (and optimistic) discourse on the possibilities of selective breeding around this time. Additionally, J.B.S. Haldane predicted a future of selective and artificial breeding in his 1924 essay "Daedalus, or Science and the Future" (pp. 16-17), which Joanne Woiak cites as the "main inspiration and model" (2010, p. 167) for the society of the Huxley's World State.

new understandings are layered over (and influenced by) the old. Therefore it is entirely appropriate that new genetic engineering texts should build on early bioengineering texts, because genetic engineering technologies build on prior bioengineering technologies. *Frankenstein* was inspired by Luigi Galvani's attempts to reanimate the bodies of dead frogs, *The Island of Doctor Moreau* drew on the work of Victorian vivisectionists, and *Brave New World* was written in the context of debates about eugenics and ectogenetic research. The body manipulations to which these novels responded shared a broadly similar agenda with genetic engineering, in that they controversially aimed to extend, optimise, and take control of the bodies of organisms. Thus the layering of bioengineering in fiction over time reflects the layering of scientific discoveries, as new technologies build upon the old.

Accordingly, there are a great many thematic commonalities between recent and early bioengineering texts. Specifically, there is a shared attention to the fractured, compromised, and confused identity of the bioengineered subject, who is generally more sensitive than his or her (or its) status would indicate. Dr Moreau's creatures recite over and over: "Are we not Men?" (p. 59), issuing a self-doubting cry that echoes through contemporary works; indeed Frankenstein's creature, the Numbers of Zamyatin's OneState, and the World State's Bokanovsky siblings are also fractured beings with a persistently human emotionality. But as in contemporary works, these early novels depict the exploitation and dehumanisation of the bioengineered subject, who is ultimately a victim of the regime into which he, she, or it is "born."

There are, however, key differences between contemporary and early bioengineering fictions which reflect changing ideas about who (or what) might control genetic technologies. *Frankenstein* and *The Island of Doctor Moreau* are often associated with the stock figure of the "mad scientist." Even though that label is an oversimplification of the characters of Doctors Frankenstein and Moreau, it does reflect a literary tradition which cautions against secret science. In twentieth century texts *We* and *Brave New World*, the secret scientists are no longer individuals but nation-states, reflecting fears about the connection between totalitarian governments and scientific power. In contemporary genetic engineering fictions, the scientific evil-doers are almost always corporations or hybridised corpo-states (see Chapter Four), mad scientists for the neoliberal era. The shift from rogue scientists, to scientific states, to biocorporations reveals a growing concern about the collective misuse of bioengineering by organised groups whose motives are no longer intellectual curiosity, but political and economic control.

Parts Two and Three of this thesis read contemporary fictions largely as responses to modern genetic engineering technology, but this chapter is the asterisk on that interpretation. The works examined in later chapters respond to advances in genetic technology, but they also draw on literary traditions and conventions. Given the number of tropes shared by early bioengineering novels and recent works, it is reasonable to conclude that the figure of the exploited genetic posthuman in contemporary fiction is not simply a response to cloning science or a rebuttal to genetic engineering. Narratives of bioengineering, even those written before genes were known to be the carriers of heritable traits, continue to influence writings on the altered posthuman. For instance, Chris Pak (2010) argues that although genetic engineering is not a particularly brutal science, it is often written as such because of the enduring influence of *The Island of Dr Moreau*'s vicious depiction of vivisection (p. 27). In fact, Wells's novel is so enduringly relevant that the problems he associated with hybridised species in 1896 were the very problems identified by the U.S. Institute of Medicine in their 2006 "Guidelines for Human Embryonic Stem Cell Research" (Clayton, 2007, p. 570).

Thus the contemporary fictions of genetic engineering draw on twenty-first century science, but are also influenced by nineteenth- and twentieth-century fiction. Of course, the heritage of a text is wider even than its relation to earlier texts. It would be impossible to trace every influence on every work of contemporary genetic engineering fiction; however, this chapter gives an account of some of the key novels that established a way of fictionalising bodies which "transgress" against norms of reproduction and heredity.

Early Bioengineered Subjects: Torment and Turmoil

The contemporary genetic posthuman subject, as is shown in subsequent chapters of this thesis, frequently contests the enhancement assumptions of posthumanist scholars. Genetic posthumans are often depicted as disadvantaged beings, shunned or exploited by human peers, and deemed secondary or insubstantial. But because they are often given the prominence of protagonists, the humanised interiority of genetic posthumans can be shown and contrasted to their secondary status, resulting in an impression that they are unfairly marginalised. Similarly, early bioengineering fiction represents the bioengineered subject as a persistently human and ultimately well-intentioned being. But the early bioengineered subject is not always disadvantaged: in some cases it is considered monstrous, but in other cases it occupies a position of privilege. For example, the creatures of *Frankenstein* and *The Island of Dr Moreau* are made gruesome relative to their human witnesses; but the lobotomised numbers of *We* and the bottle-bred citizens of *Brave New World* are considered their society's norm and ideal. There is, therefore, a distinct split in the way these novels

deal with the bioengineered subject. Shelley and Wells present "monstrous" creatures who demonstrate their inner humanness, and who are driven to monstrous acts by their human creators. By contrast, Zamyatin and Huxley create bioengineered states in which citizens must seek to control many elements of their human nature. In each case, the scientist or scientific regime that creates the subject/s cannot claim perfect control of its creations. The bioengineered subjects of all four novels grapple with conflicting desires and confusion. This, perhaps, is the most consistent legacy of early bioengineering fiction: the inner turmoil of the biologically altered posthuman.

Outer Monstrosity and Inner Humanity

The creations of Doctors Frankenstein and Moreau are completely unique beings, without precedent in their own worlds. They are monstrous, in the sense that they *look* inhuman. But they are also inherently sensitive, well-intentioned, and emotionally complex. Their monstrosity is part of their appearance but is largely left out of their characterisations. It is in popular retellings of the stories, not in the novels themselves, that Frankenstein and Moreau's creations are boiled down to simple monsters.

The creature of Mary Shelley's novel is initially gentle, self-educated and articulate, but he becomes darkened by isolation and the rejection of his human peers. Despite the popular image of the creature as a hideous monster, it is his peers, the villagers, who act unreasonably. They attack; the creature retreats (p. 109). Bruno Latour (2012) points out that Dr Frankenstein's experiment created a being; but it was his abandonment that created a monster. Indeed, Frankenstein's creature is not initially termed a monster. He has no name; he is excluded, even at the onomastic level, from the conventions of human society. Instead, in describing the creature's reanimation, Shelley has Victor gradually load his descriptors for the creature with more and more value-judgements: transitioning from "creature," "thing," and "being" to "wretch," and then to "monster" and "demoniacal corpse" (pp. 58-59). The transition accompanies Victor's growing realisation that the creature, despite his best efforts, is ugly. The creature's purported monstrosity is thus an aesthetic judgement, rather than a character judgement. Victor's revulsion and the creature's monstrosity become mutually reinforcing factors. Victor sees the monster as repulsive and shuns him; the creature, in turn, sees himself as monstrous and his behaviour becomes increasingly anti-social. Shelley reinforces the idea that the creature's monstrosity is purely aesthetic by showing him engaging in a perfectly polite exchange with a blind man, but then being attacked by the blind man's seeing family (pp. 135-137). The creature blames Victor for the isolation he feels: "'Accursed creator! Why did you form a

monster so hideous that even *you* turned from me in disgust?'" (p. 133) It is only this *rejection* – the "'barbarity of man'" (p. 109), in the creature's own words – that drives him to destructive behaviour. In this sense, the novel speculates about the behavioural psychology of a bioengineered being, but does not constitute a wholesale dismissal of bioengineering science as is popularly understood.

It is mainly in retellings of the Frankenstein story that the classical "monster" figure appears, grunting and frightening ordinary folk. The gentlemanly, if frustrated, conversations between Dr Frankenstein and his creature in the novel become, in film adaptations, fits of grunting and strangulation. A recently-rediscovered 1910 silent short film followed the novel in that the creature craved his creator's love and acceptance, and was not inherently monstrous (Searle Dawley). However, the string of adaptations released by Universal Studios in the 1930s and 1940s added the angry mob to the Frankenstein story. The famous 1931 Boris Karloff monster was chased by a mob of the prototypical torches-and-pitchforks variety (Laemmle & Whale). Subsequent films in the series featured Frankenstein's monster being chased again, but often alongside other horror film monsters. In *House of Frankenstein* (1944) for instance, Frankenstein's monster is aligned with the Wolfman and Dracula (Malvern), creating a sense of equivalency between the three and associating the monster with Wolfman and Dracula's violence. References to the story often distort its monster/mob dynamic even further. A 1988 commercial showed an angry mob attacking the creature because he didn't watch *The People's Court* on television (The People's Court "Frankenstein" promo 1988). A 2003 parody on *The Simpsons* had "Frinkenstein" going on a murderous rampage and stealing brains (Swartzwelder). These exaggerations and distortions are critically important to understanding the impact that *Frankenstein* has had on the place of bioengineering in the popular imagination. While students of literature might carefully read Shelley's *Frankenstein* in its entirety, most people who are aware of the story will have gained that awareness through reinterpretations of the novel, rather than from the novel directly. Thus the popular understanding of *Frankenstein* is that the titular character is a monster, not a doctor, and he is remembered as a much more malicious monster than Shelley's novel portrays.

The "monsters" of *The Island of Doctor Moreau* are similarly remembered as grotesque beasts, though their grotesqueness is largely a first impression. Prendick, upon first encountering the creatures, declares them "'Monsters manufactured!'" (p. 71). But although Prendick's early disgust is directed at the creatures, he quickly turns his revulsion toward Moreau. Prendick, after interacting with the creatures for some time, begins to see them as victims rather than monsters. The incompatibility of their animal and human natures creates in them a pitiable despair:

> 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; their mock-human existence began in an agony, was one long internal struggle, one long dread of Moreau – and for what? (p. 95)

This passage is full of Darwinian terminology (for example "fitly," "adapted"), and frames the creations as crimes against mainstream biology; against the "natural" order of life. In Prendick, who is said to have studied with Darwin's "bulldog"[47] T.H. Huxley (p. 29), Wells creates the perfect disapproving judge of such anti-evolutionary tinkering. Moreau is the architect of the distortion of evolutionary adaptation. His work (as witnessed and interpreted by Prendick) is not that of a biologist, but of someone *undoing* biological processes. Prendick's judgements and commentary cast Moreau as the novel's true monster. Indeed, many of Moreau's appearances in the novel have him covered in blood (pp. 50, 105), and his tortuous experiments match and exceed the violence of any creature they produce.

Wells complicates the creatures to such a degree that they cannot be considered simple monsters. In the rare moments when we get a glimpse into their psyches, they are shown struggling with rejection and reversion. They are trained to experience shame at their animal instincts, to feel fear of Moreau, and, in a telling detail, are physically incapable of smiling (p. 82). When they revert to animalistic violence, as the Leopard Man does, Prendick attributes their ferocity not to any innate monstrosity, but to their maltreatment: "I am convinced that only the madness of unendurable fear could have prompted this attack." (p. 91) Their animal and human elements are at odds, creating deep internal conflict. But to Prendick, there is authenticity in their humanity:

> It may seem a strange contradiction in me – I cannot explain the fact – but now, seeing the creature there in a perfectly animal attitude, with the light gleaming in its eyes, and its imperfectly human face distorted with terror, I realized again the fact of its humanity… 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. (pp. 94-95)

Despite Prendick's respect for the human suffering of the creatures, their hybrid status – especially after the visual impact of numerous film adaptations[48] – leaves an *impression* that they are the

[47] Wells had many connections to the Huxley family. Like his character Prendick, he studied under T.H. Huxley. He would also later publish a biology textbook called *The Science of Life* (1929) with Julian Huxley, T.H. Huxley's grandson and Aldous Huxley's brother. Aldous Huxley satirised Wells's ideas in *Brave New World,* and indeed satirised Wells personally in the character of Dr. Wells. H.G. Wells was horrified at the novel's grim portrayal of a scientific future, and wrote critically of both the novel and its author (Firchow, 1976).

[48] Including *Ile d'Epouvante* (1913) directed by Joë Hamman, *Island of Lost Souls* (1932) directed by Erle C. Kenton, *The Twilight People* (1972) directed by Eddie Romero, *The Island of Dr. Moreau* (1977) directed by Don Taylor, and *The Island of Dr. Moreau* (1996) directed by John Frankenheimer. The 1932 and 1972 adaptations added to Moreau's sinfulness by turning the Panther Man into a highly sexualised Panther Woman (Kenton; Ashley & Romero); similarly, the 1977 and 1996 versions featured hybrid women as love interests (Pressman; Steloff, Temple-Smith, & Taylor), compounding Moreau's transgressions. In these latter versions, not only is he creating hybrid beings, but he is also potentially muddying the taxonomic waters further by setting the stage for hybrid-human sexual reproduction. The 1996 adaptation recast Moreau as a geneticist, applying Wells's commentary on vivisection directly to the science of genetic engineering.

novel's monsters. But on close reading, Wells imbues greater humanity in the creatures than he does in Moreau.

Enduring Humanness in Bioengineering Regimes

The bioengineering narratives of the early twentieth century depict bioengineering *regimes*: entire states in which every member is systematically bioengineered and dehumanised to fit an efficient, mechanised, labour-oriented ideal. Yevgeny Zamyatin's *We* describes a society in which human emotions are taken as a sign of rebellion against the rational state. The OneState seeks to make all citizens uniform. Humanness is seen as the enemy: "A true algebraic love of mankind will inevitably be inhuman." (p. 206) Accordingly, people are numbered, not named; romance, families, and art are excised from the social fabric. Dehumanisation is part of the philosophy of state stability: "when a man's freedom is reduced to zero, he commits no crimes. That's clear. The only means to rid man of crime is to rid him of freedom." (p. 36) The individual is devalued, and the "one, powerful, million-celled organism" (p. 132) of the OneState is prioritised. The main means of ensuring obedience to the OneState is social conditioning, but when citizens show signs of independent thought, the state seeks to surgically excise their imaginations via a "Great Operation." The Great Operation is at first voluntary, but later, when citizens rebel in larger numbers against the OneState's strict rules, schedules, and curfews, it is enforced as a mandatory anti-revolutionary measure. The state claims that after the operation, "You are perfect, you are the equal of the machine." (p. 173) This type of rhetoric permeates the state's pro-Operation propaganda, emphasising that the perfect citizen is a dehumanised citizen. The Great Operation is thus a distinctly political and oppressive form of biological alteration.

Struggles with transgressive humanness form the basis of the novel's plot. The protagonist D-503 begins to humanise, and comes to think of the occupants of the universe as a family (p. 44) despite his conditioning. As he walks happily with his new (forbidden) love I-330, his happiness takes the form of maternal warmth: "The whole world was one immense woman and we were in her very womb, we hadn't yet been born, we were joyously ripening." (p. 71) Although he is expected to view his peers as a number-coded mass, he sees I-330 differently: "She was no longer a Number, she was simply a person" (p. 122). In other words, D-503's humanness breaks through his conditioning so that he experiences social phenomena that he has been taught to view as hallmarks of ancient peoples' incivility. As his emotionality builds, D-503 still visualises himself mechanistically, but with an element of overheating; like "a machine being run over its RPM limit" (p. 130). The social

conditioning that has failed to fully dehumanise and enslave D-503 is eventually supplemented by the Great Operation. Zamyatin hangs the Operation as a threat over his characters throughout the latter half of the novel, and devotes several pages to propaganda espousing its value. Little attention is given to the procedure itself, and because D-503 is forced to submit to it only near the very end of the novel, its long-term effects are not explored. However, its inclusion suggests that biological alteration can be seen (and exploited) as a powerful extension to social conditioning to shape obedient citizens.

Brave New World explores the same concept of state manipulations to humanness,[49] but does so in an inverted way. The novel is one of the few examined in this thesis which depicts *enhanced* posthumans. Its characters are bred (and for most, cloned using the "Bokanovsky" splitting process) to fill a variety of roles for the good of the World State. Many copies are made of the low-status Gammas to fill menial jobs; whereas a few individualised Alphas are created to take on more intellectual work. But all, even the most privileged, are systemically dehumanised.[50] Firstly, the family is shown to have been completely revised in the (unspecified future) time of the novel. Sexual reproduction has been nearly eliminated and is considered revolting (p. 88); the very word "mother" has become unspeakable (pp. 131, 139). The role of the individual is also upended. No one individual has special value because the World State's breeders "'can make a new one with the greatest ease'" (p. 128). Yet in order to maintain this status quo, the World State must mollify its citizens with a drug called "soma," channel their desires away from romance and towards casual sex, and condition them with hypnopaedic messages. Despite this campaign of control, Bernard Marx, the novel's protagonist, demonstrates an unassailable capacity for independent thought. His tendency to think for himself is both errant and "intoxicating" (p. 85); his uniqueness is exotic, frightening, and pleasurable.

[49] *Brave New World* was published just a few years after *We* and Huxley's World State shares many common features with Zamyatin's OneState. However, Huxley claimed (unconvincingly, according to some critics) that he was unaware of *We* during the composition of *Brave New World* (Shane, 1968, p. 140n).

[50] The Huxley brothers, author Aldous and evolutionary biologist Julian, exemplify the chasm between authors and posthumanist theorists that this thesis seeks to explore. Julian, coiner of the term "transhumanism," wrote enthusiastically about the prospect of selective breeding. In his book *What Dare I Think?* (1931), he argued (within the enhancement assumption) for the genetic improvement of the human race. (Though he also wrote a horror story called "The Tissue Culture King" (1927), in which a lost scientist stumbles upon a hostile society and bargains for his life by replicating the king's tissue samples so that the king could maintain a presence in, and power over, the households within his kingdom.) In 1932, Aldous published *Brave New World*, which presents a nightmare of genetic engineering via state control and class stratification. The brothers embodied the biologists' optimism and novelists' pessimism that permeate discussions of genetic engineering even now, over eighty years later.

Because the World State suppresses human qualities that are inefficient within its model of social organisation, it endorses a flipped understanding of what it means to be "civilised." To a citizen of the World State, the writings of William Shakespeare – arguably the most valued cultural product of Western civilisation – are "full of nonsense. Uncivilized." (p. 113) John, the novel's main unaltered human character, reads Shakespeare and values his mother. These traits, which undoubtedly endear him to readers, are part of what marks him as monstrous to the novel's mainstream society. He is named The Savage in their world, and is repeatedly positioned as anti-civilised (pp. 137, 141). Yet John is monstrous only according to the biases of the bioengineered mainstream; by the rules of the World State, every twentieth-century reader would be considered monstrous. Huxley primes readers to relate to John and therefore to see his treatment as inhumane. While this inverts the more common bioengineering narrative – in which the bioengineered posthuman is the one unfairly degraded and dehumanised – it ultimately creates the same message: humanness endures. Bernard's human capacity for thought emerges despite the World State's dehumanising regimes; John's humanness endures despite the abuses he faces from his bioengineered peers.

Early Bioengineers: From Rogue Scientists to Mad States

Although *Frankenstein, The Island of Dr. Moreau, We,* and *Brave New World* depict some possible unsavoury outcomes of bioengineering science, they cannot be interpreted as being anti-science. Their nightmare scenarios employ scientific and technological tools, but are in fact representations of extremes in the misuse and malicious *control* of science and technology. The locus of that control has changed over time. In the two earlier novels, science is misused by rogue individuals, acting outside the scientific mainstream. However, in the two later novels, science is misused by rogue states. In recent works of fiction, science is misused by rogue corporations (see Chapter Four). These shifts reflect changes in the way scientific work is performed and organised, but they also reflect the concentration of power in state and corporate groups over the twentieth and twenty-first centuries. Yet despite these shifting depictions of scientific abuse, bioengineering fiction has seldom condemned bioengineering itself as inherently immoral. Starting from the earliest depictions of the supposedly "mad" bioengineer, authors have presented complex views of scientific research. Yet the nuances of these views are often lost to the mythic power of the "mad" science label.

Mythologising the Mad Scientist

The figure of the "mad scientist" is so well-recognised that Roslynn Haynes (2003) identifies it as one of seven stereotypes of the scientist in Western literature (p. 244). Indeed, although there are shades of the "mad scientist" cliché in early bioengineering fiction, a close look at the texts suggests that the mad scientist character – at least in this context – is often a product of retellings rather than of the novels themselves. Some insanity is suggested in the Academy of Lagado "projectors"[51] of Jonathan Swift's *Gulliver's Travels* (1725), who would busy themselves "extracting sun-beams out of cucumbers" while their homes, towns, and personal appearances fell into ruin (p. 135). Swift scholar Clive T. Probyn (1978) points out that the Academy of Lagado is a direct parody of the Royal Society, as evidenced by the fact that Swift matches the Academy's date of establishment to the Royal Society's (p. 147). Similarly, the specific choice of cucumbers was probably targeted at the work of plant physiologist Stephen Hales, who around 1720 hypothesised (correctly, as it turned out[52]) a connection between sunlight and plant respiration (Probyn, p. 148). Clearly, the projectors are a swipe at the impracticalities of some scientific research, and *Gulliver's Travels* is sometimes described as an anti-science novel (see for example Lutz, 2002; Stableford, 2012). However, Swift's projectors are not depicted as being deliberately malicious. Their labours are represented as foolish rather than dangerous, and the harm they cause (although serious) is a result of their neglect of their home lives rather than any hazards of their scientific work itself.

Almost a century later, Mary Shelley would create the character who is now probably most commonly associated with the "mad scientist" cliché. Colin Clive's portrayal of an eccentric Henry Frankenstein in the 1931 film adaptation left a cultural impression of the doctor as a crazed genius. The iconic scene in which the creature is reanimated features Clive's Dr Frankenstein crumbling to the floor in ecstatic shouts of "It's alive! It's alive!" (Laemmle & Whale). By contrast, the novel does not allow Victor even a moment of celebration. Rather than revelling in the success of his experiment, he is immediately ashamed and afraid: "I had worked hard for nearly two years, for the sole purpose of infusing life into an inanimate body. For this I had deprived myself of rest and health. I had desired it with an ardour that far exceeded moderation; but now that I had finished, the beauty of the dream vanished, and breathless horror and disgust filled my heart." (p. 58) His regret is instant, often repeated, emotionally complex, and articulately expressed – a far cry from the crazed catchphrase of the film.

[51] "Projector" was effectively a synonym for scientist. In the 17th and 18th centuries, a projector was someone who worked on projects, often with an innovative or technological approach.
[52] Hales is now remembered as a major contributor to the discovery of photosynthesis.

Indeed, the characterisation of Victor Frankenstein as the prototypical mad scientist is not entirely Mary Shelley's work. Scholars tend to agree that Victor Frankenstein is a much more complex character than the "mad scientist" label would indicate, and that it is largely popular retellings of the story (especially the 1931 film and its sequels) that have mythologised the "mad scientist" cliché (Brannon, 2012; Hindle, 1990; Oates, 1984).[53] In her categorisation of fictional scientists, Haynes identifies Victor Frankenstein not as a mad scientist, but as an inhuman researcher. The inhuman researcher, in Haynes' description of the stereotype, is a cold and mechanistic scientist who is consumed by work and cannot appreciate beauty, nature, or emotion (p. 249). Victor does state that science "had before secluded me from the intercourse of my fellow-creatures, and rendered me unsocial" (p. 71), but this is given as a past-tense statement, and Victor is shown to have friends. Victor is, ultimately, complex and inconsistent: he is foolish in the execution of his experiment, adventurous in his thinking, mad for attempting to create his monster, and helpless once the creature is animated. Haynes perhaps takes on an impossible task in trying to categorise him. But she is correct to avoid the usual label of "mad scientist"; he is not straightforwardly insane or dangerous. Although Dr Frankenstein's motives often have an air of arrogance (p. 55), his early interest in scientific study was noble: "Wealth was an inferior object; but what glory would attend the discovery, if I could banish disease from the human frame and render man invulnerable to any but a violent death!" (p. 42) His project may be justifiably deemed mad, but Victor himself is merely complicated.[54]

H. G. Wells' Doctor Moreau comes close to fitting the "mad scientist" model. Even the name Moreau carries with it connotations of dangerous and wayward intellect. Psychiatrist Jacques Moreau, who worked on the intersections between genius and mental illness, is thought to have been the inspiration (at least in name) for Wells's Doctor Moreau. There is good evidence to believe so: Wells wrote favourably about John Ferguson Nisbet's *The Insanity of Genius* (1891), in which he must have read Jacques Moreau's work quoted extensively (Stiles, 2009, pp. 331-332). Nisbet and Moreau countered the prevailing post-Enlightenment view of geniuses as great romantic figures by theorising that genius was a form of disorder; literally, that great scientists (or great minds, more generally) were inflicted with madness. Wells's Doctor Moreau illustrates this idea perfectly.

[53] Maurice Hindle points out that the word "scientist" was yet to be coined when Mary Shelley wrote the novel, and Victor is not even titled a Doctor anywhere in the original text (p. 29).

[54] One reputational element of *Frankenstein* that *does* hold up to a close reading is the view that the reanimation amounts to "playing God." The creature is likened to Adam several times (pp. 103; 132-134). Like Adam of Genesis, he becomes lonely, spurring the creation of a female. Victor, creating both male and female, is cast in the God role; though he is, in the creature's view, an inverted god who produces monstrosity instead of beauty (p. 133).

Doctor Moreau bursts into the novel amid the screams of vivisected creatures, "with a hand that was smeared red" (p. 50) – in other words, quite literally with blood on his hands. As his project is revealed, he is shown to be psychopathically calm in his work, even as he inflicts extreme pain. Indeed, a concern for pain is sub-human in Moreau's view: "'So long as visible or audible pain turns you sick, so long as your own pains drive you, so long as pain underlies your propositions about sin, so long, I tell you, you are an animal" (p. 73). Wells builds the psychopathy of Moreau's character by not only filling the novel with the cries of his victims, but also by giving ample space to Moreau's explanations of his work. Moreau repeatedly draws attention to his status as a man of science, and explicitly marks his credibility against "those mediaeval practitioners who made dwarfs and beggar cripples and show-monsters" (p. 72). Wells goes so far as to place a clear denial of ethical concern in Moreau's mouth: "'To this day I have never troubled about the ethics of the matter. The study of Nature makes a man at last as remorseless as Nature.'" (p. 75) Moreau is shown to be aware of the pain he causes his creations, and to be unconcerned by it. Instead, he fixes steadfastly on his scientific objective: "'Each time I dip a living creature into the bath of burning pain, I say: this time I will burn out all the animal, this time I will make a rational creature of my own.'" (p. 78)

But despite his depiction of an evildoing man of science, Wells does not vilify science per se – it would be strange if he did, given his own background. There are two scientists featured prominently in the novel: while Moreau, the more enduringly famous, is depicted as a sociopath, Edward Prendick is depicted as a sane, rational, and moral. Indeed, Prendick's knowledge of science is his salvation since it is the only reason he is allowed refuge on the island, and therefore the only reason he survives (p. 29). The novel also casts no aspersions on the scientific community that sent Moreau out of London. It is only Moreau who is maligned as irresponsible. The reader is at several removes from Moreau: he is only visible through Charles Edward Prendick's presentation of Edward Prendick's narrative of Montgomery's mediated version of Moreau. The sense of mystery around Moreau is compounded by Prendick's recollections of "The Moreau Horrors," which, according to a scandalous pamphlet, had involved cruelty to animals (p. 34). Rumours, recollections, and fleeting sights and sounds are all Wells gives of Moreau's work for fully a quarter of the novel. This obfuscation of scientific malfeasance would seem to act as a cautionary measure against science *in secret*, not science in general.

In fact both Shelley and Wells created stories which showcased the dangers of science in secret. Because both authors invented practitioners who hid their experiments away, both authors needed a conduit by which to reveal the dangers of the work. They each created a "rational observer" figure

to achieve that end. Both *Frankenstein* and *The Island of Dr. Moreau* employ structural devices to contrast the scientist with a sceptical, moral, concerned observer. Shelley's narrative structure – in which Dr Frankenstein's tale is framed by epistolary sections in the voice of Victor's rescuer, Captain Robert Walton – presents the scientist figure through the perspective of a relatively ordinary (and therefore relatable) witness. This gives the reader an obvious ally. Both characters are restorers of life: Walton benevolently, by rescuing Victor (p. 28), but Victor harmfully, by joining together and reanimating the parts of human corpses. The reader can thus view Victor through the eyes of someone trustworthy. Wells, too, uses an inoffensive witness to impose the values of a concerned population into his narrative. Prendick's scientific pedigree and moral outrage at Moreau's experimentation makes him a trustworthy conduit through which readers can judge the story's events.

However, Prendick's narrative is itself mediated. Wells prefaces the novel with an introduction claiming that the story was found among the papers of the protagonist (p. 5) by his nephew, and may or may not be true.[55] The novel is fiction which might be, even in its own world, fictional. In its modern iteration, this "found story" model (used in, for instance, Eduardo Sánchez and Daniel Myrick's film *The Blair Witch Project* (Cowie, 1999) and Mark Z. Danielewski's novel *House of Leaves* (2000)) is employed to limit the power of scepticism. The story is claimed to have been found – this obscures the fact that it was created from the imagination of a professional author. There is a veneer of reality applied to the text. In *The Island of Doctor Moreau* and *Frankenstein*, a rational observer "vouches" for events that might otherwise strike the reader as fanciful. The horrors within the narrative hit the reader or viewer with greater impact because the story is presented as being not necessarily *just* a story. The fuzzy fourth wall created by this framing device means that, ironically, the maybe-false story has even greater impact than the traditional explicitly-false story. All of these distancing structural devices create a sense that the "mad scientist" – often talked about as a central figure in these texts – is in fact a highly mediated character, represented indirectly and in multiple perspectives. The mad scientist character trope may be the *perceived* legacy of early bioengineering fiction, and that perception in itself can be influential. However, it would be more accurate to identify anxieties about the *hidden abuse of scientific knowledge*, rather than madness, as the true precedent set by these texts.

[55] This authenticating device is not unique to *The Island of Doctor Moreau*, and is used in several of Wells's science fiction novels.

Mad Science in the Nation-State

Early twentieth century narratives of bioengineering shift the figure of the secretive lone scientist to depict widespread regimes in which abuses of scientific knowledge have become core aspects of state power. The mad science regimes of Yevgeny Zamyatin's *We* and Aldous Huxley's *Brave New World* translate the perception of mad science through the lens of totalitarian state regimes. Their scientists are generalised and subsumed into (largely) faceless governments which abuse their scientific and technological prowess.

Zamyatin wrote *We* during the Russian Civil War, as Bolshevik socialists fought for control of a post-Tsarist Russia. Zamyatin was a vocal critic of the Bolsheviks, and the OneState – with its insistence on suppressing imagination to create stability – has generally been seen as a critique of the regime established by Lenin's Communist Party (which would become, shortly after *We* was written, the Soviet Union). The Bolsheviks symbolically oppressed the imaginative powers of Russians via widespread censorship; the OneState of *We* oppresses the imaginative powers of its citizens by simply cutting them out. *We* was banned in Russia upon publication, thus proving Zamyatin's point: that the denial of human thought, feeling, and art is a hallmark of a tyrannical state.

We is, in fact, more concerned with politics than science. It does not go into detail on technologies of human alteration: the Great Operation is barely described, and at no point does Zamyatin critique the surgeon or the knife. His target is not medical science, but rather the state exploitation of dehumanising technologies. The novel's protagonist D-503 undergoes the Great Operation – and thus surrenders his humanity – because of the OneState. Zamyatin makes the OneState culpable for forcing the surgery, but also for brainwashing citizens to want it. As critic Patrick A. McCarthy (1984) writes: "It is against this idea that man should emulate the machine – not against the machines themselves, but against the ascendancy of technology over the imagination that created it – that Zamyatin very effectively directs his satire." (p. 127) There is neither mad science nor mad scientists in *We*, simply a mad state with surgical capabilities. In *Brave New World,* too*,* the role of the mad scientist is redistributed to a mysterious body of authority figures who comprise the state. There are few unaltered humans to express outrage at the controlled breeding programme; the vast majority of people are bioengineered, and have been conditioned to favour engineering.

By reallocating the responsibility for the evils of the state's breeding programme, Zamyatin and Huxley make early steps towards envisaging biological meddling as a systemic practice, rather than the work of an errant individual. The standard mad scientist narrative allows the reader to safely

dismiss horrifying acts of bioengineering experimentation as the isolated works of a solitary deranged mind. Zamyatin and Huxley's shared revision of the mad scientist trope acts to disperse blame. A reader projecting themselves into *We* must realise that, were they to live in the world of the novel, they might have been conditioned to eschew imaginative thinking and human relationships just like D-503. By the same token, a reader projecting themselves into *Brave New World* must realise that, were they to live in the world of *that* novel, they would be part of the bottle-breeding regime.

We and *Brave New World*, taken together, provide a precedent for later works that express anxieties about collectivised science. They express fears not of science itself,[56] but of its misuse by a controlling state that seeks to strip citizens of their emotionality, relationships, and humanity. It is this model of science anxiety that recurs in the contemporary fiction of genetic engineering. Backgrounded teams of genetic engineers, rather than foregrounded individual genetic engineers, feature in most of the works explored in detail in this thesis. However in contemporary works, the state is often supplanted by the corporation (or sometimes, a hybrid corpo-state) as the seat of biotechnological evil. The move towards depicting entrenched, society-wide genetic engineering practices in recent novels coincides with the rise of neoliberal ideology, and reflects concerns about the corporate control of genetic engineering technology. Such fears are explored in more detail in Chapter Four.

The legacy of early bioengineering texts is largely one of subtlety diminished. Retellings and adaptations of *Frankenstein* and *The Island of Doctor Moreau* have left out the inherent humanness of the bioengineered creations, and tales which caution against the *misuse* of science have been popularly remembered as anti-science. Even the prominent and highly conservative bioethicist Leon Kass cites *Brave New World* as an influence on his opposition to further research on genetic engineering (Manier & Grossman, 2001). But the contemporary fiction of genetic posthumanism reasserts the humanness of the subject, and reaffirms that genetic engineering technology is a tool which reflects those who wield it. In this way, it follows the direction set by these early works. Yet the question arises: will contemporary genetic engineering stories, as they are retold and adapted, follow the same trajectory of subtlety diminished?

[56] Huxley, in particular, went on the record in favour of eugenic breeding in a number of essays. He advocated controlled breeding for those deemed "unfit," and increased breeding for those of high intellectual fitness. He did not, however, accept the racialized view of fitness that some eugenicists promoted at the time (Woiak, 2010).

Part Two: Recurring Dehumanisations in the Contemporary Fiction of Genetic Engineering

Chapter Three: Metaphors of Secondariness in the Construction of the Other

A 2003 study asked students in biology courses to write poetry in order to approach their scientific studies from another angle. Students were prompted to write about a cloned child in the future, and the result was this group poem:

> Born in 2022
> She was her mother's mirror
> Her time machine
>
> When she was five,
> Her mother taught
> Herself manners.
>
> When she was 15,
> Her father took his teenaged wife
> To the father-daughter dance.
>
> When she was 23,
> She gave her mother
> A grand-niece.
>
> When she was 50,
> She watched herself die. (Richardson, Morrison Shetlar, & Shetlar, p. 69)

The students' poem conveys the idea that the cloned child is not her own person. She is a copy – "her mother's mirror" – and she does not have her own identity outside that status. Geneticist Jonathan Marks (2002) hits upon that same key point in his philosophy of cloning: "The problem of cloning is that it would create a situation in which a person had an already partly formed identity, a situation that of course never arises with the 'natural' analog of clones, identical twins… cloning thus technologically impinges on a crucial human right, that of self-discovery" (pp. 224-225). The secondariness of the clone is such an apparently self-evident concept that it is identified by undergraduates and geneticists alike.

Because no human clone has ever been observed, the idea that a clone would have a kind of mirror status is an assumption – and largely a cultural assumption. The notion that human clones would be unoriginal is somewhat intuitive; after all, the process of cloning is a process of copying genetic material. Yet it is scientifically inaccurate to assume that copied genetic material would produce a copied person. A human clone, if produced by splitting an embryo, would develop differently from their clone/twin due to environmental differences and stochastic variation. This holds true even if both were raised in the same home, as in the case of non-engineered identical twins. If cloned from an adult cell, the environmental differences between the "original" and clone would be exaggerated

by generational differences. In either case, the clone may begin from copied genetic material, but it would not become a mere copy.[57] In the case of genetically engineered humans, any edited genes would be much less prominent in the genome than the bulk left unedited; and even if mass populations were genetically engineered for purposes of homogenisation, the diversity of the starting population, along with environmental factors, would prevent the creation of pure copies. The terminology of copying, replicating, or doubling in relation to genetic technologies is therefore misleading. Cloning an adult human would not be, for instance, analogous to making a photocopy of a document. It would be more like starting with a document, editing it for decades, copying it, and then continuously editing the copy. At no point would the first document and the "copy" be identical.

Nevertheless, there is a strong cultural proclivity towards describing clones and genetically engineering beings in the language of replication. Precedents for such an assumption are plentiful in literary theory, where a longstanding fascination with doubles and simulation has established a critical tradition around originality, replication, and mirroring. Recent fiction employs these concepts to construct metaphors of secondariness around genetic posthumans. The genetic posthuman is represented as a copy; its human source is privileged as the original. The genetic posthuman (the clone, particularly) is represented as a shadow, an image, a mirror, a double, a photograph. As they are likened to mere images, genetic posthumans are implied to be two-dimensional. The mechanistic and replicating nature of the genetic posthuman's production is shown to dehumanise them – in terms of Haslam et al.'s model of dehumanisation, these imagistic metaphors promote the view that genetic posthumans are superficial, where their human source material had depth and originality.

But for many novelists, this model of the human as authentic and the clone as copy is simply a structure they set up to subvert. In most – though not all – cases, writers of fiction about genetic posthumanism couple their metaphors of secondariness with evidence that the genetic posthuman is far more human than those metaphors would imply. It is generally unaltered *human* characters who, from their position of privilege, designate genetic posthuman characters as secondary through the language of replication. Genetic posthuman characters themselves demonstrate an emergent humanity that contests their designation as unoriginal or two-dimensional.

[57] In her book *Illegal Beings: Human Clones and the Law* (2005), Kerry Lynn Macintosh gives an excellent summary of the science on how clones can differ from their genetic donors. Differences can arise not only from environmental factors, but also from genetic factors: for example the impact of mitochondrial DNA from the donor egg, the impact of different uterine environments on gene expression, and in female clones, randomness introduced in the deactivation of the extra X chromosome (pp. 23-25). Thus clones are not perfect genetic copies even before birth.

The Nature of the Copy: Theoretical Perspectives

Maria Aline Seabra Ferreira gives a thorough account of the theoretical underpinnings of the clone/copy conflation in her book *I Am the Other*. She traces the influence of a number of theorists on our cultural understanding of the clone as a copy: from Jean Baudrillard's work on "simulacra," and Walter Benjamin's theories of the value of art in a context of easy reproduction, to Gilles Deleuze's revision of Plato's cave and Freud's theories of the uncanny as that which is familiar, and notably, Slavoj Žižek's view that clones threaten the distinctiveness of individual personalities. Ferreira draws from these theorists the theme that a copy lacks authenticity[58] – in the words of Benjamin (1936), "the authority of the aura" (pp. 25-26). Ferreira notes, and it is worth reinforcing here, that these theories are not directly applicable to the case of the clone, whose environment will differ from that of his or her original, and who will thus become a different being (p. 27). Nevertheless, theories of replication remain influential on cultural understandings of genetic technologies.[59]

Perhaps the most influential of the theorists Ferreira cites is Jean Baudrillard. His book *Simulacra and Simulation* (1981) features a chapter on cloning, in which he writes:

> Of all the prostheses that mark the history of the body, the double is doubtless the oldest. But the double is precisely not a prosthesis: it is an imaginary figure, which just like the soul, the shadow, the mirror image, haunts the subject like his other, which makes it so that the subject is simultaneously itself and never resembles itself again, which haunts the subject like a subtle and always averted death. (p.95)

Baudrillard is just one of many scholars who link cloning to metaphors of replication. In *Posthuman Bodies,* Judith Halberstam and Ira Livingston tie the posthuman body to postmodern ideas of contested reality: "the posthuman body is a technology, a screen, a projected image" (p. 3). The double, the photograph, the shadow, and the mirror image are all used to conceptualise the nature of the clone. These metaphors not only imply another instance of something; they suggest a reduced or flattened *secondary* instance of some *primary* original. A shadow, copy, photograph, or mirror image implies the existence of something to cast the shadow, to make the copy from, to capture in the photograph or mirror. These metaphors suggest the existence of an original as something

[58] The same word used by Carl Elliott to describe the identity effect of enhancement technologies more broadly (see page 42).

[59] I do not intend to give a thorough account of theories of doubling here, for reasons of space; Ferreira's account is very thorough and more than sufficient for those interested in the theoretical foundations of the idea that clones are copies.

corporeal, three-dimensional, and substantive. They do not simply indicate replication: they connote reflection.

Cloning has been conceptualised in relation to Jacques Lacan's famous theory of the mirror stage: that self-identification in the mirror is central to the development of subjectivity. It has been suggested that clones would relate to their own image differently than unaltered humans, and that the mirror stage would accordingly be woefully inadequate to describe the construction of selfhood in clones.[60] Body theorist David Le Breton argues that "if one is simply the copy of another person, it is now less a question of passing through the mirror stage, but rather of smashing it in order to gain access to the self" (p. 5). Baudrillard theorises that with genetic technologies, we are "modelled 'from the inside,' no longer passing through the perspectival space of representation, of the mirror, and of discourse" (p.101); he writes that "the mirror stage is abolished in cloning, or rather it is parodied therein in a monstruous (sic) fashion" (p.97). Whether or not human clones would self-identify differently to sexually reproduced humans is highly speculative. But the consistent association of clones with mirrors, particularly in relation to the construction of their selfhood, reveals an imagistic view of clones as mere likenesses, grappling with their identities as a two-dimensional reproductions.

The image encapsulates so much of what problematises the posthuman: it is simultaneously representational and unreal; it is inauthentic and doubled, yet recognizable. It is through these imagistic metaphors that many novelists and filmmakers establish the alterity of the genetic posthuman. Cloned and genetically engineered characters are positioned as secondary, and accordingly, as second-class citizens. They are *not* dominant, *not* mainstream. Their "originals," by contrast, are primary; they have agency and free will. Like mirror images, genetic posthuman characters are positioned (often by their unaltered human contemporaries) as being merely *reflective* of authentic humanness, rather than possessed of it. In other words, imagistic metaphors function to establish the dominant/Other binary between unaltered humans and genetic posthumans.

This chapter shows how genetic posthuman characters are relegated to a secondary position compared to the "models" or "originals" from which they are created. I trace the use of imagistic metaphors such as cameras and photographs, mirrors, and masks, and demonstrate how these

[60] The mirror stage theory is considered by many to be woefully inadequate to describe the construction of selfhood in anyone (see for example Tallis, 1988).

metaphors reflect the social position of genetic posthumans as insubstantial reflections of their unaltered human counterparts. But these metaphors are shown to be inadequate. This chapter closes with an analysis of how fiction affirms the inherent humanity of genetic posthuman characters and makes clear that they are three-dimensional figures, marginalised by their imagistic status.

Unoriginals: Complications of "I" and "We"

There is one very easy and obvious way for storytellers to establish the alterity of the genetic posthuman: by contrasting them to their "original." When works of fiction juxtapose genetic posthuman characters to the unaltered humans from whom they were created, the posthuman is left in a metaphorical genetic shadow. Clones are, in theory, the Eves to their human originals' Adams: they are created from a part that has been extracted and developed. It follows that they could have trouble establishing independent identities. Even those who have been genetically engineered rather than cloned, and who therefore have no "original," could arguably fit with the notion – applied by Ferreira and Elliott to clones – of inauthenticity. Alterations to genetic code constitute a form of biological editing, and in that sense, the genetically engineered (but not cloned) posthuman is conceptually constructed, at least in part, by someone else.

This creates a sense of unoriginality that positions genetic posthumans not only as secondary, but also as less-than-human. As in Haslam et al.'s model of dehumanisation, authenticity is designated as a human quality. If genetic posthumans are seen to be unoriginal and inauthentic, they fail to meet the standard of humanness. It must be noted that this is a *cultural interpretation* of genetic engineering science and not a prima facie truth. An infant born to two parents via sexual reproduction will carry a genetic code that has been randomly derived from the shuffling of the parents' genes. It is not "original" because it is entirely composed of inherited genetic material; the only sense in which it can be considered original is through the randomness of *which* genes it inherits. An infant created by cloning an existing individual (or engineered from an existing genome) would still have a full genome that is equally inherited. The difference is that a clone or genetically engineered being would have its particular arrangement of genes chosen rather than randomised. That the cultural interpretation of those base facts stresses the "inauthenticity" of the genetic posthuman is significant. It would be just as logical to interpret genetic posthumans as "chosen ones," lucky enough to have had a deliberate hand at the wheel during their creation. But because

the culturally dominant view of genetic posthumanism stresses inauthenticity, it can be inferred that genetic randomness is important to the issue of human identity.

Caryl Churchill negotiates the identity implications of cloning for both the clone and the original in her 2002 play *A Number.* The play features a clone, named Bernard but designated as B2, who was commissioned by his father Salter to replace the "original" Bernard (B1) after he (B1) became difficult to handle. It is gradually revealed that the doctor charged with cloning B1 exceeded his brief by creating an indeterminate number of other clones, who are unaware of their origins. The play deals with the question of whether the proliferation of clones weakens, flattens, or otherwise diminishes the identity and wholeness of both B1 and B2. From Salter's perspective, each newly discovered clone increases the injury done to his son, as measured by the amount he thinks he can sue for (p.14). For the sons, however, the problem of being cloned (or having been cloned) is one of self-identification.

B2 defines himself against B1, from whom he was cloned. The way in which he does this reveals his sense of being secondary.[61] B2 also sees himself through the lens of his cloned 'brother,' saying: "I remind myself of him" (p.45). The usual way to express this sentiment might be: he reminds me of myself. Instead, B2 designates himself as the merely familiar figure, against B1's primacy. As he discusses his "original" with his father, B2 repeats variations on the phrase "Not like me at all" (p. 36). In fact, in the first half of scene three, the word "no" or "not" is spoken thirty-two times in relation to B2's likeness to B1. There is a great deal of confusion over where the lines of me / not-me are drawn:

B2	Because there's this person who's identical to me
SALTER	he's not
B2	who's not identical, who's like
SALTER	not even very
B2	not very like but very something terrible which is exactly the same genetic person
SALTER	not the same person (p.39)

The repetition of the words 'not,' 'identical,' and 'like,' from both Salter and B2, gives an impression of general confusion over the indistinct identities of the son/s.

Complicating this me/not-me haziness, the dialogue between characters is distinctively choppy. Characters frequently break off in mid-sentence or finish one another's sentences, and in print, their

[61] Of course, his designation as "B2" makes him quite blatantly secondary to his primary brother B1.

speeches contain very little punctuation.[62] Churchill has used clipped and interrupted dialogue as a "stylistic innovation" throughout her dramatic oeuvre (Kritzer, 1991, p. 136). In *A Number*, this device is thematically apt because the woven dialogue of multiple characters mimics the genetic contiguity and confusion between the characters. The dialogue not only overlaps, but fractures, just as Salter's genetic material overlaps with the clone-sons, and as theirs is split and shared. Throughout the play, the quick transitions between speakers form a kind of split interior monologue; a single narrative delivered, fracturally, from two or more minds. This links with the notion of genetic code splitting and replicating: "with its cut-off endings and repetitive internal motifs, [Churchill's dialogue] mimics the underlying themes of fragmentation" (Holzapfel, 2008, p. 12). Even when sharing the stage, the characters do not converse; they tend not to respond to one another's utterances. Instead, their choppy fragments of speech punctuate each other. Their speeches are split, intertwined, and yet independent – just like the clones themselves. Churchill seems to suggest that cloning is injurious to both the "original" *and* the clones, as all find it difficult to achieve internal cohesion in light of the discovery that they are genetically indistinct.

Fay Weldon's *The Cloning of Joanna May* (1989) features a similar illicit cloning scenario, and presents a similar dramatisation of individual identity in relation to genetic likeness. Joanna May, like B1, is cloned without her permission. Her husband Carl works with Dr Holly to clone her secretly, in order to create more youthful versions of her. Carl's decision to clone Joanna is an expression of his patriarchal power and control, and the novel interprets his act from a feminist perspective as well as from a biosocial perspective. Decades after the cloning, Joanna discovers her four clones – now 30-year-old women – and experiences discomfort at seeing her more youthful self come back to life. The entire novel is structured so as to juxtapose Joanna's experiences to those of her clones and cloner. Of fifty-five chapters, exactly one-fifth are third-person accounts within Joanna's perspective, and another one-fifth are told in the third-person from the clones' perspective. Joanna is also given a first-person narration for a further one-fifth of the chapters.[63] The chapters are arranged so that the perspectives of multiple characters are interspersed, with greater emphasis on Carl May earlier in the story, and greater emphasis on the clones in later sections. This is largely similar to the approach taken by Churchill. Weldon splices her characters together, structurally mimicking their genetic

[62] Churchill appears to have written *A Number* as much for the reader as for the theatre-goer. As a text, the play is not slowed by stage directions (of which there are none whatsoever), and the run-on dialogue is expressed on the page with a lack of punctuation, rather than with instructions to actors' delivery. These choices allow readers to textually experience the *effect* of the play's minimalist setting and choppy dialogue without having to read *directions* to the same.
[63] The remaining two-fifths of chapters are split between other characters, with Carl May featuring prominently. However, only Joanna's perspective is privileged via first-person narration.

indistinctness – and like Churchill, she weaves the person culpable for the cloning (Carl May; Salter) inextricably into the fabric of the clones' lives.

Within this near-mathematical structure, Joanna's first-person chapters consistently open with the words "I, Joanna May…"[64] By promoting a self-identifying statement to such a prominent position, Weldon centralises individual identity as a crucial component of her cloning narrative. Subject and object nouns are frequently problematised as Joanna and the clones negotiate their status as individuals. Negotiations between "I," "you," and "me," and their shifting referents, are dotted throughout the Joanna / clone chapters (pp. 6, 20, 45, 46, 51, 56, 61, 70, 202). Weldon denies these terms any stable meaning, and thus denies Joanna and the clones a fixed understanding of who they are in relation to each other. Joanna's uncertainty around her selfhood is made explicit: "I don't know what to do with myself at all, whatever myself means now." (p. 121)

Joanna wavers on the impact of her cloning on her own individuality; sometimes mourning the loss of her "singularity" (p. 128), and in other places fearing that she has been made *too* singular and mourning, instead, her human "universality" (p. 202). Either way, Joanna perceives her cloning as having damaged her sense of self. The duplication of the body amounts to a dilution of the mind: "The mind had to die, that was the dreadful thing: bodies were two a penny, but that all the buzzing speculation of the individual mind had to go – therein lay the tragedy." (p. 261) The soul, too, is split: "four more individuals, and only one soul between them." (p. 155) In this way, Weldon suggests that the replication of bodies is tied to a psychological diminishment of the mind and soul; the mind is implied not to replicate in tandem with the body.

Division statements recur frequently: Joanna imagines herself as one soul split into five (p. 155), and one of her clones dreams of being eaten by her own five-way divided body (p. 162). Variations on the phrase "one being split" are repeated as a kind of refrain (pp. 108, 236, 250, 265). Language of division is even applied to the cloning doctor, when he is under the combined gaze of the clones (p. 232). The notion of one soul split into five leaves the clones feeling a "sense of not-belonging" (p. 176) in the families to which they were born. They get their happy endings only once their lives are intertwined (pp. 264-265). This notion of cloning as diluting or diminishing the individual shares similarities with Salter's view in *A Number* that the more clones there are, the more damage is done

[64] These words open chapters 1, 5, 19, 22, 28, 40, 50, and 55. Some chapters open with a variation, for example "I, the original of the clones of Joanna May" in Chapter 10 (p. 45).

to the original. This view is scientifically unjustified,[65] but its recurrence suggests that there is a conceptual damage associated with cloning that has little to do with any physical damage. Indeed, just as in *A Number,* Weldon's clones experience no sense of lost selfhood until they *discover* their status as cloned. It is not until after they talk with Dr Holly that they realise "they were not who they thought they were" (p. 236). As clones, they had a relatively stable sense of self until their biostatus was revealed, and it is only when they are juxtaposed to their "originals" that they experience a sensation of being secondary.

Unlike *A Number* and *The Cloning of Joanna May,* Kate Wilhelm's novel *Where Late the Sweet Birds Sang* (1976) follows a society in which cloning is planned, open, and transparent. A systemic cloning regime might be expected to produce a different set of identity issues than hidden, isolated incidences of rogue cloning; but confusion between "I" and "we" remains a large part of the inscription of even normalised cloning technology. In the world of the novel, radiation and pollution have poisoned the environment, prompting a large family to set up a self-sustaining community which can be shut off from the outside world and optimised to survive. Widespread human disease and infertility leave cloning as the only way to ensure the continuation of the population inside the community. The novel follows sets of cloned "siblings" (multiple replications of one "original") from their initial creation, through their first generation, and into subsequent generations of clones-of-clones. The unaltered human cloners observe a "steady, and irreversible, slide to extinction" after a few generations of cloning clones (p. 22), so they incorporate sexual reproduction into a long-range plan for the continuation of a cloned human population that is as human as possible. The novel thus deals with tensions between humans, clones (in their "sibling" groups), and "breeders," whose role is to reproduce sexually and thus introduce genetic shuffling into an otherwise fully cloned population.

In the novel's early stages, when unaltered humans survive in significant numbers, they control their community. Clones are not second-class citizens, as they are in many other texts, but they are at best protégées, waiting and learning so that they can eventually continue the work of preserving their community. Within this power balance, clones are non-threatening to the social position of the humans, but *are* threatening to the sanity of their human originals. Social relationships between originals are replayed and distorted once they see their own and each other's clones as adults. David, an unaltered human, a cloner, and one of the architects of the community, experiences the

[65] Although cloning sometimes (not always) involves splitting an embryo, the genetic resources of the original are not diminished in the process. Furthermore, the notion that the self or the mind would be diminished via cloning would seem to imply a finite measurement for selves and minds, which are of course intangible and immeasurable.

sensation of “walking through his own past, seeing his aged and aging cousins rejuvenated, but rejuvenated with something missing. Familiar and alien, known and unknowable.” (p. 62). David’s failed attempt to seduce one of the clones of his former lover (pp. 54-55) suggests a perceived continuity between the original and the clone which is ultimately misleading and damaging. The murder of one clone by her original suggests an extreme and unbearable discomfort in seeing the past genetically resurrected (p. 54). Interestingly, in Wilhelm’s clone society, it is consistently the *originals* and not the clones who are tormented by their replication.

The clones, in most cases, are blissfully oblivious to any identity issues resulting from their creation. They lack even the concept of individual identity. As the unaltered humans die off and the society within the compound becomes composed mainly of clones, individualism becomes stigmatised and members identify strongly with their set of co-clones. Clone “sibling” sets are, of course, genetically alike; but they are also behaviourally almost-identical in a way that siblings or even identical twins would not be. They are “matched sets” (p. 70), indistinguishable to non-clones (pp. 79, 159); at a buffet, they even choose identical plates of food (p. 80). Their identity and validity as members of the clone society depends on their unity: “Together they made a whole; the absence of one of them left the others incomplete” (p. 107). The “‘cult of the individual’” (p. 124) is seen as a dangerous hangover of human society, and clones reject individualism as part of the foolish human prioritisation of genetic diversity (p. 66). Isolation is so powerfully reviled, in fact, that it is used as a punishment (p. 98).

The primacy of the individual, in the clone society, is replaced by the primacy of the sibling group. The unit of wholeness is shifted from the individual to the set (p. 107), and there is even some disagreement over whether these sibling groups are separate or contiguous species (pp. 72, 96). The whole society is based on pseudo-familial structures; thus the maintenance of large cloned “sibling” groups is prioritised, even for sexually reproduced offspring who must be cloned in utero (p. 164). These groups appear, initially, to promote social stability among clones. The uniformity and lack of individualism in clone sets is said to overcome the unruliness of human genetics and allow for control of the population (pp. 164-165). However, cloning is also shown to be both biologically and socially unstable.

After several generations, clones-of-clones become “mouselike” (p. 80), lacking in agency and eventually losing any capacity for original thought (p. 235). Even the apparent social stability of clone sets is short-lived as individual clones can deviate from the group-minded norm. A “fallen” or

individualised clone will see their own "siblings" as strangers (p. 103), and will start to view other clones from the human perspective; that is, as indistinguishable sets (p. 115). The individualised clone will seek isolation (p. 110), as humans once had (p. 98), rather than shrinking from it. The individual is, at that point, considered to have a "disease" which intensifies and infects with isolation (p. 131); while to the remaining siblings, the lost clone is "like an amputated limb" (p. 121). The choice of corporeal language here – disease, limb – reinforces that the fallen clone is a portion of a whole; each one can be thought of metaphorically as a limb of one body, rather than a whole body in itself. This is reinforced by the individualised clone character Molly's comment that her sister set was "one creature, and now I'm a fragment of that creature." (p. 234) When they individualise, the clones spread their "disease" and compromise the whole body of the sibling set. Thus the seemingly idyllic social harmony of clones hides an undercurrent of identity trauma – a very human individualism which cannot be entirely bred out.

By writing a long-range, multi-generation cloning narrative, Wilhelm is able to explore clone-human relationships in their evolution. When clones and unaltered humans co-exist, there is tension. When clones are alone together, there is harmony. When some clones individualise (humanise) then tensions resurface. In Wilhelm's story, it is the *interface* between human and genetic posthuman characteristics that is tricky. Uniformity is associated with peace. However, uniformity is also shown to lead to deterioration. The human-only society poisoned itself; the clone-only society becomes degraded with each new generation. Wilhelm's novel advocates for generative forces – art, imagination, genetic randomness – in a way that represents cloning as an ecological problem. When Wilhelm casts her fictional clones into the genetic shadows of their originals, she seems mainly concerned with what cannot be grown in the shadows.

Churchill, Weldon, and Wilhelm's narratives take diverse approaches to the notion of clones and "originals," but what they have in common is a sense that cloning is not pure replication. In none of these novels does cloning simply make *more* or create abundance. In each case, genetic posthuman characters can be seen not as replications (copies) but as reproductions: *versions* of something original – versions which are sometimes deemed insubstantial, but which nevertheless diverge from the "original" in often unexpected ways. These texts contest the notion of cloning as copying, and they are not alone in doing so.

Reproductions: The Genetic Posthuman as Image

Brigitte Nerlich and David D. Clarke (2003) point out that in media reports on cloning, the loaded term "copy" is used to communicate fears about the standardisation of life (p. 54). Copying metaphors convey the sense that clones are replicated from something original, but they do so in a value-loaded way. A photocopy, snapshot, or mirror image is not merely a replication: it is a two-dimensional, flattened, insubstantial, and secondary version of something original, authentic, and primary. Imagistic metaphors do not merely speak to the creation of a genetic posthuman; they speak to its social status. In much recent genetic engineering fiction, reproduction – as in the generation of offspring – is allied to reproductions – as in representational images. Cameras, mirrors, paintings, and other forms of representation recur as fundamental elements of the genetic posthuman world. These motifs are used *on* and *by* fictional genetic posthumans – they both *are*, and are obsessed *with*, representations. As if Baudrillard drifted through their pages, contemporary genetic engineering fictions surround their engineered subjects with mirrors, doubles, photographs, masks, drawings, and acted roles.

There is a precedent for this type of imagistic metaphor that goes back to some of the early bioengineering fiction examined in Chapter Two. The grafted beings of H.G. Wells's *The Island of Doctor Moreau* are described as shadows, apparitions, curiosities, unreal, and uncanny products of the imagination (pp. 33, 40, 41, 45, 48, 68). *Frankenstein*, too, designates scientists as those who "mock the invisible world with its own shadows" (p. 49). Mirrored reflections – between Victor and his creature, or between the creature and his own image (p. 116) – recur throughout the text, marking Victor and the creature as shadows of each other, and each "the shadow of a human being" (p. 187). *We* is also filled with references to mirrors, particularly as D-503 begins to see more in himself than a compliant numbers man (pp. 59, 63, 73, 87, 155, 217). For contemporary novelists, writing from our technologised twenty-first century, the notion that genetic posthumans might be visual copies has a whole range of new metaphoric applications. Photographs, monitors, video, and screens of all types flood the fiction of genetic posthumanism.

But ultimately, the effect of these metaphors is to express a *perception* of the genetic posthuman's two-dimensionality. For example, in *A Number*, the play's staging suggests that the cloned sons are flat, identical copies. In the original staged version, the characters of B1, B2, and Michael Black (another clone) were played by a single actor, meaning they were visually doubled (then tripled) on the stage. Individually is denied physically: when B1 wishes to show himself to his father, he assumes that his face holds some supra-physical clue to his interiority:

SALTER	I know it's you.
B1	No but look at me.

SALTER I have. I am.
B1 No, look in my eyes. No, keep looking. Look. (p. 34)

Yet to an audience, looking at the same eyes that act B2 and Michael Black, there can be no distinctive interiority found there. Spatial staging techniques also contributed to the impression of the clones as flat: Amy Strahler Holzapfel (2008) notes that in the play's US debut at the New York Theatre Workshop, it was staged with the steeply raked seating and lowered stage common to much 'anatomy theatre,' creating a kind of 'operating room' aesthetic. Because audience members eyes were turned down upon performers, this was a way of "flattening the body in space" (p. 11).

In dialogue, too, Churchill demonstrates the image-status of the clones. B2 describes his response to finding out about his cloned brothers as being "like seeing yourself on the camera in a shop or you hear yourself on the answering machine" (pp. 15-16). The clones' images, even though they are said to be non-identical, are scrutinised as the most apparent evidence of their replicant status. When Michael Black, the only non-Bernard clone to appear in the play, comes onstage in Act 5, Salter apologises for staring (p. 54). Their conversation revolves around the extent to which Michael does or does not resemble his cloned brothers. The connection between cloned status and image is made more clear when Michael admits that he carries no photographs of his (presumably) naturally conceived children: "there's no need for photographs is there if you see someone all the time" (p. 55). The children are not pictured because their authenticity is not questioned; by contrast, the clones' contested realness demands constant imagistic documentation. When B1 murders B2, Salter expresses a desire to "get a picture" (p. 48) of his son's death. Holzapfel sees this moment as the culmination of Salter's persistent need to control his sons as replicable pieces of media: "Through the metaphor of the photograph, Churchill reveals the tragic consequences of treating the human itself as a mere copy of an original. In *A Number*, therefore, the body is not only metaphorically defined through media; it becomes media." (p. 14).

Sociologist Steve Garlick (2010) has theorised this connection between the cloned body and the photographed image. Using Roland Barthes' theories of photography, he classifies modern concerns over human cloning as an update to nineteenth century fears of photography. In its early days, photography was connected to mortality, and was considered a morbid way to allow the continuation of one's image after death. In the same way, cloning raises the possibility of manipulating one's image outside the single linear lifetime (p. 146). Garlick argues that, like a clone, a photograph is a copy of something that existed at a moment in time, but no longer exists in quite that form. In this way, "both photograph and clone are indexical signs that emanate from a mortal referent" (p. 47). The use of the word "copy" throughout *A Number* cements this

association between photograph and clone. B2 concedes that he is a copy – the word "copies" is repeated three times at the moment the audience learns what the clones are (p. 11), and B2 semantically denigrates himself as "just a copy" (p. 21) later in the play. With this word, the cloning process is likened to making a genetic photocopy of a person.

Yet Churchill does not allow the sons to stay completely two-dimensional. Even as every measure of flatness is imposed upon them – through staging, through half-expressed thoughts, through imagistic metaphors – the flattened, physically identical characters of *A Number* demonstrate very distinctive personalities. B1 is angry and violent; B2 calmer; and Michael Black an average suburban husband and father who is entirely unconcerned with being a clone. B2 attempts to express the tension between sameness and difference: "someone with the same genetic exactly the same but at a different time a different cultural and of course all the personal all kinds of what happened in your own life your childhood" (p. 43). In other words, all the environmental influences acting on a person can create different products from the same genetic material, producing people who may appear physically to be copies but whose personalities are distinct. The clones of *A Number* have grown up believing they are nothing less than authentically human, and their differing characterisations make clear that they are real people. Yet the discovery that they are cloned is in itself injurious; they come to see themselves as "photo-copies" who have lost something in the process of transmission. There is some precedent for the belief that an indistinct "something" is lost from one whose image is replicated. In the early days of photography, some anthropologists made claims – now suspected to be exaggerated – that their subjects, upon first encountering cameras, feared being photographed in case the act of capturing their image stole some part of their soul (Andriopoulos, 2006, pp. 157-158). B2 likens the discovery that he is part of a set of clones to seeing himself on camera, not merely to seeing himself. He identifies his doubles as two-dimensional representative images, not as people.

Similarly, the replicants of Ridley Scott's *Blade Runner* (1982) are immersed in visual (and especially photographic) metaphors which represent the loss of their selfhood. They do not have families or childhoods, but they are given photographs to encourage the formation of false "memories" of childhoods that they did not experience and families to whom they are not related.[66] Because their implanted memories are mere images, any emotions associated with their memories can be seen as flat and inauthentic, casting the replicants themselves as hollow creatures. This is not to say that they *are* insubstantial – but because they are given no real

[66] The early development of replicants is not depicted, however they are constructed from parts that are shown to be built on an adult scale. This implies that they are not cloned from embryos, but built from cloned body parts; thus eliminating any childhood.

childhoods, and no chance to form real memories, they are denied the opportunity to feel familial bonds or experience real nostalgia. Human bonds via imagery are not unique to *Blade Runner* – the replicants' photographed faux-families recall the hologram lovers in George Lucas's *THX 1138* (1971), and the device of implanted childhood memories would be repeated in Michael Bay's *The Island* (2005) – and in each case, those controlling the genetic posthumans deny them any chance to demonstrate their innate humanness by showing authentic emotion toward a real, genuinely remembered loved one. Not only do photographs mislead *Blade Runner*'s replicants, but they are used to hunt them too. In the technology of the film's future, photographs can be scrutinised and explored in great detail. Deckard, charged with finding escaped replicants, examines a photograph belonging to a replicant and finds a clue in a reflection in a mirror within the photograph. The mirror within the photograph (a double layer of image) viewed by Deckard on a screen (a triple layer of image) reveals Zhora, a replicant, sleeping on a bed. Thus photographs betray the replicants not only through the creation of false memories, but also as image-clues allowing them to be traced through their reflections.

Indeed, as the androids of Philip K. Dick's book *Do Androids Dream of Electric Sheep?* (1968) were adapted into the film's replicants (clones), imagistic metaphors were added and associated with the replicants. In Dick's novel, the Voight-Kampff test is administered to detect androids, and uses "simple polygraphic instruments" with no mention of cameras or images being used to collect or analyse biometric data (p. 37). In *Blade Runner*, images become a key component of the test. The pupils of those undergoing testing are shown in extreme close-up on a monitor. Eyes are a particularly loaded motif in the film; Vernon Shetley and Alissa Ferguson (2001) argue that, because the film's opening shots show a city flaring with fire and then an eye reflecting that city, "the eye is proposed as an analogue to the camera" – in other words, the camera shows us what the eye sees (p. 66). Given that the eye and the camera are closely intertwined, the replicant's eyes on a monitor during the Voight-Kampff test are, metaphorically, lenses on screens. Folk wisdom holds that the eye is the window to the soul; for replicants, whose eyes are allied to cameras, the soul is never accessible. The eye is merely a lens, which of course is the biological function of an eye. In fact, the replicants' eyes are manufactured components designed to do nothing more than perform their biological function. In his quest to find the person who made him, replicant Roy Batty approaches Chou, a geneticist who manufactured his eyes. The jars of eyeballs visible throughout the scene indicate that there is more of the genetic craftsman in the replicants' eyes than there is any sense of themselves. Yet Roy's words to Chou complicate the status of his eyes as parts: "if only you could see what I have seen with your eyes" (Deeley & Scott, 1982). The play of pronouns in this line makes

clear that, despite the fact that Roy sees with eyes made by someone else, his subjective experience of seeing is still powerful and individual.

This is exactly how novelists writing about genetic posthumanism contest the notion of clones as simple Baudrillardian mirror images. Imagistic metaphors, at first glance, appear to contribute to the assumption that a clone must be inauthentic. But they build an understanding of genetically engineered "reproduction" as just that: re*production* with the benefit of variation, invention and subjectivity, as opposed to simple replication. By peppering their fiction with references to mirrors, shadows, doubles, masks, photographs, and other imagistic metaphors of reproduction, novelists *appear* to reinforce the clone/copy conflation. But many subvert it. Imagistic metaphors are often used as positioning devices to highlight the secondary status of genetic posthumans within the texts. Some authors, particularly (as will be seen in Chapters Six and Seven) Kazuo Ishiguro and David Mitchell, represent genetic posthuman characters who are framed *by human characters* as mere copies, but who in their thoughts and expression demonstrate a capacity for "authentic" human characteristics such as emotion, reason, and compassion. The copy metaphor is emptied of its dehumanising power when the supposed copies demonstrate agency and self-awareness.

Mirrors in particular provide the perfect metaphor with which contemporary authors can demonstrate the simultaneously reproduced, but also humanised, genetic posthuman. In the 1970s, it was discovered that some intelligent species of animals (chimpanzees, orang-utans, dolphins) had the ability to recognise their own reflections in mirrors. Raymond Corbey (2005) writes that animal use of mirrors necessitated a change in the belief that self-recognition and self-awareness were uniquely human traits (p. 165); thus mirrors have recently been associated with a change in the borders of what is considered human. The complication of representation in novels of genetic posthumanism often finds expression in the image of the mirror. There is, after all, an intuitive relationship between cloning in particular and the mirror, given that a clone is (theoretically, at least) a genetic "mirror" or copy of an original. The physical likeness between an original and a clone creates an obvious doubling, and this compromises the ability of either original or clone (not to mention those around them) to associate appearance with identity. Thus the use of mirrors in the fiction of cloning is quite logical as a way to negotiate the replicability of the physical form. However, the mirror image is not used as a simple way to advance a Baudrillardian view of cloning as pure replication. Novelists of genetic posthuman stories use mirroring – Baudrillard's own motif – to shatter the view that the clone is a simple carbon copy.

In the mirror, Fay Weldon finds the perfect symbol not only of cloning, but of the Otherness of women. Joanna was cloned by her husband, who wished to possess her and preserve her youthful appeal as a sexual partner and trophy. Joanna's clones, having been reared as individuals in families with no connection to Carl May, become individuals;[67] and yet their genetic connection to Joanna is imagined to guarantee their sexual submission: "They'd consent. They'd do as he asked, as Joanna always had. They'd love him, as Joanna had. Of course they would: they were Joanna... he had done it to multiply her love for him" (p. 241). To Carl, the clones are preserved images of his ageing wife in her youth. At sixty, Joanna's mirror image is established in the novel's first few pages as the site of her declining sexual relevance. Anticipating a visit from her lover, Joanna "looked into my mirror and saw the face of an old woman looking back at me, and that was very strange and terrible. I attended to this apparition at once with astringent masks, moisturising creams and make-up" (pp. 5-6). Joanna's clones also evaluate their sexual relevance via mirrors; but they do so in highly individualised ways. Jane is aware of her attractiveness to men but cannot reconcile that with the "ordinary, expected face" (p. 83) she sees in the mirror. Jane's co-clone Alice, on the other hand, "looked at her perfect self in a mirror one day and decided not to have children, not to get married." (p. 92) Their mirrored status is linked to their sexual and reproductive value, *and* to their status as secondary cloned beings.

But of course, being thirty years younger and highly individualised, the clones are not mirror images of Joanna. The symbol of the mirror is applied individually to each clone in relation to her own self-identification, but when Joanna comes into contact with her clones, a different imagistic metaphor is employed: "What woman of sixty would want to meet herself at thirty: rerun of some dreary old film, in which she gave a bad performance, like as not, and split-screen technique at that." (p. 112) In the revised metaphor of the film, the clones are left as mere players: "I wondered if they lived their lives, or acted them." (p. 202) While mirrors reduce Joanna and her clones to mere two-dimensional images of sexual value, the film metaphor addresses their authenticity. It is suggested (albeit briefly) that they might act out lives that are scripted for them. The concept of clones "acting" or playing out scripted lives recurs in *Never Let Me Go* (see Chapter Six) but is, like other metaphors of reproduction, not endorsed as a true reflection of the lives of clones. Weldon raises the notion of acted lives only to rebut it: Joanna's clones do not, in fact, live out her life by submitting to Carl May. Instead, the novel closes on them living harmoniously together, with Carl left out entirely.

[67] Their individualism is almost hyperbolic. The four clones are largely stock characters – Gina the troubled one, Julie the domestic one, Jane the career-oriented one, Alice the glamorous one – as if they were written to refute genetic determinism.

The clones in *Where Late the Sweet Birds Sang*, largely freed of sexual politics, see representational imagery quite differently – yet mirrors and drawings play a large part in the identity-building process of one clone who deviates from her set. Each member of a sibling set is visually identical to each other member, so for a standard clone to identify themselves in a mirror would be somewhat futile.[68] Nevertheless, when Molly transitions from a communal, conforming clone to a solitary aberration, she contemplates her new self in a mirror: "she had changed, she thought, studying herself in the large mirror at the end of the [hospital] room." (p. 104) She seeks some physical evidence of divergence from her "sisters," but her relationship with mirror imagery is not limited to mere practicalities or, indeed, physical mirrors. Mirrors – and, by extension, all representational imagery – become sites of the clones' deterioration and dehumanisation. Generation by generation, Wilhelm's clones lose the ability to cope with anything but the literal truth. Their capacity for representation and fiction becomes diminished, and eventually the human talent for imaginative invention is bred out of them completely (p. 183).

The move is demonstrated in the transition from Molly's generation to her son Mark's. Molly is a talented artist, and her skills are used in cartography for the good of the entire society. She does not stick to utilitarian art, however; her artist's eye is applied to the form of the clone (pp. 84, 88), and is implied to be a mode of connection when she is isolated from her clone-sisters (p. 91). Her art shows another female clone reflected, changed each time, in multiple mirrors (p. 119). The process of creating these images is likened to the process of cloning itself; she had "made people come to life on paper" (p. 236), just as her human predecessors had done in the lab. Hers is a philosophically loaded method of genesis, however, and the other clones react strongly against her representations of lineage and familial resemblance (p. 132). When she is exiled from clone society, her paintings become representations of isolation – lone figures surrounded by landscape (p. 182). By the time her naturally-conceived (i.e., non-cloned) son Mark is grown, clone children have lost the ability to recognise a representation of the human/clone form (pp. 190, 195). The loss of imaginative powers is again likened to the loss of the generative power of sexual reproduction: "They could duplicate what had gone before, but they originated nothing." (p. 193) Thus the clones, who are direct copies of individuals and have not been generated via the productive shuffling of two sets of genes, cannot productively generate ideas. Copying, in Wilhelm's account, begets only copying.

[68] Clones are frequently likened to masks (pp. 65, 104, 115), which suggests a status as representational imagery, but as *static* representation. It is mainly Molly, a humanised clone with an identity independent of her "sisters," who is depicted in front of mirrors.

This is a kind of accelerated, artificial evolution; taking the last human generation (from whom the first clones were developed) as an idealised starting point, Wilhelm portrays each successive generation of clones as a diminished copy. Wilhelm's language frames generational changes as negative developments: "'The new clones can't think for themselves; they can't conceive, can't impregnate, they'll never have children of their own... The new babies from the tanks won't even have names.'" (p. 235). In short, "each generation lost something" (p. 236) and became less than the human ideal.[69] Wilhelm takes the loss of written knowledge[70] as a metonymic symbol for the loss of generative power:

> The clones wrote the books, and each generation had felt free to change the books to conform to their own beliefs. [Barry] had made a few such changes himself, in fact. And now Andrew would change them again. And this would be the final change; none of the new people would ever think of altering anything. (p. 232)

Those who develop cloning methods are authors in this scenario; they write the wisdom of artificial generation, but ironically, in doing so, they rob the generated beings of the ability to write. The proliferation of creative media in Wilhelm's account of the death of generative power indicates a loss, not only of imagination, but of achievement and of permanence. The lasting artefacts of a generation – artworks, books, and so on – will no longer be produced, and thus clone society is to become inconsequential.

Yet within the degenerative cloning regime, human inventiveness reemerges. Molly's instinct for art shows how, even in a comparatively dehumanising account of cloning (because Wilhelm's clones are much less humanised than most), humanity cannot be bred out completely. This seems to be the central thesis of George Lucas's *THX 1138* (1971), another bioengineering text awash in screens, mirrors, and representational imagery. In the film's highly controlled underground capitalism, citizens are discouraged from forming human connections, and sex is outlawed. Instead, they are encouraged to interact with screens: a talking mirror on their medicine cabinets advises on their health, holograms deliver in-home entertainment, and screens depicting the face of Jesus are provided for spiritual succour. Drugs are administered to control citizens' mind and body functioning, and failure to take the drugs is a criminal act. Surveillance is constant, and involves not just visual contact but in-depth analyses of citizens' body chemistry (Lucas, 1971). Film scholar J. P. Telotte (2000) argues that even the cinematography contributes to the citizens' imageness, as it "offers us utter simplicity, cubicles and bare walls that frame the individual within stark rectangles, imprisoning the subject but also replicating the film frame itself and thereby rendering the person as

[69] Wilhelm employs the late-human character of Mark as a mouthpiece for anthropocentric observations about the inferiority of clone generations. The description of loss is embedded in his narrative.
[70] Margaret Atwood also associates cloning with writing – see Chapter Eight for a fuller account.

doubly a 'screened' image." (p. 48) Lucas goes so far as to imply that genetic posthuman bodies are actually emptied of all corporeal contents. In a morgue-like setting, with bodies lying on slabs, an organ harvesting regime is implied: "Did you know all the insides are gone from these people?" (Lucas, 1971)

Despite all these metaphors of two-dimensionality, genetic posthumans are seldom depicted as *just* imagery. Human drives – for reality, for human contact, for sunlight – cannot be eliminated. The film's protagonist, THX, breaks his society's rules by forming a romantic relationship, refusing drugs, and breaking out of the underground world in which he is contained. In other words, he chooses the real over the artificial. Like Molly who exercises her imagination, and Joanna and her clones who live for more than their aesthetic value, and the replicants who see more than they are shown, and even Salter's sons who are more different than their status as copies would allow, THX shows a humanness that refutes his supposed two-dimensionality. He and other fictional genetic posthumans are (usually) shown to think, emote, and behave in a distinctly human fashion, even when discouraged from doing so. Thus, the ways of constructing secondariness that have been described in this chapter – juxtaposing genetic posthumans against their "originals," and using imagistic metaphors – are employed ironically. These techniques play on the notion that genetic posthumans are "copied," while those same characters demonstrate their wholeness as individuals. Metaphors of doubling recall genetic posthumans' (supposed) status as copies, while their thoughts demonstrate their capacity for authentic human feeling. In other words, at the same time as they cast genetic posthumans as an auxiliary class, novelists and filmmakers expose the injustice of such a classification.

Chapter Four: Biocapitalism and the Owned Body

As discussed in Chapter One, ingroup/outgroup theory suggests that (in Claude Lévi-Strauss's words) "humanity is confined to the border of the tribe" (p. 12). In a largely globalised capitalism, however, the "tribe" is no longer a relevant way to group and organise human societies. Benoît Dubreuil (2000) argues that, as populations grow well in excess of the size of the "bands" of foraging humans in the pre-Holocene era, these new large groups lose the ability to monitor individuals through traditional social sanctions. Human social cognition is limited; and network sizes (the number of people a human can feasibly consider part of their "band") do not rise above the low hundreds (p. 158). Thus population subgroups form, and those subgroups are represented by figureheads.

States represent, in this view, a mode of social organisation that allows ingroup/outgroup socialisation to function within a vastly expanded human "tribe." Mass numbers of individuals who cannot feasibly regulate each other's behaviour establish states in order to delegate social sanctions to a representative body (Dubreuil, p. 208). High status leaders represent this large population group, forming hierarchies in which those who represent others are more powerful than those who are represented. Cities and countries allow for a regional and national sense of belonging, with mayors and prime ministers or presidents as leaders. However, this new expanded tribe has hierarchies built into it: the leader holds power and status, while those within the group shrink into invisibility. In fictionalised accounts of the relation of bioengineering to the state, many authors have envisaged states as ingroup tribes with bio-stratified internal hierarchies. The notion of bioengineered social class within the state is abundantly evident in *We*, wherein citizens are punished and demeaned for demonstrating their humanity, and lauded if they submit to lobotomies. It is also clear in *Brave New World*, with its masses of workers, slaves and thinkers created through controlled breeding.

But in the neoliberal era, the corporation is a much more relevant example of a shrunken tribe. It is, in Dubreuil's view, the new ingroup/outgroup division. Corporations are likened to individuals in that people will accept that a corporation has a viewpoint (p. 171). Indeed, corporations are considered persons in the context of many Western legal systems. Thus corporations allow large populations to "shrink" to the levels afforded by human cognition. As in nation-states, large populations are represented by leaders (CEOs), and those with powers of representation again hold a higher status than those without (p. 175).

In parallel, historical cases in which ownership rights have been exercised over human beings tend to involve single actors: individual slaves, individual slave-owners, husbands, and wives. But in the neoliberal age, it is corporations that are increasingly seen as holders of political and economic power. As Thomas Piketty (2014) has recently argued, inequality is an inherent feature of capitalism:

> When the rate of return on capital significantly exceeds the growth rate of the economy (as it did through much of history until the nineteenth century and as is likely to be the case again in the twenty-first century), then it logically follows that inherited wealth grows faster than output and income… Under such conditions, it is almost inevitable that inherited wealth will dominate wealth amassed from a lifetime's labor by a wide margin (p. 26).

In this view of capitalism, those who are wealthy become wealthier; the powerful become more powerful. Accordingly, in more recent bioengineering fictions, the inequalities of genetic posthuman societies are attributed to economic interests. The stunted genetic posthuman is often depicted as a labourer or economic product from which unaltered humans profit.

Economic entities have supplanted the nation-state or the individual as the imagined exploiter of genetic posthumans. Early bioengineering texts blamed lone scientists or rogue nation-states for the ill effects of scientific tinkering on the body. But contemporary genetic engineering narratives often eliminate the scientist as a character altogether. The new "villain" is the businessman (Carl May), the consumer (Salter), the corporation (Papa Song in *Cloud Atlas* – see Chapter Seven) or in some cases, the scientist-entrepreneur (Dr Tyrell in *Blade Runner*; Dr Merrick in *The Island*). Occasionally, the corporate entity responsible for dehumanising genetic posthumans does not put a figurehead forward at all (as in *Spares, THX 1138*), and thus there is no character on whom to hang blame except, perhaps, capitalism itself.

Notably, in most of these texts, scientists are either absent or tangential to the economic power players who make decisions about genetic materials. J.B.S. Haldane (1924) said of capitalism that scientists are "one of the geese which produce golden eggs for its table" (p. 2). But recent fiction has shifted its attention to those *at* the table, not those supplying it. The fictional scientists who produce genetic posthumans – Dr Holly; the unnamed doctors of *A Number* and *The Island,* Chou in *Blade Runner* – are backgrounded while blame falls squarely on those who employed their services.[71] This would seem to imply that it is not scientists, but decision-makers who are responsible for ethics in bioengineering. Applied to our real-world bioethics landscape, novelists and filmmakers imply that it is those with the money and power to make decisions to use bioengineering technologies – in other

[71] Faye Weldon goes so far as to suggest that the complicit scientist is a co-victim of the genetic posthuman. Dr Holly is depleted through his association with Carl, just as Joanna is (p. 193). The ageing scientist experiences the same sense of obsolescence as the ageing wife (p. 192).

words, biomedical companies, employers, governments, and wealthy individual consumers – who shoulder the responsibility to utilise them ethically.

Owning Bodies: The Legal Context

The real-world bioethics landscape surrounding these fictions is populated with confusion over ownership of the body and its valuable materials. Until recently, legal ownership of the body and its tissues was an academic matter. Shed hair and skin cells were inconsequential, and therefore of little interest to legislators. But now, in the bioengineering age, human tissue has value for a variety of applications. Biocommerce is somewhat familiar in terms of the sale of eggs and sperm for fertility purposes; paid genetic screening for paternity cases or diagnostic purposes; or even beauty treatments using placental cells. In the last three decades, though, human tissue has also become enormously valuable for the information it carries.

As it stands now, in the eyes of the law (and depending on their citizenship) individuals will usually not own their own bodies. In order for citizens to legally own their bodies, that ownership would have to be protected under property law. Loane Skene (2002), writing from an Australian legal perspective, argues that such protection would lead to absurd consequences – for instance, theoretically, if an organ donor legally owned the organs they donated after their death, donor recipients could sue the donor's estate if the transplant caused complications (p. 170). Though this argument may seem ridiculous to those outside the legal profession, the fact remains that structurally, existing legislative frameworks do not offer a logical space for the protection of body ownership.[72]

Test cases have shown that those whose bodies are profited from have little legal recourse. John Moore, a leukaemia patient in California in the 1970s, had particularly valuable cells. The unique properties of his T-lymphocytes (a type of cell) held lucrative research and development opportunities. His doctor, recognising this, extracted blood and tissues, and used these to develop a cell line, which he then patented. Moore believed his tissues and bodily fluids were taken as part of his medical treatment. When he later discovered that his cells (as replicated in a lab) were on file as a patent, he sued his doctor. During the ensuing legal battle, it was argued that human tissue is a

[72] Skene argues that protections falling short of legal ownership can be established under strengthened privacy, non-discrimination, and tort law.

waste product; a patient who has diseased tissue surgically removed, for instance, is hardly going to package it up and take it home (Andrews & Nelkin, 2001, p.29). The California Supreme Court finally ruled in 1990 that Moore had no property rights in his cells (Andrews & Nelkin, 2001, p.1-2).[73] Of course, living beings are composed wholly of cells. Though they did not say so in as many words, the California Supreme Court in essence ruled that Moore did not own the components of his own body.

In New Zealand, as in the United States, once informed consent is given, the recipient of human tissues (generally a doctor or medical researcher) is considered the owner of the tissues. The tissues themselves, or the information they contain, could thereafter become the legal property of any number of pharmaceutical companies, tissue banks, universities, or research institutions. Most of us would probably assume that our tissue would not be sold, nor our genetic information used for profit, without our knowledge. Yet in many countries,[74] assuming consent was given at the time of collection, human tissue can be bought and sold quite directly within the medical sector. The donors would not necessarily know of each transaction involving their biological material. The American Type Culture Collection (like many other similar companies around the world) offers human tissue samples to industry and research clients for a fee; their catalogue of "products" is filled with cells which once resided in patients, but are now the legal property of the ATCC. Under this system, the cells of a 70-year-old woman with breast cancer become product number ATCC® HTB-123™ (American type culture collection, n.d.).

The trademark may seem surprising, but it is in fact completely legal in many jurisdictions to trademark human tissue, and even to patent genes[75] and new life-forms. In the United States, the Supreme Court allowed the patenting of living things in 1980. As of 2013, patent claims had been made on 41% of the human genome, or up to 84% counting patents on animal sequences that match parts of the human genome (Rosenfeld & Mason, 2013). In New Zealand, it was not until the Patents

[73] The court also noted that Moore's doctor had not obtained 'informed consent' for the extraction of tissues, since Moore was not made aware of their intended use.

[74] In New Zealand, section 56 of the Human Tissue Act 2008 prohibits the trading of tissues for financial benefit, while allowing trading of products *derived* from human tissue. This effectively allows one person to profit from collecting and using another's bodily tissues as long as "informed consent" is given, and the tissues in their raw form are not traded ("Human Tissue Act," 2008).

[75] A subtle distinction has been made to justify the ownership of genes by people who did not produce them in their own bodies. Genes themselves, as they exist in the body, cannot be patented in the United States. What tends to happen is that a gene is extracted, replicated in a lab, and then the synthetic laboratory *version* of the gene is patented (Dickenson, 2008, p.94). With that in mind, it cannot be said that *your* genes, in your body, are patented. But it can be said that exact synthetically produced copies of some of your genes are owned by people other than you. However, a June 2013 U.S. Supreme Court ruling has now revised the legality of patenting replicated DNA ("Association of Molecular Pathology et al. v. Myriad Genetics Inc et al.,"). The decision means that genes which are simply *isolated* from their chromosome are not patentable; whereas "cDNA" which is synthetically "edited" from naturally occurring DNA is still patentable (Fisher, 2013). As of the time of writing, it is not clear what impact the ruling will have for genes already patented.

Act was revised in 2013 that rules were introduced for the patenting of living organisms ("Patents Act," 1953; "Patents Act," 2013).[76] By that time, transgenic mice had been patented already (Ministry of Economic Development, 2002, p.30). The European Union granted intellectual property protections for biological products under a resolution called the "Directive on the Legal Protection of Biotechnological Inventions" (1998).[77] The legal right to patent others' genetic information is often argued as an essential protection to allow medical researchers to attract capital investment, for the eventual benefit of medicine in general. In Asher Meir's words, "patents are the fulcrum which transmits market forces to the research establishment" (2007, p. 145).

In this legislative context, the body is treated as a container for valuable information; according to bioethicist Bronwyn Parry (2004), the forms of transacted bioinformation will "privilege the informational content of the biological material at the expense of much of its corporeality" (pp. 200-201). Commodifiable genetic information is broken up and catalogued like consumer products, and human tissues are treated as entities separate from the bodies (much less the people) from which they are taken. With all this in mind, it would be logical for fictionists who turn their attention to biocommerce to work with decorporealised, particulated bodies. They might be expected to dramatise the issues of tissue ownership and patenting that play out in the courts and in the media. With a few exceptions,[78] that is not the case. Literary fictions that thematise genetic technologies tend to look beyond the level of individuals and tissue samples, and attend instead to the exploitation and ownership of whole populations. They ask about the ownership not of tissues, but of bodies en masse: their parts and the labour they produce. Literary negotiations of ownership in relation to genetic posthumans bear a greater resemblance to historical cases of rights over others than they do to contemporary cases of rights over genetic material.

Owning People: Historical Precedents

Genetic engineering narratives tend to examine the ownership of genetic posthuman others in two ways: as slaves, and as property or products. There are precedents for both types of control

[76] Under the Act, micro-organisms can be patented; genetically engineered animals can be patented under some circumstances.
[77] Outside the EU, developing nations have tended to deny patents on life forms. India and China, for instance, currently do not follow the American / European position on life form patents; though China does allow patents on cellular and genetic information (Fowler, 2010, p.1085).
[78] *A Number* and *The Cloning of Joanna May* do dramatise tissue ownership issues, though they do so as part of a wider consideration of who has rights to control a person's body.

and ownership of people, often enshrined in law. The notion of people as property was applied to marriages in much of the Western world until the 19th Century. The principle of coverture held that women, once married, lost their legal rights to their husbands. Accordingly, married women did not have the individual rights of personhood under the law – in England, for instance, they could not own property until 1870, and could not open bank accounts without their husbands' permission until 1975. As at the time of writing, women still cannot own land or property independently in Lesotho. In cases such as these, financial dependence on husbands (or male relatives) limits women's mobility and decision-making, thus reducing their agency as people. This is an attractive parallel to fiction writers fashioning genetic engineering narratives, wherein the mobility, decision-making, and agency of a cloned or altered posthuman can be limited by their creators.

The legal history of slavery provides another useful parallel for fiction writers dealing with themes of genetic posthumanism. In ancient Rome, China, and some Islamic states, slaves were considered the property of their masters (Archer, 2013, p. 275). In more recent history, chattel slavery (in which rights of ownership are exercised by the enslaver over the enslaved) persisted in Great Britain until 1807, Canada until 1819, and in Mauritania until 2007. In the pre-Civil War United States, slaves were not declared to be property by any particular piece of legislation or founding documentation; they were, however, a form of property by way of legal precedent. In the 1857 case of *Dred Scott v Sandford,* Chief Justice Roger B. Taney ruled that slaves were a form of property, and possession of them was protected under the Constitution (Finkelman, 2012, p. 128). [79]

The fiction of bioengineering draws upon the shameful history of people-ownership and slave labour to build genetic posthuman populations which are economically exploited for parts and labour, and whose exploitation is positioned as history repeating itself. The commodification of the body is also an important concept in genetic posthuman narratives, and fiction which considers the genetic posthuman body as a disposable source of labour or parts (particularly *Never Let Me Go* and *Cloud Atlas*, which are analysed in Chapters Six and Seven) draws upon a literary tradition of body commodification. For instance, in the wake of the Industrial Revolution,

[79] Debates about the legal status of slaves were prompted by economic concerns. During the American Revolution, citizens debated whether slaves should be counted as people – and therefore counted in population-based tax calculations – or whether they should be counted and taxed as property (Finkelman, 2012, p. 115). The taxed-as-property advocates won, and slaves were not counted as people under the Articles of Confederation (Finkelman, p. 116). While this did not directly legalise the ownership of slaves as property, it did establish an informal understanding that slaves were a form of owned wealth.

a glut of texts emerged which addressed the sale of the body for labour and parts. Characters in this fiction of labour occupied what Cindy Weinstein (1995) describes as "a market economy in which body parts are commodities and workers themselves are body parts" (p. 8). The human body, as a source of labour, became analogous to a machine, and authors began to examine the body as a part: a cog in an economic engine. Again, slavery is analogous to this kind of economic exploitation. Weinstein points to *Uncle Tom's Cabin* (1852) as a spotlight on the "ideal of invisible labor" (p. 38), and demonstrates that Harriet Beecher Stowe not only makes that labour visible, but also shows slave owners symbolically partitioning slaves by referring to them as "hands" (p. 39),[80] thus reducing their identity to nothing more than the body parts that perform their work.

Genetic posthumanist narratives often imagine what types of exploitation might ensue when body commodification and ownership are empowered by the ability to manipulate, design, and replicate bodies or body parts for a particular purpose. The historical precedents of "owning" and/or economically exploiting wives, slaves, or workers provide useful ways to write about creating genetic posthumans who may, in turn, be owned and/or economically exploited. Joanna May is an owned wife whose youth can be cloned; THX and the replicants of *Blade Runner* are effectively slaves; the clones of *Spares* and *The Island* can be cut up and sold at any time. This chapter follows themes of commodification and economic exploitation in the fiction of bioengineering, and finds that texts are much more deeply influenced by a history of labour politics, property rights, and slavery than they are by the ethics of contemporary biocommerce.[81] In other words: the narratives studied here are concerned more with the sale of identity, labour, and parts than they are with the sale of genetic information. The concerns raised in these texts — and concerns about commodification are raised in *every* text studied here — reflect a body of literature which anticipates that the economic exploitation of genetically altered people will differ only marginally from the historical economic exploitation of the unaltered.

Bioengineered (Slave) Labour: Capitalism's Endgame

Concerns about the exploitation of clones for labour predate actual cloning technology by

[80] This type of terminology is of course not exclusive to slavery scenarios, and is still common today in colloquial terms such as "farmhand" or "storehand." However, in a literary context, it is one of a number of ways authors can call attention to the ways in which the body is divided for labour purposes.

[81] Seale, Cavers & Dixon-Woods (2006) note that the same is true in relation to contemporary debates on commodification in bioethics. Cultural perceptions of the commodification of bodies are not a purely rational response to the nature of biocommerce; rather, they are influenced by a media that sensationalises its reports on bioethical issues.

decades. The famous *Brave New World* scenario predicts that mass-produced clones will perform mundane work tasks more efficiently than unaltered humans could, but at the expense of human diversity. Since the success of *Brave New World*, human cloning and labour have been linked in the public imagination. Articles on the ethics of cloning – though often conservative in their predictive scope – occasionally mention the possibility of an emergent slave class as an argument against allowing research into cloning. However, it has been argued that cloning would be unlikely to produce mass worker populations. Economist Gilles Saint-Paul (2000) conducted a study on whether clone labour would be cost-effective. Working on the assumption that human clones would be granted human rights and therefore could not be enslaved,[82] Saint-Paul argues that cloning would not be cost-effective unless the labour of the human creation was of high value. Accordingly, the *Brave New World* scenario of mass-produced low-level employees would be economically improbable, and the cloning of, say, Bill Gates would be more likely (pp. 2-4).

Skilled genetic posthuman labour has been depicted in China Miéville's *Embassytown* (2011), and in the films *GATTACA* (1997) directed by Andrew Niccol and *Moon* (2009) directed by Duncan Jones, all of which explore the possibility that bioengineering could produce elite workers suited to highly skilled or dangerous tasks. But despite the ethical and cost barriers to producing cloned or engineered slaves, the Huxleyan narrative of mass-produced menial labour persists: notably in *Cloud Atlas* (discussed in Chapter Seven), and also in *THX 1138* and *Blade Runner*. Bert-Jaap Koops (2013) claims that the recurring attention to labour in the fiction of cloning is one way of expressing the "closed future" of clones' lives, in which they "live their lives in the shadow of their instrumentality" (p. 146). Yet the common fictional scenario of cloning for labour is about much more than the instrumentality of the clone: it is about the *exploitation* of the clone. The fiction of cloning – and genetic engineering more broadly – frequently reiterates the idea that late-stage capitalism, armed with genetic technologies, will profit from unethical clone labour in a manner comparable to the way in which slave owners have profited from their slaves. This is fiction which is partly concerned with the victimhood of the cloned slave, but at least equally concerned with the culpability of the enslavers.

In many narratives, the culpable parties are rogue corpo-states which are part private enterprise, part government, all-powerful, and utterly mysterious. The production-oriented state of *THX 1138* issues code names to its citizen workers and analyses their productivity in minute detail; the

[82] Saint-Paul notes that bioethics organisations currently recommend the granting of human rights to any cloned humans, however some states may not follow these recommendations, and so the enslavement of human clones is still possible (p. 4). This would change the economic incentives for creating clones, and could create a market for mass-produced workers.

biomedical company that creates *The Island*'s clones controls every aspect of their biology to protect its investments; the Tyrell Corporation in *Blade Runner* is a corporation by name, but is responsible for preparing entire colonies. These worlds can be described as hypercapitalisms. They extend and update the totalitarian agendas of Zamyatin and Huxley's OneState and World State by blurring the lines between corporate and national interests. As opposed to the recognisable environments of Weldon, Ishiguro and Churchill's present-day genetic theft narratives, these hypercapitalisms depict late-stage capitalist economies in which the ordinary lives of citizens are spent in subservience and consumption for the benefit of pervasive private companies. Indeed, some authors depict a world past the collapse of capitalism entirely (the Sloosha's Crossing section of *Cloud Atlas, Where Late the Sweet Birds Sang,* the *MaddAddam* trilogy.) This is perhaps logical; if Saint-Paul is correct, and cloned menial labour would not be cost effective now, then a society which makes use of it must have managed to make the technology cheaper. The fact that cloned slaves are associated with *a point of collapse*, though, suggests a correlation between cheap labour and economic instability.[83]

In *THX 1138*, the society's underground fascist and pseudo-religious capitalism is the subject of the film's attention; indeed, bioengineering is only an implied aspect of this regime, rather than a major thematic focus. However, the citizens of the film's society do appear to be bioengineered in a manner derivative of *Brave New World*. Several shots show foetuses developing in jars, and each is identified (in a manner derivative of *We*) with a code of letters and numbers. As adults, these coded beings are expected to work as efficiently as possible, under extreme surveillance. The mission of a citizen is to, as the film's Huxleyan recorded announcements emphasise: "work hard, increase production, prevent accidents and be happy." (Lucas, 1971) The film's protagonist THX works as a manufacturer of android police units, and his purpose is to be an efficient producer. Like all worker-citizens, he is highly controlled via drugs and surveillance, and highly disposable. His effectiveness at his job is measured in part by whether he prevents his and his fellow citizens' deaths, which public announcements cheerfully count: "That accident over in Red Sector L destroyed another 63 personnel, giving them a total of 242 lost to our 195. Keep up the good work and prevent accidents." (Lucas, 1971)

THX's labour is quantified, observed, and alienated to such a degree that it can offer no meaning to him. He is as a machine in a factory: those supervising his work can even induce "mind lock" if they wish to take over his decision-making (Lucas, 1971). These are Marxist fears for the

[83] This is an anti-slavery position that takes into account the ecological concerns of the past few decades. Wilhelm, Mitchell and Atwood write scenarios which pair cheap cloned labour with resource depletion. While the link is not necessarily causal, it does mark clone labour as the dying gasp of a sick consumerism.

bioengineering age: not only is THX's life spent in service of labour from which he will not profit, and to which he has no personal connection, but his entire *biology* is sacrificed to the service of the corpo-state. While he does have the luxury of leisure time, his time is not free; his leisure activities are dictated by the anonymous corpo-state, and he and other workers are encouraged to believe in OM, the state-sanctioned God-figure presented on numerous screens who encourages them to "be grateful we have commerce" (Lucas, 1971). THX's body, mind, spirituality, and time are all directed toward submission and maximum productivity. In this sense, THX and his co-workers are semi-slaves. The second half of the film is an emancipation narrative – THX escapes his labour only by being sent to a kind of prison, but once he escapes from prison, he seeks and finds a natural world above ground, free of labour. Even his emancipation is couched in the language of capitalism; his escape is made possible because the project of capturing him goes 6% over budget and is abandoned (Lucas, 1971).

The notion of bioengineering for labour utility appears again in *Blade Runner*, with elements of recycled alterity very obviously incorporated. The world of the film is extremely, noticeably diverse. People of different ethnicities interact, speaking multiple languages. Race is linked to economic power: the overabundance of Japanese language, people, media, and foods in the film suggests that its racial politics owe much to the 1980s fear of Japan overtaking the United States as the world's greatest economic superpower. As David Desser (1991) points out, there are relatively few Caucasians in the film – and those that remain on Earth are said to either be there for professional reasons, or too genetically deficient to qualify to leave (p. 111). By implication, the off-world colonies have enabled a futurised "white flight." Replicants, clones created as slaves to prepare the off-world colonies, are the labour force that builds the luxuries which will belong to the racial ingroup. This is an updated African American slavery, made especially clear when Deckard explains Captain Bryant's use of the term "skin jobs" for replicants by calling him "the kind of cop who used to call black men niggers" (Deeley & Scott, 1982).

Robert Barringer goes so far as to claim that the film enacts a form of racial coding, with humans as white and replicants as black, and each of the replicants corresponding to "specific black types present in the popular U.S. media and imagination for at least the last century" (p. 14). But, I would add, the film does not perform racial coding in order to make any particular comment about the ethics of America's history of slavery. Rather, the film positions replicant slavery in parallel to American slavery so as to encode replicant slavery as a criminal act of exploitative othering. The replicants – although perhaps, as Barringer suggests, "coded" as African Americans – are white. Their

enslavement is not a function of racism but of speciesism. Indeed, races are shown to be integrated to the point of being blended. Gaff, for instance, speaks a hybridised "cityspeak" language with influences from multiple different existing languages. This is a society of the brink of being so globalised as to make race irrelevant – or at least undeterminable. It is a society about to lose its ability to base ingroup/outgroup politics on race at all. Replicants fill the gap left by the loss of racial distinctiveness. In theory, replicants can be the new Other.

But this theory does not hold. Replicants, when let loose into human society, are not obviously different to humans. They can only be identified by a test that is seen to be less effective on Rachael, one of a new generation of replicants. Genetic difference, a cornerstone of the labour model of this new world, is about to follow racial difference in becoming ineffective as an ingroup/outgroup distinction. In other words, the film suggests that genetic othering is not stable. Indeed, the symbol associated with the possibility that Deckard himself may be a replicant is an origami unicorn. The unicorn, a figure of Deckard's dreams, is folded by Gaff. This implies that Gaff knows Deckard's dreams because they have been implanted, making Deckard a replicant. Origami, a Japanese paper art, is a particularly apt medium for encoding Deckard's potential replicant status, because just as 1980s America feared losing economic domination over Japan, so too humans in the film would have reason to fear losing economic domination over replicants if replicants could "pass" as human. The replicants' value as slaves, like that of African American slaves, is dependent on the "justification" of their recognisable Otherness – an otherness that is biologically suspect.

The Standardised Posthuman Product

Even where genetic posthuman characters are not enslaved, they are positioned as products of economic worth. In the hypercapitalist societies of genetic engineering narratives, genetic posthumans are often assigned an actual dollar value. In *The Island*, it is revealed that clones were ordered by their originals at a cost of $5 million each. They are consistently referred to by the staff of Merrick Biotech as "product," and the murders of dozens of clones who have the potential for individuality is described by Dr Merrick as the "disposal of $200 million of infected product" (Bay, 2005). The term is accurate; the clones exist only so that their wealthy "originals" can have a supply of fresh body parts available. This notion of the genetic posthuman as "product" is prevalent throughout much of the contemporary fiction of bioengineering.

Caryl Churchill places the commodification of human beings at the heart of *A Number*. Salter

admits to having paid to clone B2 from B1, when B1 grew out of his "perfect... beautiful baby" (p. 31) phase and, having lost his mother, began to exhibit difficult behaviours.[84] The cloned son is a product, purchased like any other. Accordingly, when Salter discovers that other clones were made without his knowledge, he assumes the role of the wronged customer:

B1	You made an effort
SALTER	I did and for that money you'd think I'd get exclusive
B1	they ripped you off (p. 28)

His instinctive reaction is to mimic the action of an aggrieved consumer by suing the doctor who cloned his son. Like John Moore, his case is couched in the rhetoric of stolen property, and becomes a legal matter. His language takes on a quasi-legal tone: "Nobody regrets more than me the completely unforeseen unforeseeable which isn't my fault" (p. 30). He repeats a belief that "there's money to be made out of this" (p. 29), that "we'll make our fortunes" (p. 50). He gleefully imagines how much each clone might be worth in terms of damages:

SALTER	what? is it money? is it something you can put a figure on? put a figure on it.
B2	This is purely
SALTER	yes
B2	suppose each person was worth ten thousand pounds
SALTER	a hundred
...	
SALTER	a million is the least you should take, I think it's more like half a million each person because what they've done they've damaged your uniqueness, weakened your identity, so we're looking at five million for a start. (p. 14)

This preoccupation with money hints at the crux of the play: that replication of a person is, or could be, the division of their identity, and that this is a financial issue. B2 uses the phrase "a number" to describe how much each clone might be worth in damages (p. 14), and also to describe the number of clones that may exist (p. 10); this connection between number and worth is important enough that the phrase connecting them is promoted to the play's title. The number of clones – not their nature – is Salter's concern in the earlier half of the play. He claims that "the shocking thing is that there *are* these [clones], not how many but at all" (p. 11); however his persistence in trying to determine a tally betrays this sentiment:

B2	A number
SALTER	you mean
B2	a number of them, of us, a considerable
SALTER	say
B2	ten, twenty
...	
B2	even one
SALTER	exactly, even one, a twin would be a shock

[84] First, Salter claims that B1 had died in a car crash at age four and B2 had been a replacement (p. 20); however he later admits that B1 had survived the crash and been sent away when he became unmanageable (p. 31).

B2 a twin would be a surprise but a number
SALTER a number any number is a shock (pp. 10-11)

It is their number that will determine what he can sue for (p. 14), but it is also their number that determines the egregiousness of the doctor's sin, and the extent to which Salter can feel wronged as a customer.

This suggests that the criminality of tissue theft becomes greater the more often the tissue is used and disseminated. Readers and audiences are left to infer that property stolen from the body retains something of the person from whom it was taken, and that the person is further injured with each replication of their genome. This recalls Walter Benjamin's theories of the value of art. In his essay "The Work of Art in the Age of Mechanical Reproduction" (1936), Benjamin argued that a reproduced artwork lacks the authenticity of an original; but as reproductions come to be seen as emblematic of the original, they diminish the original. Maria Aline Seabra Ferreira (2005) ties this theory to the value of clones. In her update of Benjamin's theory, "the aura that pertained only to unique objects… can be said to have diminished but also to have dispersed and been disseminated, attaching to mechanically reproduced objects almost as much as to "original" ones." (p. 27) In other words, the authenticity of a person may be perceived to be dispersed when they are cloned. Churchill's play explores this idea by casting B1 as a work which, upon reproduction, has diminished in value. The number of clones made is implied to be a measure of how diluted their identity/ies have become. The more product made, the less the value of each.

This emphasis on the number of bodies cloned indicates that the locus of self in Salter's world is in the body. Indeed Holzapfel (2008) argues that, in the play, the body is "configured as a conglomeration of 'a number' of parts, or fragments, that make up such a construct. The 'real' son, Churchill insinuates, is not a single individual but rather the monstrous combination of the original and its innumerable reproductions." (p. 12). When B1 reveals that he has killed B2 (Salter's favoured son) Salter seeks information about the body: "your son dies you want his body, you want to know where his body last was when he was alive" (p. 48). This sense of the self in the body would explain Salter's motivations for cloning B1. A new body signified, to the father, "your son the new" (p. 28) rather than your son the copied. The cloned son is a fresh, clean, unfettered version of the unsatisfactory original. The cloning process is therefore, in this case, the biological equivalent of returning a faulty product to the store.

Churchill brings fresh ethical questions to the ownership debate. If a clone exists only because of

someone else's genetic sample, can they be seen as property? Salter suggests that B2 should hold ownership rights over the other clones: "they belong to you, they should belong to you" (p. 13). However the fact that Salter sees B2, and not B1, as the rightful owner of the clones, betrays the fact that, in Churchill's cloning society, it is the new, fresh clone, and not the old, unsatisfactory original, that is treated as the rightful holder of genetic capital. The politics of ownership here are complex: B1 provided the original genetic sample, yet is never suggested to have any rights over the other clones; B2 was a result of the sample, and is (in Salter's view) a rightful owner; while Salter himself, the progenitor of them all, is the one to sue. Churchill seems to suggest that ownership is a matter of perception, and cannot be an intrinsic right. This can be seen as an argument against the application of property law to the human body.

The Cloning of Joanna May, like *A Number,* deals with the politics of treating another person as a product. Neither B1 nor Joanna May makes decisions about the use of their own genetic materials. Salter makes the choice to clone his son (though only once), while Carl May makes the decision to clone his wife. The original possessors of the contested genetic information are entirely disempowered. But in *The Cloning of Joanna May,* Faye Weldon links this disempowerment to the patriarchal control of women's bodies. Dr. Holly, Joanna's cloner, suggests that she should have no rights to the egg that he stole and split into four: [85] "'I don't think ownership comes into it. Does a woman's egg, once fertilized, belong to her, or to the next generation?'" (p. 195). Dr. Holly ignores (and Joanna points out) that the theft occurred before fertilization; thus his actions violate even his own logic. But logic is implied to have little to do with Dr Holly and Carl's work, and Weldon uses them to expose the commodifying arrogance of men who would claim "ownership" of the female body.

Jürgen Habermas (2003) argues that genetic technologies are inherently paternalistic: "The program designer carries out a one-sided act for which there can be no well-founded assumption of consent, disposing over the genetic factors of another in the paternalistic intention of setting the course, in relevant respects, of the life history of the dependent person. The latter may interpret, but not revise or undo this intention" (p. 64). The process by which Carl and Dr Holly set the proverbial course is described as "not cloning in the modern sense, but parthenogenesis plus implantation, and a good time had by all" (p. 34). The glib way in which the (all-male) cloners describe their work obscures a serious agenda: "Dr Holly felt, and Carl felt with him, that an evolutionary process which caused so much grief could surely be improved upon by man" (p. 89). It is this notion – of

[85] Weldon does not go into any scientific detail on the cloning method; but from what little is given, Dr Holly's method appears highly implausible.

improvement by men, specifically – which forms the novel's focus. Genetic technology here forms a kind of patriarchal control mechanism. Carl May's view of his ex-wife is as a woman of good "stock" (p. 24) – a word which serves both the genetic content of the novel and also the view of Joanna as merchandise – but poor character; his decision to clone her is thus a way to control her by re-expressing her genes in clones born into a variety of environments. He creates future mistresses for himself by "redipping the faded stuff in stronger dye" (p. 239). This action, once exposed, is not viewed as surprising or shocking, and there is little discussion as to the ethics of his actions. Rather, it is the expected work of a tyrannical man, acting upon a woman who he considered to be his property.

Indeed, Carl's actions are presented as a colonisation of the body that relies upon his rights to it as husbandly property. In Weldon's feminist reading of biotechnology, the male cloner(s) replicate the unconsenting female body as a way of preserving and controlling its expression. Carl May is unapologetic about having secretly cloned Joanna. His sense of entitlement to her body is clear in his dialogue: "I'll grow you into what I want" is a typical example (p. 110); as is "I, man, want to teach nature a thing or two" (p. 111). His motivation is explicitly to reduce her by replicating her: "There are many of you and many of you [sic] gloated Carl May and that means there are none of you because you amounted to so little in the first place" (p. 108). This puts a patriarchal spin on the notion of genetic reductionism[86] – Carl attempts to reduce Joanna to a mere genome, and in doing so, reflect back to her via four copies the little he sees in her. Joanna's rebuttal relies on the idea that multiplication is fortification: "Multiply me and multiply my soul: divide me, split me; you just make more of me, not less… there will be no end to my seeing" (p. 110).

Although Carl's main motivation seems to be to commit an act of violence against Joanna, he also expresses a desire to "create a perfect woman, one who looked, listened, understood and was faithful" instead of "spoiled, sullied" (p. 78). The clones are implied to be, by virtue of having been cloned, subject to a kind of revised male gaze. The motivations for cloning are not only borne of a desire for control of the female body, but also of a related sense of entitlement to sexual access and affection. Carl's appetite for female attention is expressed in his view of the clones as courses for him to enjoy:

> For the hors d'oeuvre, Alice, light and astringent (but too much lemon). For the fish, Julie, tentative and delicate (but a little stale, a little flat, too long out of the water). For the entrée,

[86] "Reduction" is a complex term in discussions of genetics. Genetic reduction refers to the provision of a genetic explanation for a particular trait; whereas genetic *reductionism* refers to a tendency to pursue and privilege genetic explanations (Sarkar, 1998, p. 103). Epigenetics has largely eroded the territory of genetic reductionists by requiring other forces to act upon genes. However, Weldon wrote *The Cloning of Joanna May* before epigenetic theories became widely known in the 1990s and 2000s.

> Gina, full-blooded but overcooked. Jane, a delectable dessert except salt not sugar had been put in the topping. (p. 240)

They are potential sexual conquests of Carl May – a way for him to retain his wife's youth. They are, to Carl, love-exuding bodies to be conquered and consumed. As bodies, their environmental influences are read in their flesh; their degrees of similarity and relative levels of privilege are ascertained from their measurements (pp. 49, 53, 56), and the least privileged of the clones is identifiable from her extra four inches around the waist (p. 54). When they do not acquiesce to Carl's will, their free will is seen as his failure: "he had thought to breed passivity and had manufactured its opposite." (p. 231)

In contrast to *A Number*, suing is only briefly raised as a possibility for Joanna and her clones (p. 234). Just like married women who have historically lacked economic independence and had their financial rights legally restricted, Joanna lacks the power to challenge her cloners. Weldon devotes a full page to describing the interplay of ethics and economics for the pharmaceuticals company that employed Dr Holly. Carl May is on the board of the company (p. 182); thus Joanna is positioned on the losing side of a massive power imbalance. She is relegated firmly to the status of product, and Carl is free to manufacture more product with no financial or legal repercussions.

Given that the view of the body as a product or products for sale is so common in texts with genetic posthuman themes, it is reasonable to assume that there is something about the encroachment of genetically amended bodies which invites notions of body commodification. In their 2001 book *Body Bazaar*, Lori Andrews and Dorothy Nelkin note that body technologies are interpreted as devaluing the subject. When organ transplants and surrogate pregnancies first became feasible, concerns about organ markets and pay-per-kidney arrangements cropped up: "as the body was viewed as an object with replaceable and collectible parts, personhood would be devalued (p. 173-4).[87] Just as those who have had organs removed are not, in practice, deemed any less human than their peers, genetic posthumans would not necessarily be less human for having been subject to genetic technologies. Yet the association between genetic technologies, body commodification, and identity depreciation remains strong in fiction. But the link is positioned as wrongful. Fiction tends to associate the commodification of genetic posthuman bodies with historical cases of wrongful claims of ownership over people. This suggests that making slaves or products of genetic posthumans is just as wrong as making slaves or products of racial others, or of women. The alterity of slaves and

[87] Although usually there are far greater legal protections around organ harvesting than there are around the collection of other tissues.

owned wives is recycled and applied to genetic posthumans, and the economic exploitation of genetic posthumans is therefore positioned as a potential forthcoming injustice.

Chapter Five: Caging the Animalised Genetic Posthuman Other

In his novel *Animal Farm* (1945), George Orwell presented a society of animals living under seven commandments of animalism; the seventh of which was "All animals are equal." As the ideology of animalism becomes corrupted, the seven commandments are boiled down to one far less idealistic aphorism: "All animals are equal but some animals are more equal than others." (p. 97) No statement could more perfectly articulate the uniting philosophy of many genetic posthumanism narratives, which place increasing inequality and animalisation at the heart of the projected genetic posthuman experience.

The connection between animalisation and posthumanism is not exclusive to fiction. Donna Haraway's "Cyborg Manifesto" makes special mention of the relevance of the animal in the human-cyborg interface:

> The cyborg appears in myth precisely where the boundary between human and animal is transgressed. Far from signalling a walling off of people from other living beings, cyborgs signal disturbingly and pleasurably tight coupling. Bestiality has a new status in this cycle of marriage exchange. (1991, p. 152)[88]

Despite the fact that cyborgs – and, as are relevant here, clones and genetically engineered organisms – are almost always envisaged as anthropomorphic beings, the metaphorical ties between posthuman figures and animals are strong. In fact, references to animals in the fiction of genetic posthumanism are much too frequent to be coincidental.

The prevalence of animal imagery in bioengineering texts is not, in itself, extraordinary. The use of animal traits as metaphors for human character is well-documented in literary texts dating back to at least ancient Greece (Thuminger, 2006), and literary critics have traced the remarkably consistent "brave as a lion" and "sly as a snake" stock similes in numerous canonical texts (see for example Cosman, 1963; Maxwell, 1947; Whaler, 1932). But the animalisation of genetic posthuman narratives is far removed from this tradition. Animal metaphors are conventionally based on an understanding of otherness. In the Cartesian view, animals are nothing but soulless automata behaving according to type, and not on the basis of any individual consciousness. They are therefore

[88] Haraway does not reference animals in order to suggest any dehumanisation of the cyborg. Her other writings indicate a great respect for animals as others, but not necessarily inferiors. In addition to her "Cyborg Manifesto," she has written *The Companion Species Manifesto* (2003), which validates the bond between humans and dogs. She has also written on animal rights issues by taking the animal's perspective (see, for instance, the chapter "Chicken" in Jodey Castricano's book "Animal Subjects" (2008)).

distinctly non-human, and the classical use of animal imagery is based on that distinctness – the "rational" human against the "wild" beast (Ferber, 2007). On the basis of the animal's otherness, human characters can "borrow" traits via bestiary similes, and can thus be singled out of the human herd. The human character who is as "brave as a lion" or "sly as a snake" is differentiated from fellow human characters by the application of animal characteristics, without *becoming* animal.

In the post-genetic novel, however, animal otherness is not as fair an assumption as it once was. *Homo sapiens* have been included as part of the animal kingdom in Linnaean taxonomy for 300 years; and for 150 years now, humans and apes have been known to be related in recent evolutionary history. As genetic engineering emerged as a serious field in the 1960s, scientists enacted a real-life *Island of Doctor Moreau* scenario by blending human cells with mouse cells,[89] and commentators fearfully predicted timelines for the development of full human-animal blends (Gudding, 1996, p. 537). With the development of genomic analyses, the genetic contiguity between humans and other animals has become clear. The oft-quoted factoid that humans are genetically 99% identical to chimpanzees – though problematic[90] – creates an environment of thought in which the traditional otherness-based animal simile holds little relevance.[91] Indeed, animals have been granted legal rights in some places. New Zealand, for instance, took a step towards establishing hominid personhood in 1999 by protecting several species of great apes from use in research, testing, and teaching under the Animal Welfare Act (R. Taylor, 2001).

With barriers between humans and non-human animals now breaking down, it is perhaps unsurprising that contemporary texts featuring genetic engineering themes use non-traditional animal imagery to describe engineered human characters. The way in which this imagery has changed from its traditional use can be broadly described as a shift from simple similes and metaphors to what I will call *immersive metaphors*. Redcrosse in *The Faerie Queene* (1590) fights as fiercely as a lion (Cosman, 1963, p. 86), and Shakespeare's Coriolanus is "a very dog to the commonalty" (cited in Maxwell, 1947, p. 419); these are simple, traditional, and relatively common human-to-animal likenings. By contrast, the altered characters of contemporary genetic engineering

[89] Zadie Smith's novel *White Teeth* (2000) uses a genetically engineered mouse project to ground an exploration of genes and fate.

[90] The genetic similarity between humans and chimpanzees ranges from 90 – 99.3%, depending on the unit of comparison. The famous 99% figure is based on a 1975 study which compared only the slow-changing genic portion of DNA, and thus overestimated the overall genetic similarity. Studies including non-genic DNA and mitochondrial DNA comparisons have produced much lower estimates of genetic similarity (Marks, 2002, pp. 32-36). A 2005 full-genome comparison provides more detailed analysis of genetic similarity, though the authors did not summarise their data into an overall percentage (The Chimpanzee Sequencing and Analysis Consortium, 2005).

[91] Though Sherryl Vint (2008) points out that our willingness to genetically modify animals, and our current hesitation to modify humans, somewhat reinforces the human-animal divide by allocating special significance to humans (p. 195).

fiction are described in fully animalistic terms. They are not merely *like* animals (as Redcrosse and Coriolanus were); they *are* animals – but crucially, they are animalised from the perspectives of their non-altered human counterparts. They are described by human peers from within the language of animality, and they are also sited by their human controllers within "cages" that limit their freedom of movement. They are meat.

These immersive animal metaphors are not designed to convince readers of posthuman animality; quite the opposite. They are designed to jar and disturb. Caged and animalised genetic posthuman characters are imbued with an intrinsic humanity that transcends their cages, and contests their supposed soullessness. The animalised status and humanised interiority of genetic posthuman characters together destabilise any easy Cartesian assessments of biostatus in relation to humanness. Brian Boyd (2007) notes that Descartes' characterisation of animals as soulless was quickly followed by Jonathan Swift's twist on the rational human / bestial animal formula in his 1726 classic *Gulliver's Travels* (p. 233). Like the bestial human Yahoos and rational equine Houyhnhnms, contemporary genetically engineered characters promote the notion that characteristics, rather than form, constitute humanity. Just as Gulliver gravitates towards the Houyhnhnms and endorses the civility of their nature, so too the authors of contemporary genetic engineering narratives often suggest that their animalised genetic posthumans are more civil than the humans who cage them.

Animalisation as Dehumanisation

Through their animalisation, the genetic posthuman is again dehumanised and familiarly othered. Haslam et al. (2009) designated animalistic dehumanisation as an entire category of dehumanising tools (p. 62) (see Chapter One). Animalisation works to dehumanise racial others by symbolically extending the classification of non-humanness to the group in question. The othered group is designated as bestial, or sometimes specifically as being monkeys or vermin, often through propaganda campaigns. Once their status as less-than-human is believed, the political barriers to their maltreatment or – in some cases genocide – are lowered.

Recent history is rife with cases of animalistic dehumanisation. Orwell's animal allegories and Zamyatin's dehumanised workers in *We* responded to the Russian Revolution of 1917 (and, in Orwell's case, to Joseph Stalin's subsequent communist regime). Animalisation of the other was a key component of Russian political rhetoric at the time. Lenin was known for describing his adversaries as insects, lice, or bloodsuckers; Stalin frequently framed political enemies as prey; and

in one short speech during the Moscow Trials, prosecutor Andrei Vyshinsky managed to liken defendants to dogs, eagles, vultures, foxes, and pigs (Courtois, 1997, pp. 749-751).

African people, too, have been frequently subject to animalising rhetoric. The respected French naturalist Georges Cuvier wrote in his influential text *The Animal Kingdom*, first published in 1817, that "the negro race… manifestly approaches to the monkey tribe" (1817/, p. 97). It was even suggested at some points in history that people of African descent should be considered a separate species to those of European descent. J.H. van Evrie, one of the more egregious racial animalisers, complained in 1859[92] that Linnean classification made the "mistake" of assuming that "the human creation is composed of a single species" (1859/, p. 39), rather than segregating humanity into hierarchised racial species. Cuvier, Van Evrie, and other writers contributed to a discourse which animalised African people as "bestial" or "savage" (Lundblad, 2013, p. 122; Roberts, 2008). While their arguments did not go unchallenged, the belief that African people were a separate species was so common that one zoo went so far as to exhibit an African pygmy. In 1906, a Congolese man named Ota Benga was put on display in the Bronx Zoo in New York. Benga was displayed (to great public outcry) in the monkey house for two weeks, labelled with his name, age, height, weight, and region of origin (Newkirk, 2015).

The animalisation of racial outgroups – and people of African descent in particular – has been used to "justify" slave trades.[93] Because so many genetic engineering narratives feature the enslavement of genetic posthumans, this is a particularly relevant form of animalisation; many of the dehumanising tactics applied to genetic posthuman characters involve containing and trading them in ways reminiscent of slave trading. Mark S. Roberts (2008) points out that, in their first exposure to America, imported African slaves were treated like livestock by traders. The separation of families, the sale of slaves by the pound, and the calculation of "acceptable" loss rates in transit were all hallmarks of animal trading, and thus early slaves were cast into the position of farmyard animals in a way that had nothing at all to do with "innate" animality (pp. 65-69), except that assumed by slave traders.[94] This animalisation was not limited to the era of slavery. While direct references to African Americans as particular species of animals (or as a separate species from humans) declined,

[92] The edition cited here is an 1868 republication of the original 1859 text.
[93] Slavery researcher David Brion Davis (2006) notes that animalisation has been a feature of slavery for thousands of years, as evidenced by Sumerian tablets dating back to the third millennium B.C.E. which show records of slaves priced alongside domestic animals (p. 52).
[94] Colleen Glenney Boggs (2013) points to Frederick Douglass's *My Bondage and My Freedom* (1855) as an example of animality reclaimed. Douglass's text is divided into two sections; the first covers the aforementioned parallels between the slave trade and animals at auction, while the second depicts the freed slave-child as being able to play like a frolicking animal. In Boggs' reading, "bestiality is the primal scene of biopower" and thus the animalistic freedom is a reclaimed reconfiguration of animalised slavery (p. 84).

continuing degradations of black Americans as being generally animalised underpinned much of the postbellum segregation of the late 19th and early 20th centuries. Joel Chandler Harris used seemingly innocent animal allegories in his "Uncle Remus" tales, published in the 1870s and 1880s; this facilitated their popularity among white readers for whom the African-animal association was entrenched (Sundquist, 1993, p. 341). Black men, in particular, were demonised as "beasts" and "brutes" in the 1890s, when accusations of sexual assault were used to justify lynchings (Lundblad, 2013, p. 133). And of course, segregation itself can be seen as a kind of "caging" which, at an institutional level, animalises those it seeks to contain.

Historical examples of animalisation are frequent enough – and some are recent enough – that animalisation is recognisable as a mode of negating or minimising an undesirable human Other. Australian settlers also have a long history of animalising Aboriginal people as apes or vermin (Cudworth & Hobden, 2014, p. 751), and Jillian Kramer (2012) points out that modern mainstream media outlets in Australia still use animalising terms to refer to Aboriginal people and symbolically "locate them within the sphere of *zoe*." (p. 7; italics in original). During World War Two, Western propaganda animalised the Japanese, while Japanese propaganda animalised the Chinese (Dower, 1986).[95] During the 1994 genocide in Rwanda, the Tutsi people were described in Hutu media as vermin, snakes, and cockroaches (Rothbart & Bartlett, 2008, p. 232). Examples of dehumanisation through animalisation are so numerous that these only skim the surface. Their global recurrence, especially in very recent history, means that readers and viewers of fiction and film are likely to recognise the animalisation of genetic posthuman characters as an indication of politically motivated abuse.

The Posthuman as Animal

Because animalisation is so closely associated with moments of historical abuse, exploitation, and genocide, narratives which position the genetic posthuman as an Other can use animal metaphors to communicate the alterity of their engineered characters. Animal metaphors can be particularly meaningful because the prospect of changing or replicating a human being's genetic code brings up questions about what a human (or for that matter a body) actually is. Genetics requires an understanding of bodies – both human and non-human animal – as manifestations of code; as

[95] Australian soldiers were told that the Japanese soldier "is a subhuman beast, who has brought warfare back to the primeval, who fights by the jungle rule of tooth and claw, who must be beaten by the jungle rule of tooth and claw." (Dower, 1986, p. 53)

embodied information. Thus, the animal emerges as a comparative device through which fictionists can explore the corporeality *and* the alterity of the altered body.

Early bioengineering narratives have created a precedent for this. The notion of the body as flesh, and particularly as animal flesh, is clear in H.G. Wells's descriptions of Doctor Moreau's hybridised human-animals. Of course, the creations are literally part-animal, but Moreau applies animal similes using species that they are *not* grafted from (pp. 27, 46). This suggests that Moreau's work eliminates the specificity of the body and creates a kind of flesh equivalency between species; what Prendick designates as "a kind of generalized animalism" (p. 124). Whatever species a creature is made from, it is, above all, a being of "stark inhumanity" (p. 20); something animalistic but not ever acceptably human. The creatures bear the "mark of the beast" (p. 74) and are thus both dehumanised and demonic. The mere existence of species-grafting is shown to animalise those who have never been subjected to it. Prendick himself adopts the pose (p. 49) and the fear (p. 130) of a four-legged animal, and when he returns to London, he sees animalistic qualities in the people he encounters (p. 131). D.B.D. Asker (1996) points out that Prendick's animalism in the novel's final pages works to destabilise the boundaries between human and animal by closing on the idea that so-called civilised humans are merely beasts in suits (Asker, p. 155; Wells, p. 131).

Similarly, *Brave New World* animalises unmodified and lab-grown characters alike. The novel closes on the unmodified human John, surrounded by his bioengineered contemporaries who taunt him, "throwing (as to an ape) peanuts," forcing him to cower "in the posture of an animal at bay" (p. 225). John's lab-grown contemporaries do not escape animalisation in the scene, as their contribution is to crow at him "parrot-fashion" (p. 226). Similarly, when Linda, a World State-raised woman in exile in *Brave New World*, recalls first encountering people who had children through sexual reproduction, she equates them with animals (p. 109). They are "like dogs" (p. 105) to her, despite the fact that she also had a child conceived sexually. Being accustomed to planned laboratory genesis, Linda sees sexual reproduction as something from which humans have moved on; something belonging to the animal kingdom.

There is logic to Linda's position. A society that has used genetic engineering for eugenic purposes is a society that has redefined its conception of conception. If sexual reproduction produces offspring that are considered superfluous or sub-optimal, then sexual reproduction[96] itself is bound to be

[96] Note that it is sexual *reproduction*, not sexual activity, which is stigmatised. Indeed, the characters of *Brave New World*, *Never Let Me Go*, and to some extent the *MaddAddam* trilogy are encouraged to be promiscuous in the interests of maintaining a form of social harmony that is beneficial to their schools and states.

stigmatised. Michael Lundblad, in his comprehensive study of literary animality entitled *The Birth of a Jungle* (2013), notes that "sexuality and animality shift at roughly the same time" across history (pp. 31-32). In other words, a shift in our understanding of sexuality is filtered and processed through references to animality and biology more generally. The colloquial "birds and bees" is not just a flippant phrase, but a product of the deep association between sexuality and animality. Genetic engineering, as the ultimate revision to sexual reproduction, can be expected to be accompanied by a language of animality. The posthuman is usually (in the texts studied here, at any rate) non-sexually generated; so its relation to the animal kingdom is logically diminished. Accordingly, it would be reasonable to expect that narratives of the genetic posthuman will be told with references to animality that equate the *unmodified* human with the animal, as Linda does.

This is not the case for recent fiction. Where characters are likened to animals, it is very often the genetically modified or cloned posthuman who is *negatively* animalised, in contrast to the "civilised" human. In keeping with the notion that much contemporary fiction contests the idea of human "enhancement," animalisation is used as a mechanism by which to show human characters casting aspersions on posthuman characters. Through the eyes of the dominant human group, the posthuman is simultaneously post- and sub- human. This marks a shift from the traditional use of animal similes, which could be either validating or demeaning. For genetic posthumans, animality is an insult. But it is, of course, a *recycled* insult. Given the vast record of dehumanisation via animalisation in human history, the animalisation of posthumans is in fact an ironic choice. Where racist rhetoric has animalised outgroups in order to dehumanise them, authors of genetic posthumanity ironically animalise genetically engineered characters in order to demonstrate how they might become the next unjustly dehumanised community. *Never Let Me Go* does this extensively, as will be discussed in Chapter Six, and *Cloud Atlas* also somewhat ironically animalises its fabricant characters, as discussed in Chapter Seven.

Even in texts which follow *Brave New World* in applying animal comparisons to *humans* as well as posthumans, the animalisation is linked to the process of producing the posthuman figure. For instance, the original (human) son in *A Number* casts himself as various animals in order to understand how he was replicated:

> B1 not a limb, they clearly didn't take a limb like a starfish and grow
> SALTER a speck
> B1 or half of me chopped through like a worm and grow the other
> SALTER a scraping cells a speck a speck
> B1 a speck yes because we're talking that microscope world of giant blobs and globs (p. 25)

The forms of life chosen here – particularly "worm," and later "bug" – cast B1 as something to be trodden on: "anyone in their right mind would have squashed you" (p. 51). But this also implies that the *process* of creating the clones was dehumanising, and that the resulting clones are of animalised origin.

In *The Cloning of Joanna May*, Fay Weldon creates a similar implication by attributing Carl May's decision to clone Joanna to his "'bestial blood'" (p. 33). After a childhood spent living amongst dogs (p. 241), he does not want to have children lest he pass on his bestial character. But although the choice to clone Joanna is attributed (in part) to a desire to *avoid* passing on animal traits, Carl animalises Joanna:

> "I want to amuse myself. I can make a thousand thousand of you if I choose, fragment all living things and re-create them. I can splice a gene or two, can make you walk with a monkey's head or run on a bitch's legs or see through the eyes of a newt: I can entertain myself by making you whatever I feel like, and as I feel like so shall I do." (p. 109)

In the act of cloning Joanna, Carl dehumanises her by reducing her to the status of an animal in a recycled version of the abuse he received as a child. Joanna internalises her own animalisation, and she has recurring visions of Moreau-style species-blending, despite the fact that the novel's cloning technology is strictly human-only (pp. 157, 194).

As "originals," B1 and Joanna are not genetic posthumans – but by applying animal references to their cloning, authors establish their clones as animal products from the moment of their creation. There are two main types of immersive animal metaphors that are applied to genetic posthumans in the texts examined here. Firstly, there are frequent references to the body as meat; as something inescapable, butcherable, and able to be manipulated and packaged for consumption. Secondly, engineered characters are frequently sited in cage- or farm-like settings. The combination of metaphors, along with frequent posthuman-as-animal similes, achieves an overall sense that the genetically engineered or cloned character is viewed as an animalistic creature – profoundly *not* human – without relying exclusively on constant obvious animal references.[97] The posthuman-as-animal plays upon the once-ubiquitous notion of the racial other-as-animal by updating and mocking the assumptions of inferiority that arise in cases of genetic otherness. Just as a particular race might

[97] There is extra baggage to the specific choice of animalisation in the foregrounding of selfhood. A legacy of debate on the existence or nonexistence of souls in animals is imported to the posthuman context through their animalisation. Souls are, indeed, key components in both David Mitchell and Kazuo Ishiguro's treatment of clones. But again, there is an irony to their questioning of the existence of posthuman souls. It is *human characters*, in both novels, who express doubt at the existence of clone souls; and in both cases, the reader is exposed to the interiority (i.e. the first-person perspective) of the most sensitive and intelligent of clones, thus establishing a groundwork for acceptance of the existence of clone souls. Thus fiction writers of genetic posthumanity are preparing readers to disagree with the human counterparts they encounter in the texts.

deem itself the master race and all others part-animal, fiction writers of genetic posthumanism now, when racism has been deplored in civil society, recycle that racism by casting humans as a similarly shameful master race over the animalised genetic posthuman.

Posthuman Meat: The Body as Flesh

Much posthumanist theory expresses the view, sometimes without scientific evidence, that posthuman technologies are a way to ascend beyond the limits of the flesh. Some of the more theoretical work in the field predicts a posthuman future in which the self is independent of the body. Jean-François Lyotard's early contribution to posthumanist theory[98] in *The Inhuman* (1988) works on the premise that, given the inevitable eventual death of the sun, the task of the sciences is to disembody thought so that mental activity can continue once physical life becomes impossible (p. 13).[99] Rosi Braidotti (2013) makes similar claims about death and dissolution as the ultimate goal of humanity. In her view, death is not an end or a return, but a "becoming-imperceptible… it is part of the cycles of becoming, yet another form of inter-connectedness." (p. 137). The disappointingly atomic, sensate body must die in order for the posthuman subject to access these "waves of becoming" (p. 136).

N. Katherine Hayles, whose own 1999 posthumanist treatise has 63 different types of index entries for the body, embodiment, and disembodiment, takes the proliferation of critical attention to the disappearance of the body "as evidence not that the body has disappeared but that a certain kind of subjectivity has emerged. This subjectivity is constituted by the crossing of the materiality of informatics with the immateriality of information." (p. 193) Fiction writers of genetic posthumanism certainly work with the notion of a new posthuman subjectivity, but it is emphatically *not* one of disembodiment. On the contrary: they use animalisation to reinforce the inescapable materiality of the genetic posthuman body, and to degrade it to the status of meat.[100]

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[98] Although Lyotard does not use the term posthuman, *The Inhuman* is generally treated as a work of posthumanist theory.
[99] But for Lyotard, this is a doomed imperative. He holds that embodiment is a necessary factor for the existence of conscious thought: "there's a necessity for physical experience… in what we call thinking the mind isn't 'directed' but suspended. You don't give it rules. You teach it to receive." (p. 19)
[100] I use the term "meat" not to indicate flesh for eating, per se, but to indicate bodies that are reduced to the status of flesh for a variety of purposes. The genetic posthuman subject, when reduced to flesh, is denied their personhood and treated as a collection of body parts intended for medical, sexual, or economic consumption by unaltered human beings. They are treated as "meat" in the same sense that someone who is sexualised against their will might complain of being reduced to "a piece of meat." The choice of the term "meat" should not be taken to imply any suggestion of genetic posthumans being physically eaten; though they will typically be physically consumed in another sense.

This again demonstrates a corrective action against the biases of posthumanist theory. Those who would claim that posthuman technologies allow for the escape of the body work within the enhancement assumption: the body is to be overcome, and its limits surpassed. Against this assumption, fictionists write the genetic posthuman body as a distinctly fleshy entity. Literary scholar Gerald Bruns (2011) describes the historical understanding of the "body" as something to shape, beautify, worship and respect, as opposed to the historical understanding of "flesh" as meat: material and insensate (p. 66). The bodies of fictional genetic posthumans are not worshipped or respected; instead they are likened to animal bodies, carved up into parts, biometrically monitored, sedated, and controlled with drugs. However, these animalisations are usually represented as the politically motivated actions of unaltered human characters, and the inherent humanism of the genetic posthumans makes clear that their animalisation is unjust.

In its more literal iterations, the animalisation of fictional genetic posthumans places the posthuman alongside actual animals. The clones in *Where Late the Sweet Birds Sang*, for instance, are created next to animal clones, using a "'separate set of systems, but the same machinery'" (p. 42). In the early stages of their development, the clones are repeatedly likened to cattle (pp. 51, 56, 57). Colloquially, likening humans to cattle conjures images of a mass of bodies to be herded (as in the phase "cattle class," used to describe economy travel). This particular choice of animal suggests that clones are an indistinct herd to be "managed" by the novel's human characters. Indeed, the "management" of genetic posthuman bodies is a major project in the novel, particularly when it comes to those clones who will reproduce sexually and thus introduce genetic shuffling into the population. So-called "breeders" are removed from their community (pp. 115, 123), conditioned (pp. 124, 141), drugged (p. 126), inseminated (pp. 139, 141), and when they can no longer produce offspring, they are "put to sleep" (p. 127). They are kept contained, as if fenced, by being conditioned so that they feel physically nauseated when roaming outside their boundaries (pp. 144, 234). They are functionally animalistic. Their role is to get pregnant and produce offspring in a cycle that only ends with their obsolescence and death. They are treated in a manner reminiscent of breeding farm animals, and their health is valued only insofar as it promotes the health of their offspring.

Genetic posthuman characters are also herded and farmed in *The Island* and *THX 1138.* These can be considered together as texts in which genetic posthumans are dehumanised by having their autonomy stripped away and the health of their flesh promoted above all else. THX is useful to his

society insofar as his body can move instruments to create economically useful products. As discussed in Chapter Four, his body is sacrificed to his labour. His supervisors are shown analysing his biological functions via control boards that appear to show real-time biometric data. Those monitoring him report on his status in recognisably medical terms, with phrases like "current brain wave function on 1138, adrenal off point 74 or minus 6, no doubt of severe sedation depletion," and "sinex drop reading of less than 2000 degrees with an accompanying loss of greater than 350 degrees" (Lucas, 1971). These types of reports are peppered throughout the film, not as dialogue per se, but as background; similarly, medical equipment and biometric monitors are part of the design of the film, but are not featured or explained in any detail. The constant monitoring of citizens is taken as part of the fabric of the film's society. Yet this biometric monitoring is fundamentally dehumanising in that it reduces THX to a collection of functional parts – of useful meat.

The background monitoring of THX and his peers is echoed in *The Island*. The clones in Michael Bay's film spend their lives waiting, under the impression that the outside world is poisoned, hoping to win the lottery to go to the island – the world's last unpolluted paradise. They believe they are human, when in fact they are produced by Dr Merrick of Merrick Biotech for wealthy clients ("sponsors") who wish to have a ready supply of healthy body parts. The "island" is a façade, and the lottery is a mechanism by which the clones can be called away to be carved up for organs or used for surrogate pregnancies. In order to maintain the health of their products, Merrick Biotech monitors clones' health via toilets that analyse excretions, mechanised microsensors, brain scans, and dream monitoring. Biometric data is everywhere. In the film's first shots inside the clone compound, Lincoln Six Echo awakes to see the results of his latest "wellness evaluation" digitally displayed on a screen near his bed and on a bracelet on his wrist (Bay, 2005). Public announcements stress that "a healthy person is a happy person" (Bay, 2005). Biometrics are used to determine what the clones are allowed to eat, and Lincoln Six Echo – who despairs that he is not allowed to eat bacon – works "feeding the nutrient lines" (Bay, 2005) that sustain other clones who are kept unconscious in sacs of fluid. The collection of data is prioritised above the comfort of the clones, and one harrowing scene depicts tiny mechanised bugs – "microsensors" – crawling into Lincoln Six Echo's eyes. The clones' economic value depends on the health of their organs, and their freedom is severely constrained to preserve both. Their lives are spent in service of quality flesh. The meatiness of the clones is reinforced in a metaphor used by their human ally McCord: "Just cause people wanna eat the burger doesn't mean they wanna meet the cow." (Bay, 2005) But, as Brian Baker points out, the clones cannot be merely meat. They fact that they dream – and that fact is established at the very beginning of the film, which opens on Lincoln Six Echo's dream – proves that they have imaginative

powers that belie their status as simple copies. Baker calls the dreams "a 'biological' excess which compromise Lincoln's status as 'copy'" (2015). The particular content of the dream shows Lincoln Six Echo's yearning for freedom, as well as his fear of never finding it; these basic, relatable emotions humanise him and show him to be more than the "product" that Merrick deems him to be.

The premise of *The Island* is, like its subjects, cloned.[101] Other narratives to imagine the use of genetic posthumans for organs include the films *The Resurrection of Zachary Wheeler* (1971) and *The Clonus Horror* (Fiveson, 1979), and the books *House of the Scorpion* (2002) by Nancy Farmer, *Spares,* and *Never Let Me Go*. The popularity of this premise over the last fifty years, without significant precedent in early bioengineering fiction,[102] suggests a relatively new and enthusiastic cultural interest in the notion of the posthuman body as meat. Perhaps a growing understanding of human and animal genetics has led to a sense of equivalency – that all bodies are made up of the same basic stuff, and that if animal flesh can be packaged and sold, then human flesh can too.

In *Spares*, Michael Marshall Smith takes this idea to its extreme. Wealthy humans clone their offspring in order to keep a body for spare parts. Clones are kept on purpose-built industrial farms in "concrete wombs" (p. 197) until their "original" requires tissues or organs. The clones are then harvested and, if possible, kept alive to provide another quick fix for future accidents or illnesses. The development and wellbeing of the clone is of no concern: "it is left with droids for a while, until it's got the basic motor-skills and perception stuff worked out. Then they bring it out to a Farm, put it in a tunnel and forget about it until they need it" (p. 44). The clones of *Spares* exist to be divided. Michael Marshall Smith makes their status as flesh explicit by describing the tunnels in which they live as "a butcher's shop where the meat still moved occasionally" (p. 45).

With the genetically engineered body established as an animalised and denigrated piece of meat, escaping or limiting the body is a common motif. A large proportion of genetic engineering narratives feature invented drugs, or new uses for drugs, and these are usually mollifying in nature; the user is lulled into a sleep, or at least a docile waking state. In *Brave New World,* soma is given to calm the citizens of the World State; it induces a feeling of wellbeing which prevents

[101] DreamWorks was taken to court by the makers of *The Clonus Horror* (1979) on allegations of copyright infringement (Snyder & Archerd, 2005). Additionally, Michael Marshall Smith had sold the film rights to *Spares* to DreamWorks (Mulrooney, 2009), and no film adaptation eventuated. But despite the similarities between *Spares* and *The Island*, there is no record of any legal action in that case.

[102] Early fictional bioengineered bodies were largely the results of isolated experiments by lone scientists. In narratives featuring mass cloning or genetic engineering, texts produced before the 1970s tended to predict labour applications rather than medical applications, even though transplantation has been active and successful since 1950 for kidneys, and since 1905 for corneas, and there is evidence of skin grafts dating back thousands of years (Hamilton, 2012, pp. 10, 210, 244).

excessive emotionality or uprisings. In *THX 1138*, the use of drugs is mandated, and drug evasion is a criminal act. In *Where Late the Sweet Birds Sang*, drugs are given to those clones who are capable of falling pregnant; they are "given soporifics at bedtime and stimulants at breakfast" as a minimum (p. 141) in order to keep them optimised for their reproductive use. Molly, having transgressed against the reproductive norms of her community by hiding a naturally conceived child, is drugged into unconsciousness for a year and a half (p. 140), suggesting punishment but also preventing her from raising her child independently of the clone community. In *Cloud Atlas*, soap is given to fabricants to regulate their work schedule and prevent escape, as fabricants will "expire" without it, and humans control the supply. The remarkably common recurrence of drugs in genetic engineering narratives illustrates how thoroughly the animalised genetic posthuman is expected to be *controlled*. Human characters regulate so many aspects of the genetic posthuman body – via drugs, biometric monitoring, forced organ donation, and so on – that unaltered humans can be seen as the farmers to genetic posthumans' animals.

The Invisible Fence

The role of unaltered humans as farmers is shown on the page and on the screen in the way that genetic posthumans are spatially contained and herded. As a literary technique, animalisation is open to interpretation; animal images can conjure notions of freedom or strength. The use of caging metaphors shuts down the possibility that the animalised genetic posthuman may be free. Fictional genetic posthumans are overwhelmingly depicted in contained spaces: these range from small "cages" such as B1's closet in *A Number*, to the "factory farm" for holding clones in *Spares*, to the "free-range" idyllic (yet limited) spaces in *The Island* and *THX 1138*. In those and several other cases, the genetic posthuman is animalised by their containment. But this is largely a symbolic animalisation. The fences surrounding them are often conditioned, intuited, or implied. These invisible fences place the genetic posthuman in a hybridised human-animal state. They are human-like in body, yet spatially animalised.

Spatial limitations are incredibly subtle, though present, in *A Number*. Perhaps reflecting the fact that the cloned characters did not know themselves to be clones, they are not kept fenced in any obvious way. However B1, the "original" of his cloned brothers, self-imprisons to avoid facing the reality of his neglectful father. He "didn't dare get out of bed" during his crying fits, lest he find that no-one had stopped outside his door to check on him (p. 32). B2 meets B1 in a deliberately open place so that he cannot be caged: "I was glad we were meeting in a public place, if I'd been at home

you can't run away in your own home and if we'd been at his I wonder if he'd have let me go he might put me in a cupboard not really, anyway yes I got up and left and I kept thinking had he followed me." (p. 38) The language used here – "let me go," "followed me," "can't run away," "put me in a cupboard" – suggests a kind of human-animal caging and hunting relationship between B1, the original, and B2, the clone. Salter's recurring concern about B1 hurting B2 in the same exchange reinforces the idea that he might be hunted, and indeed Act Three closes with "I'm afraid he'll kill me" (p. 46) – which, it turns out, he does. The hunting connotations are cemented by Salter's speculations after B1 kills B2: "did you follow him or lie in wait in some dark?" (p. 50) B1's implied drive to imprison B2 does not come from B1 – it is always a fear that others have – and in the play's fourth act, the real imprisoner is shown to be Salter. He reminisces about enclosing B1 in a cupboard, and about later enclosing him in a care facility (p. 52). The ambiguous caging here – with both humans and clones enclosed – perhaps reflects that the cloning is recently discovered, and no human-posthuman hierarchies have been entrenched. But the fact that hunting and caging rhetoric is used at all indicates that there is an intrinsic connection between the practice of cloning and the need or desire to limit freedoms.

The cage in Michael Marshall Smith's *Spares* is much more apparent. The spares are segregated from human society completely.[103] Their homes are called Farms, though they are composed of tunnels rather than fields and barns. Descriptions of the Farms emphasise the poor conditions in which the spares live:

> Living in tunnels waiting to be whittled down, while mangled and dissected bodies stumped around them, clapping hands with no fingers together, rubbing their faces against the walls and letting shit run down their legs. (p. 45)

Smith gives an element of circularity to the spares' subsistence. They form a closed loop: "Shambling naked bodies, crawling in darkness until the end of time, feeding off each other's bodies and excrement until there was nothing left" (p. 197). In this sense, the residents of the Farms are being factory farmed. They are so closely packed, so injured, and so unkempt, that they form a bedraggled mass reminiscent of farms where crates of chickens or pigs are piled on top of one another. Churchill allocates a rare unbroken monologue in *A Number* to a similar idea of a human society based on small underground cells in which living and dead bodies exist and decay side-by-side (pp. 56-57). Margaret Atwood gives another version of the same self-sustaining, yet brutal system in *Oryx and Crake* (p. 243). That these *Human Centipede*-style

[103] They are, in fact, also shut out of the book. Smith centres his story on Jack Randall, a genetically unaltered human trying to figure out who killed his friend. The clones' role in the story is secondary to Jack's, and their main function is to serve as a plot point to explain Jack's absence from the MegaMall skyscraper (he managed a Farm) and to create sympathy for him (because he tries to free them.) The clones themselves are largely kept out of sight, and are not developed much as characters. For that reason, *Spares* is referenced only sparsely in this thesis.

horror images recur in genetic engineering narratives suggests that genetically engineered posthumanism is a kind of anti-humanism; that human dignity is threatened by the reduction of the body to an engineered, eating, excreting, neglected animal.

Not all caging of the genetic posthuman body is this explicit. Subtle spatial limitations are often used to support plots that require the complicity of the genetic posthuman. Chapter Six will show how "free-range" clone farming operates in *Never Let Me Go*, though there are many other instances. In *The Island* for example, clones are contained in a bunker, but the bunker is made luxurious with hotel-like bedrooms, gyms, pools, designer clothing,[104] and imagery of the titular island. Indeed, the clones' areas of the bunker are far more luxurious than the human workers' areas, which are dark, dingy, and industrial. But these comforts are not provided out of any sense of respect for the dignity of the clones; rather, they contribute to the clones' health and therefore their value as meat. The gym and pool, for instance, are shown in particularly popular use. Luxuries that would *not* improve the clones' health are conspicuously absent. There is little luxury in the dining room for instance, where unappetising health foods are doled out, and treats are withheld. This environment is reminiscent of a free-range farm, where animals are given room to roam, on the understanding that their meat, milk, and eggs will be of higher quality (and thus command a higher price) than if they were caged.

The manipulative nature of cloning societies is depicted in texts which combine farming models. In *THX 1138*, citizens appear free to roam between their home spaces and work spaces; though the state retains the power to cage them in disorienting prison spaces; similarly, in *Where Late the Sweet Birds Sang*, most clones are free-roaming, but breeders are conditioned to stay within the invisible borders of their habitat. The human[105] "farmers" in these environments manipulate the spatial limitations of their animalised subjects according to the function they wish the posthuman animal to fulfil.

Yet the animalisation of the posthuman other is never fully convincing. As in *Animal Farm*, all (posthuman) animals are created equal, but some are more equal than others. Genetic posthuman characters are so often represented as intrinsically human – created equal to their unmodified human peers – but the extent to which the animalised genetic posthuman is made meat, caged, and

[104] Motivated perhaps by product placement payments more than artistic intent. Puma-branded shoes are especially prominent.

[105] The biological status of those doing the "farming" is not always clear. *THX 1138*, in particular, does not go into detail on whether supervisors are genetically engineered. However, it is inferable that any genetic engineering regime must have, at one point or another, been designed by unaltered humans. In most texts, that is shown explicitly.

hunted, depends on their potential value within the meat economy. In writing the posthuman as animal, contemporary authors recycle the politically suspect animalisations of wartime, slavery, and genocidal regimes. By drawing on the tradition of animalising racial otherness, narratives of genetic posthumanism draw attention to the potential oppression of posthumans. To contemporary readers with some cognizance of racist propaganda, animalisation rings alarm bells. Animalising the genetic posthuman thus means politicising their diminished selfhood.

Part Three: Literary Case Studies of Exploitative Genetic Posthumanism

Chapter Six: The Veiled Dehumanisation and "Ethical" Abuse of Clones in *Never Let Me Go*

> 'I know how lucky I am, getting to be at the Cottages. But you Hailsham lot, you're *really* lucky.'
>
> – Kazuo Ishiguro, *Never Let Me Go*, p.150

> 'It might look as though you were simply pawns in a game… But think of it. You were lucky pawns.'
>
> – Kazuo Ishiguro, *Never Let Me Go*, p.261

Kazuo Ishiguro's *Never Let Me Go* (2005) follows three young clones as they approach their inevitable deaths at the hands of the faceless authorities who will harvest their organs. The novel's scenario seems designed to provoke moral outrage; yet its tone is gentle. Its setting is serene, its events are peaceful, and its protagonists are largely accepting of their fates. Ishiguro leaves readers to experience indignation on their own. A sense of outrage seldom creeps onto the page explicitly, because in the world of the novel, the abuse of these particular clones is comparatively ethical. *Never Let Me Go* features each of the hallmarks of genetic posthuman abuse explored in Part Two – othering, commodification, and animalisation – but it obscures these forms of dehumanisation in a mollifying regime of "humane" treatment.

The opening pages of the novel are characterised by a sense of good fortune. Kathy H., the novel's narrator, is given an entrance which emphasises her privilege at every turn. She brags about her career success as a "carer" (nurse), juxtaposes herself as a lucky alumna of the well-appointed Hailsham school against a jealous non-Hailsham "donor" (patient), narrates her freewheeling drive through the English countryside, and romanticises her childhood to such an extent that she compares its setting to an actual picture book (pp. 3-6). Arguably, Kathy *is* lucky; she is afforded a privileged education and humane upbringing that contrasts sharply with the sub-standard experiences of many other recent genetic posthuman characters. But Kathy's naive idealisation of her situation belies the fact that she is still a victim. She, and the novel's other main characters, Tommy and Ruth, are clones who have been produced to "donate" (forcibly surrender) their organs and die in early adulthood. Kathy's almost smug sense of superiority in the opening pages, coupled with the revelation that she is soon to be killed, establishes the contradictions that Ishiguro weaves throughout the novel: freedom within captivity, privilege within victimhood, morality within villainy.

The novel's moral villains[106] are the staff at the Hailsham boarding school, who make efforts to minimise the clones' suffering, but do not question the premise of raising their cloned charges to be killed. These staff members object to the systematic abuse of genetic posthumans; yet their work to create an "ethical" segment within the cloning market ultimately serves to prop up the system to which they object. Their students *will* be killed. They merely provide slightly better care in the meantime. The novel's depiction of "ethical" abuse is, in the context of genetic engineering fiction, Ishiguro's main innovation. Like so many of his contemporaries, he foresees the potential for abuse of the genetic posthuman; but he also foresees the potential for ethical objections to that abuse within the world in which it occurs. In the world of the novel, the practice of neglectfully raising cloned children for their organs is reviled by some. The Hailsham school is a testing ground: if its cloned students, given separate and (theoretically) equal access to a good education, can resemble unaltered human children and produce heartfelt works of art, then perhaps the exploitation of clones as sources of organs is inhumane. As an "ethical" alternative to mainstream clone-raising facilities, Hailsham would appear utopian. Yet despite the supposedly ethical quality of the Hailsham cloning regime, its subjects occupy a sub-human social stratum. Like many of the other fictional exploitation regimes examined in this thesis, Ishiguro's clone-producing human society animalises its genetic posthumans. The clones are treated as intelligent livestock, and their school grounds act as a kind of "farm." In this way, Ishiguro writes a roughly contemporary England approaching cloning for human organs in the same way it now approaches farming for food – there is enough ethical concern over each activity to justify a niche market in which the ethics of production are (at least in theory) improved. Thus the clones of Hailsham are effectively "free-range" organ producers in the same way that some chickens are "free-range" egg producers.[107] Ishiguro represents Hailsham as the "ethical" market segment of an abusive cloning economy. But this is a misleading ethics. Within their environment of relative privilege, the clones' advantages are shown to be little more than simulations of the privileges and freedoms one would expect English schoolchildren to enjoy. They are allowed to roam the beautiful Hailsham campus, obscuring the fact that they are caged. They are given the opportunity to prove their humanity through art, despite the fact that they will never be accepted as human. They are given hope of deferring their organ donations if they find love, but that hope is false. They are humanised just enough to understand and mourn their fate, but not enough to challenge or escape it.

[106] I term the Hailsham staff "moral villains" because, although most are depicted as being well-intentioned, they choose to participate in a programme in which clones are raised to be killed as soon as they reach adulthood. The Hailsham staff members are the only authority figures readers will encounter in the novel, and they are its "villains" (though complex villains) insofar as they represent the human use of clones for organs.

[107] I am not the first to make this analogy; Sarah Munch (2012) Nathan Snaza (2015) have also done so.

In this way, Ishiguro complicates the idealism of Hailsham's advocates by demonstrating the superficiality of their project. The supposed humaneness of the Hailsham environment is shown to be little more than a facade, and the "ethical" treatment of the Hailsham clones serves little purpose except to placate human consciences without adequately interrogating the basic premise of raising clones for human use. In short, *Never Let Me Go* critiques those who would, in times of systemic dehumanisation, soothe their consciences by applying a veneer of humaneness to their treatment of the Other. However, the novel's critique of the cloning regime is achieved by proxy. Ishiguro's narrator is a clone who, having grown up within the regime, lacks the objectivity to openly criticise it. Kathy's narration does triple duty: it reveals the psychologically stunting effect of the Hailsham experiment on its subjects, thereby allowing the reader to witness its false "morality" without the need for direct condemnation, all while demonstrating the relatable humanity of the clones' minds. Kathy fails to understand that she has been dehumanised, but the reader is led to recognise her humanity and comprehend her victimhood. Ishiguro's depiction of the social and cognitive development of the clones over the course of their childhood and adolescence privileges their ordinariness as children and teens, while incorporating the psychological effects of their abuse.

I close this chapter with an analysis of how Ishiguro constructs the clones as inherently human creatures, inhibited by their social (not biological) status. They show a tendency to "act" rather than inhabit their own identities; they long for (but are denied) familial relationships; and they self-define in relation to the "trash" humans they are told they were cloned from. Even with their relatively privileged upbringings, they are shown to be stunted; but Ishiguro frames their inhibited social functioning as a product of their treatment by humans, rather than as an intrinsic characteristic of clones. By demonstrating the impossibility of ethically cloning for organs, Ishiguro creates space for the endorsement of clones as possessors of a fundamental universal humanness that sits at odds with their diminished socio-biological status. The slivers of human privilege afforded to the Hailsham clones are shown to be insufficient for characters who experience the same thoughts and emotions as any other children. *Never Let Me Go* is thus a critique of the practice of dehumanising genetic posthumans, but it is also a critique of attempts to create a humanising space within that fundamentally dehumanising practice. The root of the Hailsham clones' misery is the fact that they are Othered in the first place; no false freedoms can make their eventual butchering an ethical endeavour.

Lucky Trash: Problematising "Ethical" Dehumanisation

Kathy's narration of her childhood with friends Ruth and Tommy represents clones as entirely ordinary children, with a love of play, a tendency towards clique politics, and a healthy curiosity about the world around them. Yet, like so many other genetic posthumanism stories, *Never Let Me Go* depicts humans (and in this case, relatively compassionate humans) viewing the clones as animals. For instance, when Hailsham's headmistress Madame shrinks away from the "perfectly civilised" students, she does so "in the same way someone might be afraid of spiders" (pp. 34-35). This juxtaposition of civilised humanity and animalism contains within it the place of the clones within society: somewhere between human and animal. When the clones, as adults, confront their former guardians about their chances of delaying their organ "donations," the guardians speak frankly of the Hailsham project in a manner which makes their animalisation of the clones unambiguous. According to the guardian Miss Emily, clones were considered "less than human" (p. 258), and, given the rate of scientific advancement, "there wasn't time to take stock" of their status or rights (p. 257).[108] The animalisation is continued in Madame's refrain that the clones are "poor creatures" (p. 267), yet her sympathy is shown to be insincere, given that she reacts to the adult clones "as if a pair of large spiders was set to crawl towards her" (p. 243). The repeated references to the clones as spiders is reminiscent of the dehumanisation tactic of likening racial others to vermin (see page 30). Tommy rages in the mud after his meeting with Miss Emily and Madame, reinforcing his animalistic status (p. 269). Ishiguro's choice of the word "cagey" to describe Tommy's manner after this incident further likens Tommy to a caged animal, as well as expressing his wariness of the guardians.

Just as animals are farmed for meat, the clones are farmed for their organs. But like free-range animals, the value of their flesh is prized as superior and the preservation of healthy flesh is one of the main priorities imposed on the life of a student clone. Their education includes constant coaching to "never take chances with our health" (p. 84). They are warned off smoking, and are told by their guardians that "for you, all of you, it's much, much worse to smoke than it ever was for me" (p. 68). The guardians even fear the students' use of Walkmans, in case they promote ear infections (p. 101). Herein lies a key irony in the lives of the clones: they are bred to keep humans healthy, but health is a higher priority for clones than humans. Clones must avoid vices to make up for those of their human counterparts. While the guardians seek evidence of humanity in the clones, they repress many of the pleasures of being human (hugging (p. 75), smoking, asking questions, forming sexual relationships (p. 93)) in order to preserve the value of

[108] The choice of the term "stock" here could be read as a pun on livestock, as well as in its contextual sense as a form of tallying or evaluating.

the organs – the quality of the prized meat-product – that the clones will provide.

The health imperative instils Hailsham students with a hyperawareness of their bodies as collections of useful, removable pieces. Theirs are bodies that are not meant to be whole, but segmented; they will be divided into parts, and each part will be used "to supply medical science" (p. 256). Long before the students begin their "donations," they are referred to as "spare parts" (p. 99; 122). They express a fear of parts detaching: "Tommy had been told of a student who'd gone to sleep with a cut on the elbow just like his and woken up to find his whole upper arm and hand skeletally exposed, the skin flopping about next to him" (pp. 84-85). Later, when the students become donors, Kathy observes that their management of pain is centred on the idea of segmenting their own bodies: "[Kathy's patient] was willing her eyes to see right inside herself, so she could patrol and marshal all the better the separate areas of pain in her body" (p. 231). At Hailsham, they train for this body segmentation by joking about their bodies as collections of parts:

> the idea of things "unzipping" carried over from Tommy's elbow to become a running joke among us about the donations. The idea was that when the time came, you'd be able just to unzip a bit of yourself, a kidney or something would slide out, and you'd hand it over. (p. 86)

This light-hearted take on their impending deaths obscures the horror of their donations. The clones exist to be cut up; it is the reason for their creation. But Ishiguro does not focus on extractions, blood, death, or flesh. Instead, he sanitises the clones' surgical deaths with humour. He depicts their lives and obscures their deaths; this is both a humanising tactic, and a way of allowing readers to realise the horrors of their inevitable butchering by inference.

Indeed, much of the animalisation of the clones is achieved by implication. The Hailsham environment does not, at first glance, appear to support the notion that the clones are animalistic. It is almost stereotypically idyllic; unlike the clones produced and raised for the novel's unseen (but implied) mainstream organ industry, the Hailsham clones have access to education, open spaces, and avenues for self-expression so that they might demonstrate that "it was possible for them to grow to be as sensitive and intelligent as any ordinary human being" (p. 256). As opposed to the unseen "'vast government "homes"'" (p. 260) for other clones, the Hailsham grounds (and later the Cottages where the clones live as young adults) fit the serene English pastoral ideal. But this ideal is shown to be illusory. Through subtle signs of caging, Ishiguro likens Hailsham to a free-range farm. Like the images of farms on cartons of free-range eggs, the serene Hailsham landscape is more a mollifying marketing tool than a symbol of true freedom.[109] With its landscape of both beauty and

[109] It is possible for free-range eggs to be laid by hens that have never been outdoors. In many countries, the phrase "free-range" has no legal definition and can be used by meat and dairy producers with no verification of their practices. For

subtle fences, Hailsham functions to invert the pastoral tradition in literature. Its romantic idealism and country charms are recalled fondly by Kathy, but its purpose (preparing students for death) brings the scent of the abattoir to a pastoral tradition that has long overlooked all that is red in tooth and claw.

As an adult, Kathy remembers parts of Hailsham as looking like "those sweet little cottages people always had in picture books when we were young"(p. 6), but her narration reveals sinister details hinting at the oppression beneath the surface freedoms of the school's landscape. The school "stood in a smooth hollow with fields rising on all sides" (p. 34); this suggests that visibility of the outside world is limited, and that the clones are subtly confined. The woods at the top of the hills are described as a "presence... they cast a shadow over the whole of Hailsham" (p. 49). Persistent myths about murder in the hills keep the students from venturing outside of Hailsham grounds. Indeed, the outside is treated almost as a foreign country. The students get an opportunity to procure "things from outside" during the trading frenzy known as the Sales (p. 41), and these outside goods are regarded with an almost-religious respect as artefacts of the "fantasy land" beyond Hailsham's gates (p. 66). Yet the mechanisms by which the students are incarcerated are only partially physical, and clearly psychological containment is entrenched in the students' minds. In one scene, the students theatrically mime being electrocuted by fences; yet a comment from a guardian reveals that the fences at Hailsham are not electrified (p. 77). To Kathy, the outside is associated with a kind of ill-defined fear: "I didn't know much then about the world that awaited us beyond Hailsham, but I'd guessed we'd need all our wits about us" (p. 104).

Once they leave the artificial environment of Hailsham, the clones are transported to an area euphemistically called the Cottages, but in reality a converted farm. Here, their humanising education comes into contact with their animalistic purpose. They persist unenthusiastically with the ill-defined task of completing a senior essay, showing no expectation that it will be finished or read (p. 94; 113), and displaying a growing awareness that their educations are irrelevant to their adult lives. Meanwhile, they live in converted barns and stables, emphasising the idea that they are being farmed (p. 114). Though their physical Hailsham boundaries are gone, and the practical inhibitions of donations and hospitalisation are yet to begin, the "cosy state of suspension" (p. 140) at the Cottages exists within entrenched mental boundaries. The clones

example, in New Zealand the Ministry for Primary Industries publishes a code of welfare specifying expected conditions for free-range animals. However, compliance with the code is not mandatory and Ministry farm audits check only for food safety. Producers falsely claiming that their products are "free-range" may be prosecuted under commercial law, but will usually not have broken any animal welfare laws (Consumer NZ, 2014).

remain “fearful of the world around us” (p. 118) and, in their early days there, “rarely stepped beyond the confines of the Cottages” (p. 116). In this way, they resemble farmed animals that are trained by electric shocks not to approach their fences. When their gates are left open, they choose not to escape.

Although the free-range farming of the clones in *Never Let Me Go* does not function as a truly ethical mode of raising clones for organs, it does function as a form of segregation. Robbie B. H. Goh (2010) describes *Never Let Me Go* as a “postclone-nial” novel, “playing out those concerns of the Third World body as the site of the discriminatory markings and power play of capitalism and technology” (p. 50). Yet the human-clone politics within the novel are more specifically segregationist than merely post-colonial. The clones are contained at a distance from human society, and are conditioned not to escape their boundaries. They are kept separate from humans, but within the Hailsham experiment, arguably equal. Indeed, in an interview conducted after the release of the novel, Ishiguro discussed its setting explicitly in terms of historically recent segregationist regimes:

> For a long time I’ve been struggling with the setting. If I set it, say, during the Bosnian wars in the 1990s, it becomes a book about the Bosnian wars in the 1990s. If I do author events, I will get lots of questions about Bosnia, and that would be perfectly understandable. I could just as easily move it to the United States and talk about how America has not quite confronted its relationship with the slavery and segregation eras, but then it becomes about that. So, do I write something weird, about a strange, abstract kind of place, with alien types of being behaving strangely? No: a novel has to be set somewhere. (Ishiguro, quoted in Matthews, 2009, p. 119)[110]

Ishiguro cites the Bosnian wars and slavery-era United States as potential settings – these are distinctly specific to the core theme of dehumanising regimes and their effect on human dignity.[111] These are settings of oppression; settings in which human beings behaved extremely badly towards their fellow human beings on the basis of perceived biological (racial) differences.[112] The clones of *Never Let Me Go* differ from their human contemporaries only in their biological status and in the socialising elements that are tied to that status. They think, dream, paint, feel, and act like human children; yet they are sectioned off and treated as something less. Ishiguro has, like so many of his fellow authors of genetic posthumanism, cast parallels between his genetic dehumanisation narrative and historical moments of racial dehumanisation.

[110] This comment was made at a 2007 conference, and though it appears to refer to a particular novel, no novel is named. However, given that *Never Let Me Go* was Ishiguro’s most recently-published novel at the time, it is likely that he was referring to it.

[111] Critics have also likened the novel’s setting to Nazi death camps (Armstrong, 2014, p. 452).

[112] Racial segregation is by no means the only lens through which to read the novel. Given its English setting, much can also be made of a classist reading. Bruce Robbins (2007) provides such a reading, in which the clones’ impending “completion” or death parodies the false dreams of upward mobility among disadvantaged classes (p. 292).

The particulars of the clones' segregation closely follow practices in the two segregationist regimes referenced by Ishiguro. In the American South after the end of slavery and during the Reformation, black and white children were educated separately. The famous "separate but equal" credo emerged from a piece of legislation aimed not at developing a model for race relations, but for resolving the practical matter of allowing black students to attend agricultural colleges in Southern states. The phase "separate but equal" is a colloquial interpretation of the principle set out in the Agricultural College Act of 1890[113]:

> The establishment and maintenance of [segregated] colleges *separately* for white and colored students shall be held to be a compliance with the provisions of this act if the funds received in such State or Territory be *equitably* divided as hereinafter set forth. ("Agricultural College Act," 1890)

The Act stated that land colleges could refuse to admit black students only if those students had access to separate but equitably funded institutions. In practice, "separate but equal" came to represent the way in which many black citizens in Southern states lived − with buses, water fountains, restaurants, and hotels kept separate. The principle was seen as a compromise between Northern federal lawmakers, who generally favoured integration, and Southern state lawmakers, who generally favoured segregation. In reality, however, many in the South followed only the "separate" half of the doctrine, and resources and facilities for black citizens were almost invariably substandard. This time in American history was characterised by a simultaneous liberalisation of the rights of African Americans in the North, and the imposition of dehumanising segregationist policies in the South.

Similarly, the Bosnian War featured widespread racial prejudice and segregation. Under the communist rule of President Tito, the former Yugoslavia was home to a relatively integrated mix of ethnic groups.[114] But after Tito's death in 1980, ethnic tensions rose. The Bosnian War was triggered in part by the political mobilisation of regional "ethnic enclaves" where low diversity contributed to racial prejudice (Kunovich & Hodson, 2002). During the war, ethnic cleansing was widespread. Serbian paramilitary forces tried to eliminate Muslims (and to a lesser extent, Croatians) from the areas within their control. Muslims and Croats were forced out by threats of violence, cultural artefacts were destroyed, and in some cases, residents were massacred (Burg & Shoup, 1999, p. 173). Similarly, Croatian authorities deported Serbian residents from the Croat stronghold region of Posavina (Burg & Shoup, 1999, p. 176). Ethnic cleansing resulted in ethnically homogenised

[113] Similar language had been used at the state level in an 1887 law concerning Florida railway accommodations. In 1890, Louisiana passed the Louisiana Separate Car Act, which was challenged in the famous Plessy v. Ferguson case of 1896. The ruling against Homer Plessy, a one-eighths black man selected by a civil rights group to ride deliberately in a white railcar, is often cited as the first time that the doctrine of "separate but equal" was upheld in court.

[114] Interracial marriages accounted for as many as 15% of all marriages in some areas (Burg & Shoup, 1999, p. 42).

communities which created, in effect, a segregated region. In the decades since the Bosnian War, racial segregation continued; for instance, Croat and Bosniak children were still segregated in some schools in Bosnia and Herzegovina until very recently, with the practice declared illegal only in 2014 (Dzidic, 2014).

The fact that Ishiguro was considering these specific historical settings indicates the extent to which segregation and dehumanisation were central to his narrative. In particular, both settings involve liberal and separatist elements, racial tension after a period of liberalisation, and segregation in the schoolyard. Ishiguro uses a very similar social landscape as a backdrop to his portrait of a human / genetic posthuman society. But he is not the first to allude to segregation as a way to express the dehumanisation of genetic posthumans. The consistency with which authors of genetic posthumanism depict systems of human-posthuman separation is revealing. In almost every contemporary narrative of bioengineering, genetic posthumans are cast below unaltered humans in a social hierarchy based on segregation.[115] As discussed in Chapter Five, Michael Marshall Smith's *Spares* depicts human characters housed in giant skyscraper cities where your status rises with your floor number (p. 100); clones, conversely, are kept on "Farms" - entirely outside of any human society or hierarchy. In the Nea So Copros society of David Mitchell's *Cloud Atlas*, discussed further in Chapter Seven, "purebloods" (genetically unaltered humans) are considered superior to "fabricants" (lab-grown clones), who are kept apart from purebloods in the "sealed dome" of their workplace (p. 187). In Margaret Atwood's *MaddAddam* trilogy, examined in Chapter Eight, the sealed dome makes another appearance. Genetically designed Crakers are kept hermetically sealed in a so-called "Paradice" dome so that unaltered humans can control their environmental influences and keep them apart from human society. It would be too simplistic to explain away these depictions of segregation as a matter of difference – the separation of one species from another. Genetic posthumans would not necessarily be a different species at all.[116] Especially if they are clones, they are by definition *very* like (genetically identical to, excluding any epigenetic divergence) the human models from whom they are, in fiction, commonly segregated.

[115]There are counter-examples, but they are rare. In Andrew Niccol's 1997 film *GATTACA*, for instance, those who were born as a result of embryonic selection are considered superior to those who were naturally conceived. However the embryonically selected elite cannot be considered as genetic posthumans of the same type as cloned or genetically engineered characters, since the geneticists in *GATTACA* do not actively "improve" embryos but rather select the "most compatible candidate" (DeVito, Shamberg, Sher, & Niccol) from available embryos. This is still, however, a "genoistic" (in the language of the film) class system which has "discrimination down to a science" (DeVito, Shamberg, Sher, & Niccol).
[116] It is reasonable to assume that the Crakers would be categorised as a non-human species on the basis of the non-human genes incorporated into their genome. However, Ishiguro's, Mitchell's, and Marshall Smith's genetic posthumans appear to be built entirely from human genetic material.

The unaltered human characters who section themselves off from genetically altered or cloned characters appear to do so on the basis of false assumptions about their intrinsic differences. Here, writers of genetic posthuman fiction draw on a recent history of false differentiation. Racial segregation relies upon an overstatement of difference – a false belief that one race is fundamentally different to (and incompatible with) another. The authorial choice to model genetic posthuman segregation on racial segregation thus exposes and mocks the fallacy of these assumptions of difference. Given that these texts are written in the late twentieth century and early twenty-first, when racial segregation is no longer considered acceptable in most Western countries, the choice to model human-posthuman segregation on an outmoded social practice encourages readers to reject the segregation outright. A contemporary reader consuming a story about clones kept separate from unaltered humans, recalling recent examples of racial segregation, will likely judge the dehumanisation of genetically engineered characters to be immoral. Ishiguro recognises and exploits this contemporary moral judgement by updating his imagined dehumanising cloning regime for the socially-conscious first-world nations of the twenty-first century. During the Bosnian wars, the American slavery era, or any other historical moment of widespread dehumanisation, there were dissenters; those who question the actions of the oppressors and advocate for peace and equality. Ishiguro imagines what those dissenters would do to support the dignity of clones produced solely for their organs, and posits that they would do little more than soothe their own egos.

The historical parallels to the Hailsham project are further emphasised through Ishiguro's choice to plant several historically familiar mechanisms of dehumanisation into the Hailsham regime. In particular, Ishiguro depicts human characters treating clones with a sense of revulsion, thereby inciting feelings of worthlessness or dirtiness in the clones. These measures call to mind some of the dehumanisation techniques discussed in Chapter One, and resemble the campaigns against "unclean" Jews in Nazi Germany, or the "cleansing" rhetoric of genocides in Cambodia and the former Yugoslavia. Disgust is thought to be an adaptive response, enabling omnivores to reject rancid foods and thus avoid food poisoning. Jonathan Haidt (2012) argues that disgust has become a component of ingroup-outgroup socialisation, and underpins feelings of xenophobia (pp. 148-149). In *Never Let Me Go,* revulsion and internalised disgust act to diminish the clones' self-worth and reinforce the invisible fences at the borders of the free-range farm. They allow human characters to sustain human-clone segregation and maintain control of clone populations.

Ishiguro's human characters respond with a familiarly xenophobic (possibly what could be

termed in the future genophobic) revulsion to clones' bodies. Madame is said to be scared of Hailsham students (p. 33), and her face betrays "a real dread that one of us would accidentally brush against her" (p. 35). As the students recall later, "she didn't like us even coming near her" (p. 177). Madame's dread recurs many years later, during her encounter with Kathy and Tommy. As soon as she realises Kathy's presence, she reacts "like I'd thrown something at her... she saw and decided in a second *what we were*" (p. 243; italics in original). She "tucked her shoulders in tightly as she passed between us" (p. 246). Madame's dread is so obvious to the clones as to infect the responses they perceive they would receive from other non-cloned humans. After talking to a woman at an art gallery, Ruth imagines that she would have avoided the students if she had known they were clones: "'Do you think she'd have talked to us like that if she'd known what we really were?'" (p. 164)[117] Even within the clones' dream of being recognised for their humanity and granted a deferral on their organ donations, they still assume that they would be kept away from human society. "'Perhaps they've got some other place'" Tommy theorises: "'somewhere separate for people like us'" (p. 240).

The clones internalise their repulsiveness to such a degree that they self-identify as trash. Images of rubbish, both literal and metaphorical, occur at pivotal moments in *Never Let Me Go*, and often describe or symbolise the clones' origins and behaviours. In the Hailsham days, cloned characters are said to talk or believe "rubbish" on multiple occasions (pp. 23, 24, 51, 55), and Tommy's art is repeatedly referred to as "rubbish" (pp. 105, 106). During the period at the Cottages, rubbish becomes symbolic of Ruth's naïveté; dreaming of working in an office and finding her genetic "model." Shedding her Hailsham identity, Ruth relegates her collection of Hailsham art to the rubbish bin (p. 129). She then finds her new ideal in the form of another piece of rubbish: a mud-stained magazine advert, discovered on the sodden ground, depicting modern office workers (p. 142). Just as her dream of working in an office is borne of rubbish, so too it ends with rubbish. After chasing an office worker who she believes to be her possible "model," Ruth breaks through her own naïveté with an outburst in which she identifies "rubbish" as the origin of the clones:

> We're modelled from *trash*. Junkies, prostitutes, winos, tramps... If you want to look for possibles, if you want to do it properly, then you look in the gutter. You look in rubbish bins. Look down the toilet, that's where you'll find where we all came from. (p. 164)

As the clones move towards becoming carers and donors, rubbish becomes associated with the donors' status as biological detritus, to be discarded once they are no longer useful. As Ruth

[117] While the clones are considered repulsive as a sub-species, the possibility of breeding them to be a super-species was deemed even more unsavoury: "'a generation of created children who'd take their place in society? Children demonstrably *superior* to the rest of us? Oh no. That frightened people. They recoiled from that.'" (p. 259; italics in original)

becomes weak, she dreams that Hailsham has become a lake, where rubbish drifts by on the whims of the water, right where she would have played as a child (p. 221). Similarly, the centre where Tommy's organs are taken is described as a "wasteland" (p. 274). When Kathy and Tommy finally learn the extent of their social standing from Madame and Miss Emily, the word "rubbish" is again used to describe Kathy's fleeting notion that they might offer the clones hospitality as welcome guests (p. 245). In the novel's final pages, Kathy imagines rubbish being blown against a fence: "I was thinking about the rubbish, the flapping plastic in the branches, the shore-line of odd stuff caught along the fencing, and I half-closed my eyes and imagined this was the spot where everything I'd ever lost since my childhood had washed up" (p. 282). Given that what she has lost is her friends, this fantasy casts the clones as biological rubbish: fenced in and moved at the mercy of unseen forces.

In this recurring trash analogy, Ishiguro brings to his novel another of the frequent features of genetic engineering fiction: the notion of the genetic posthuman as a commercial product. The clones self-associate with waste so frequently that they become both a product and its discarded wrapper. Their organs are the valued product, but the cognisant beings in which the organs are grown are merely its packaging. Everything in them which is non-transplantable – their identities, their thoughts, their creativity, and so on – becomes the throwaway plastic surrounding the goods for sale. While Ishiguro does not address their legal status, the clones are implied to be the property of the state. They are property, presumably, of high value. Again, the economics is not explored, but from the investment required to bring them to age (even for those not given the rarefied Hailsham education), it is inferable that there is a significant value placed on their "donated" organs. However, that value is present only in their bodies, and not in the humanity which is so apparent to the reader.

Performing Humanness: Clones' Stunted Sociality

In order for any segregationist regime to remain sustainable, the mechanisms of separation must become entrenched; hence we see Ishiguro's non-cloned characters displaying their socialised distaste for clones. But the Othered class must also be brought to regard themselves as "naturally" inferior. This presents complications for a segregationist regime that purports to be ethical, given of course that ethical segregation is an oxymoronic concept. The Hailsham administrators must keep their students in a state of resignation to prevent any uprising or

protest; yet they aim to humanise the very creatures whose organs they will extract. For the Hailsham experiment to work without compromising the organ-growing status quo, the students would need to feel not-quite-human even as their guardians explored their humanity. The frequent use of trash metaphors is one way in which the clones' internalised disgust is expressed. However, Ishiguro plants many more hints that the clones have learned to subtly hate themselves, and suggests that the clones' social development is deliberately stunted by the Hailsham administrators to inhibit any tendencies towards misbehaviour, rebellion, or revolution.

Ishiguro privileges a reading of the clones as fully human by writing them, early in the novel, as normal children. In fact, readers are only very slowly brought to a full awareness of the students' biostatus. The ambiguity about the students' status in the novel's early chapters reflects the way in which they are "'told and not told'" (p. 79) that they are clones destined for death. But even their teachers, who would be perhaps more than averagely likely to view the clones as people because of their involvement with the liberal Hailsham school, tend to show subtle signs of disregard for the clones' humanity. Ishiguro depicts the clones picking up on these subtle cues, and developing an understanding of themselves as being not quite human. This is implied to be part of a strategy by which guardians keep the clones always slightly confused about their status. According to Tommy's theory, the guardians had "timed very carefully and deliberately everything they told us, so that we were always just too young to understand properly the latest piece of information" (p. 81). Though Ishiguro plants evidence of dissent among the teaching staff – with Miss Lucy in particular railing against the policy of secrecy (p. 29; 79) – on the whole, the students are kept ignorant of their predetermined futures. As children, they "knew a few things about ourselves – about who we were, how we were different from our guardians, from the people outside – but hadn't yet understood what any of it meant." This left them in a kind of limbo state, "waiting for the moment when you realise that you really are different" (p. 36). Even approaching adolescence, the clones "knew – though not in any deep sense – that we were different from our guardians, and also from the normal people outside... but we didn't really know what that meant" (p. 69). As adults, when they fully understand donations and have experienced them, the clones accept their fates in a way that suggests conditioning: "'after all, it's what we're *supposed* to be doing, isn't it?'" (p. 223; italics in original).

This notion of "supposed to be" infuses much of Ishiguro's representation of the clones' social lives and cognitive development. As the clones learn how and why they are supposed to be, they

engage in creative imitation and performative exploration to negotiate their sub-human status. Many of the issues discussed in Chapter Three – the genetic posthumans' identity instability and status as image – come to the fore as the Hailsham clones realise and interpret their alterity. They are endorsed as potentially human by Hailsham, yet they are denied human freedoms. In this liminal space, they must try to "act" themselves into positions of legitimacy as human children and adolescents. Accordingly, Ishiguro depicts the clones performing their humanness through theatricality, art, and pseudo-familial connections.

The clones (and Ruth in particular) adopt the habit of "posing" to suit the social context and gain the upper hand. Early in the novel, as Kathy relates the clones' childhoods, this posing is relatively consistent with typical schoolyard pretence. For instance, Ruth pretends to have insider knowledge of a plot against a guardian, and allows Kathy to assume that she is a chess expert (pp. 52-53). Kathy also adopts this poseurs' power by pretending to have special knowledge of Ruth's pencil case, thereby exposing Ruth's lies about its origins (p. 59). Pretence is also used by the guardians to prepare students for life outside Hailsham. In the "Culture Briefings," students were encouraged to simulate and role play interactions with non-cloned humans in the outside world (p. 108). But as the clones age, acting takes on a greater prominence and added ominousness. The fullest explanation that the clones receive of their future is prompted by their discussion of building careers as actors. In a devastating speech from Miss Lucy, reality is counter-posed to the dream of acting: "'You're not like the actors you watch on your videos, you're not even like me. You were brought into this world for a purpose, and your futures, all of them, have been decided.'" (p. 80) As their non-human status and their inevitable deaths become clearer, the clones' pretence becomes so common and so notable as to exceed that expected in normal adolescent socialisation. It begins to resemble "passing," a term used in the theory of race performativity to describe experiences of interracial identity (see for example Alexander, 2004; Rottenberg, 2003). An individual "passes" as a member of a racial group, allowing them to be included in a group to which they could not have otherwise belonged. The relevance of this idea to the genetic posthuman is clear. The genetic posthuman is a hybrid creature – simultaneously not-quite human and not-quite animal or machine – and is thus, like the interracial "passer," caught between categorisations.[118]

[118] The same kind of "passing" happens in *GATTACA*, but in reverse. Because the film follows the enhancement assumption – that posthumans will be superhuman – it is the human character who must pass as "valid" (embryonically selected) in order to pursue his chosen career. Again, a narrative recycles the notion of "passing" to demonstrate the alterity created within a genetic posthuman society; although the role of the Other is changed, the process of othering is not. "Passing" also features in *Cloud Atlas*, as discussed in Chapter Seven.

Once transferred to the Cottages, the Hailsham clones (and Ruth in particular)[119] begin imitating human beings and, on occasion, attempting to "pass" as human in public. Ruth begins "putting on airs and pretending... she often bluffed and implied all sorts of things I knew weren't true" (p. 127). Kathy notes that Ruth behaved as if she "was performing on stage... struggling to become someone else" (p. 128). Here, in a halfway point to the outside world, the Cottage residents pick up human mannerisms from television shows. This applies to the non-Hailsham "veterans," but especially to Ruth and, by extension, Tommy. They "set about changing how they did things in front of people... like they were in a play" (p. 119). In this sense, they are copies – both genetically and behaviourally – of human models. By loading more and more references to pretence and performance in the later stages of the clones' adolescence, Ishiguro suggests that there is some connection between their growing awareness of their alterity and their habit of pretending. The clones' performances appear to arise from a deep sense of inauthenticity; they are not straightforwardly human, but they feel too strongly to be the compliant clones that their guardians (and the wider world) seem to expect. The best they can do is imitate television, which is in itself an imitation of human life. Kathy points out the falseness of Ruth's television mimicry: "'It's not something worth copying,' I told her. 'It's not what people really do out there, in normal life, if that's what you were thinking.'" (p. 121) Yet all clones are described in the grammar of performance, reinforcing their status as imitators. On at least five occasions, a verb is preceded by "[character] did a," emphasising the actedness of the action (p. 10; 121; 123; 129; 277).[120] Ruth's conversations with peers are often conducted in a "stage whisper" (p. 56; 57; 165) or a "mock whisper" (p. 191), and when Kathy conducts investigations into Madame's whereabouts, she describes her efforts in the language of play, as being "like detective stuff"(p. 239).

At one point, the clones attempt to pass as non-cloned humans on a trip to Norfolk. Given that Norfolk was mythologised at Hailsham as "England's 'lost corner,' where all the lost property found in the country ended up" (p. 65), the entire trip is metaphorically an exercise in retrieving what is lost to the clones – namely their humanness and their genetic models. The trip is a way of breaking out of their Hailsham segregation, since according to Ruth, "we weren't exploring our freedom nearly enough since leaving Hailsham" (p. 144). Yet the trip is characterised by the

[119] Ruth is probably the cloned character who rails most against her fate. She is the most determined to find her "model," the most interested in imagining a future, and the most likely to engage in acts of performance and "passing." By giving each cloned character a different degree of resistance to their impending donations, Ishiguro allows these factors to correlate so that acts of performance are associated with a strong desire for freedom.

[120] Three of these five actions are laughs, suggesting that expressions of joy might be frequently acted, or perceived as acted.

stress of keeping up an act. As they attempt to spot Ruth's model, the clones must interact with a non-cloned human in a gallery. They allow her to mistake them for art students (p. 161), noting afterwards that "'she'd have thrown us out'" if she had known their status (p. 164). Ishiguro surrounds this act of passing with numerous examples of performance rhetoric within the Norfolk trip: in a stressful moment, one of the Cottage veterans stretches "theatrically" in order to act his way out of the tension (p. 162), and makes "noises to suggest he was getting chilly" when he wishes to leave rather than simply asking to leave (p. 164); Tommy and Kathy, too, look around "theatrically" (p. 167) and "go off into a bit of a dream" (p. 160) during the trip. Ishiguro plants references to the clones' "pretending" on multiple occasions (p. 158; 164; 170), reinforcing the impression that the clones' excursion into the human world is an act of make-believe.

In addition to passing and acting, the clones are described as behaving "like we were all in a dream" (p. 35). Kathy employs a deliberate dream-state in order to escape the chaos and noise of Hailsham (p. 88); but then, as an adult, she enters the "daydream" of completing her essay as a way to get close to Hailsham again (p. 114). Even the guardians, perhaps infected with Hailsham's sense of unreality, walk around in dream-states (p. 43). At the Cottages, "dream futures" become a point of discussion. The rumours of a clone working in a clothes shop put the Cottage group into a semi-conscious state of looking "dreamily out at the clouds" (p. 149), and Kathy's walks outside the Cottages put her "in a dreamy mood" (p. 190) which would recur during her long drives as a carer (p. 204). Even the rumours about deferrals are described cruelly by Miss Emily as "'something for [the clones] to dream about, a little fantasy.'" (p. 253) Private (or exaggerated) activities also happen in a doubled space. At Hailsham, it appeared to Kathy as though "there was some parallel universe we all vanished off to where we had all this sex" (p. 95). Again at the Cottages, when reading becomes the indicator of maturity, "there was an unspoken agreement to allow for a mysterious dimension where we went off and did all this reading" (p. 121).

This self-constructed world of alternative reality cannot be written off as mere adolescent fantasy. Myra Seaman (2007) holds the view that the clones' tendency to make up stories amounts to "self-delusion as a coping mechanism" (p. 265); and that "their experiences are wholly indistinguishable from those presented by any modern narrative about children growing up in an institutional setting, discovering life for themselves, based loosely on what they are told (or, in many cases, allowed to believe) by the few adults who chaperone and educate them." (p.

265) That might be a viable conclusion, if making up stories described the full extent of the clones' imaginative activities. However their constant self-immersion in unreal planes – whether dreams, acted roles, copied mannerisms, concocted stories, posed positions, or memories – constitutes more than a simple survival technique for the institutionally bound. Their reluctance to inhabit their own selves *as* themselves implies a much deeper sense of identity constructed around and through unreality. However, Ishiguro does not position these acted identities as an inherent characteristic of clones, or as a mark of quasi-humanness. The proliferation of performance elements, and their increasing frequency over the course of the novel, suggests that they are planted as evidence of a stunted sociality. The increase in references to imagined or acted worlds coincides with the clones' growing awareness that they are something other than human. As liminal beings – not quite human, but not soulless automatons – the only forms of selfhood the clones can cling to as adolescents and young adults are *assembled*. Their sense of personhood comes from their imagined models, their observations of human life, and their television-watching. But because they are conditioned to view themselves as sub-human, they can never develop the sense of authenticity necessary to move beyond imitation.

Creative imitation is, in fact, incentivised by the Hailsham system. According to the idealistic Hailsham philosophy, the clones' humanity could be determined from their artwork; this encourages the clones to produce artworks that they think will prove their humanness. The equivalence of art and hypothetically unique souls is established from very early childhood. Remembering Miss Emily's explanation of the emphasis on students' art, Tommy says that creative works "*revealed your soul*" (p. 173; italics in original). In the Hailsham system, couples are rumoured to be able to use their artworks to "prove" that their souls are similar, thus earning them deferrals from organ donations if "'you were in love with each other, really, properly in love, and if you could show it'" (p. 151). Their idea of love, though, is a matching game, in which compatibility is evidence of emotion. This, Tommy decides, is the purpose of the Gallery: "'[Madame] can see if they go. If they match'" (p. 173). However, there are several clues within the novel that clones' artworks will never be deemed authentic proof of soulfulness or love. Firstly, the guardians instruct students in how to produce artworks, implying that what they produce is far from an unmediated representation of their inner selves. Secondly, few of the clones' artworks are evaluated for their soulfulness. As the guardians know, no artwork will ever be expressive enough to overcome the human bias against clones, and the clones' artistic efforts are futile. This false prospect of legitimacy is just one of the many ways in which Hailsham merely *simulates* human freedoms and opportunities, rather than genuinely offering them.

Tommy's artwork gives the closest view of what the Hailsham administrators might do with an extraordinary talent. Tommy's animalistic drawings are described as being brilliantly detailed and densely mechanised:

> It took a moment to see they were animals at all. The first impression was like one you'd get if you took the back off a radio set: tiny canals, weaving tendons, miniature screws and wheels were all drawn with obsessive precision, and only when you held the page away could you see it was some kind of armadillo, say, or a bird. (pp. 184-185)

The "busy, metallic features" of the animals, coupled with their "sweet, even vulnerable" appearance (p. 185), gives an impression of an artist deeply aware of his own vulnerably intricate body. The mechanised view of the body is suggestive of both genetic materiality – the "constructed" nature of the clones themselves – and of a posthuman sense of the body as a useful machine. When Tommy produces his first intricate animal drawing, it appears to Kathy "so different from anything the guardians had taught us to do at Hailsham, I didn't know how to judge it" (p. 185). Here it is in his *deviation* from the rules of the Hailsham soul-experiment that Tommy demonstrates his creative uniqueness; but that uniqueness is not recognised. Tommy notices, when he discusses his art with Miss Lucy, that she appears to have a sort of informal script governing her interaction with him, and he claims to have heard variations on her speech before (p. 27). The drawings are indicative of a kind of da Vinci intelligence; but to the guardians, they are not successful as evidence of Tommy's humanity. The artworks showed, as one of the Hailsham teachers put it, "what you were like inside" (p. 255), and whether you deserved human status. But Tommy's talent has no influence on his status, and he is forced to surrender organs like any other clone.

Most artworks go no further than the Sales, a mini trade fair in which Hailsham students swap goods. In advance of the Sales, students' artworks are ranked and priced by Hailsham's guardians, who decide "how many [tokens] your particular masterpiece merited" (p. 16). The fact that students are encouraged to sell the artworks that should reveal their souls implies that they are being coerced into selling their souls; or, conversely, repressing their souls in favour of producing commercially viable art. Toker and Chertoff (2008) liken these trades to similar schemes in Fyodor Dostoevsky and Primo Levi's accounts of Tsarist jails and Nazi camps respectively, in that the ability to attain tokens of wealth "creates a little space of freedom within the closed institution" (p. 171). However, these spaces of freedom are extremely limited. Despite looking forward to the Sales as a highlight of the Hailsham calendar, Kathy notes that "there'd be nothing remotely special and we'd spend our tokens just renewing stuff that was wearing out or broken with more of the same." (p. 41) The supposedly free trade exercise of the Sales is anything but free, since all goods are imported by Hailsham administrators and the entire operation is tightly controlled. However, the fact that clones

can trade their artworks for material goods emphasises that they are viewed not as soulful beings, but as producers of tradeable commodities. The artworks that the clones hope will secure their freedom will in fact be traded and, eventually, trashed.

In addition to curtailing and commodifying the clones' self-expression, the Hailsham administrators limit the potential for personal development in the context of a family. *Never Let Me Go* can be read as a *Bildungsroman*, in that it charts the development of an individual (and her friends) as they come of age. However as a *Bildungsroman*, it is unconventional. The clones do not develop in the context of a family, but of an institution. They are raised not by parents who try to protect them and their futures, but by a school which prepares them to have no future. They have a vague but ever-growing understanding that their youths will constitute the bulk of their lifespans, and that their childhoods will almost certainly be the highlight of their lives. Whereas the typical *Bildungsroman* focuses on character development under the assumption that there is a future to develop towards, *Never Let Me Go* details a coming-of-age which is simultaneously a coming-to-death. This casts the health, happiness, social, intellectual and sexual development of the clones in a shadow. The protagonist's development in a traditional *Bildungsroman* might be of interest to readers because the protagonist is relatable; whereas the development of the clones will not echo readers' own experiences. Instead, the clones' disadvantages are cast in contrast to the reader's likely privileges. The clones' missing adulthoods mean that they will never have careers, long-term relationships, or children. *Never Let Me Go* charts childhoods spent in mourning, rather than in preparation, for those expunged life events. Therefore, as a *Bildungsroman*, the novel's power relies on the *disparities*, rather than similarities, between the reader and the novel's subjects.

One of the main ways in which the clones' development differs from that of most ordinary children is in their institutionalised childhoods. As children of the state, Hailsham students do not have surnames; though they are usually identified with a first name and last initial. There is no suggestion of where the last initial comes from – the reader is left to wonder whether it is inherited from the student's human "model," or is randomly allocated, or identifies the student as part of a "batch" of genetic products. By leaving the source of the last initial unspecified, Ishiguro implies that each student has only the most truncated form of inherited identity – if, indeed, they have any at all.[121] The lack of families looms large in their psyches, and Ishiguro

[121] Interestingly, though, guardians have no surnames at all. Perhaps in the world of Hailsham, familial identities in the form of surnames are not simply denied to clones; they are whitewashed entirely, creating a first-name-only zone. Similarly, at the Cottages, veterans Chrissie and Rodney (who are not from Hailsham) lack even last initials.

peppers Kathy's narration with evidence that she and her peers mourn the absence of familial structures. This is, in fact, the source of the novel's title. The phrase "never let me go" comes from a (fictional) pop song that Kathy H. sings at age eleven. Kathy's retrospective narration explains that she had imagined an infertile woman singing the song to her miracle baby. This imagined woman "walks around singing 'Baby, never let me go…' partly because she's so happy, but also because she's so afraid something will happen, that the baby will get ill or be taken away from her." (p. 70) Kathy physically acts out this imaginary inner conflict, with her pillow as the baby. In common pop song parlance, "baby" would mean a paramour; Kathy's interpretation of the song shows that she is doing more than simply play-acting at motherhood. Instead, she demonstrates a longing for the types of relationships disallowed within the clone-raising economy. Ishiguro uses variations on the titular phrase to mark the frequent moments in which the clones experience conflicted attachment to others: they are "unable quite to let each other go" in the Cottages (p. 118), and when an adult Kathy realises that Hailsham is closing, she thinks of the things she left unfinished from her time there, and foresees having to "let them go forever" (p. 209). It is this desire for attachment that the novel's title plays upon.

However, the novel's human characters do not recognise this desire as a mark of humanness. Madame, who walked in on Kathy in her embrace of the pillow, is depicted looking back tearfully on the episode years later, repeating the refrain that the clones were "poor creatures" for feeling so much (p. 267). In her moment of empathy, Madame's word choice is distinctly animalising; showing that even her "ethical" approach to raising clones is underpinned by dehumanisation. Indeed, the desire for attachment to which the novel's title alludes is tied to the clone's containment within symbolic farms. Given that the Hailsham students are loosely fenced into their environments (Hailsham, the Cottages, the clinics where they "donate") this desire for attachment takes on a shade of irony. Mark Currie (2009) calls the title "a request for everlasting captivity" that equates contentment with containment (p. 91). The clones long for the places where they are contained, and the people with whom they are incarcerated; these forms of longing are proxies for the true longing for familial attachments.

The desire for familial structures emerges most clearly in the clones' tendency to form ersatz familial relationships.[122] At Hailsham, the guardians fill the role of pseudo-parents. The students have an unquestioning respect for the authority of the guardians, independent of any personal

[122] This idea appears in a number of other recent genetic posthumanism narratives – China Miéville names guardians "shiftparents" in *Embassytown,* and David Mitchell names cloned servers "sisters" in *Cloud Atlas* – suggesting a recent shift toward viewing familial structures as inevitable even for genetic posthuman characters born to state-run regimes.

feelings they may have about them. At one stage, Ruth forms a club to protect Miss Geraldine; this prompts Kathy to consider, for the first time, "whether I liked a guardian" (p. 47). Instead of considering their like or dislike of guardians, students merely crave their attention and approval, as a child would a parent's: "Didn't we all dream from time to time about one guardian or other bending the rules and doing something special for us? A spontaneous hug, a secret letter, a gift?" (p. 60) That the students are proud to have their art selected by Madame for the Gallery is further evidence of this need for the approval of senior (parental) authority figures. The guardians are, in effect, grouped together into a communal parenting group, to which the students must submit: "'The idea the guardians had differences between them, that never occurred to us.'" (p. 87) Kathy's pillow-dance places her in the parental role via fantasy; but even in this maternal act she imagines herself as a transgressing child, due to be told off by "the adult" (Madame) who had witnessed the scenario (p. 71). Later in the novel, the act of following Madame reminds Kathy of following Ruth's "possible." In both cases, the clones toddle like children behind a senior, maternal figure (p. 242). Thus, even as adults, they are infantilised in the presence of ersatz mothers.

In the Cottages, the parental role is taken over by the veterans, who "came out and took us in hand" (p. 117). This parental role is made explicit in the way the veterans relate to each other, "in a sensible sort of way, like a mother and father might do in a normal family" (p. 118). They even take the front car seats, with Ruth, Tommy, and Kathy in the back like children, because "that was what had felt natural" (p. 145). Beneath these pseudo-parents, students form a set of ersatz siblings. Ruth, having made new friends, taunts Kathy by pointing out that "baby sister isn't getting played with so often" – to which Kathy responds "that's not how it works in real families" (p. 122). When they have grown enough to leave the care of their "parents" at Hailsham, the students cling together as if orphaned: "there'd be no more guardians, so we'd have to look after each other" (p. 115). When Hailsham closes down, Kathy's association of Hailsham with family is so pervasive that she wonders what will become of her generation of students, left now without the shadow of a family structure. Her anxiety manifests in a recollection of a clown holding a bunch of balloons, which are anthropomorphised into a group of small children "like a little tribe, bobbing in the air above their owner, waiting for him" (p. 208). Just as the students at Hailsham are controlled within an ultimately violent hold, the tribe of balloons is held together by the "tight grip" of the clown's fist. Nevertheless, Kathy fears "someone coming along with a pair of shears and snipping the balloon strings just where they entwined above the man's fist. Once that happened, there'd be no real sense in which those

balloons belonged with each other any more" (p. 209).

As their constructed families disintegrate, the clones begin to look for their "possibles" (potential genetic models). Kathy begins her search by scanning pornographic magazines, looking for a woman who might be her genetic model (p. 132); while Ruth becomes obsessed with a reported sighting of her "possible" in Norfolk (p. 136). Here, in the discussions of the "possibles," the clones begin to talk of "real" and "normal" parents:

> Since each of us was copied at some point from a normal person, there must be, for each of us, somewhere out there, a model getting on with his or her life... Some students thought you should be looking for a person twenty to thirty years older than yourself – the sort of age a normal parent would be. (p. 137)

The genetic link between the clones and their models is taken to be deterministic, though not in an explicitly limiting way. Students all, "to varying degrees, believed that when you saw the person you were copied from, you'd get *some* insight into who you were deep down, and maybe too, you'd see something of what your life held in store" (pp. 137-138; italics in original). For Kathy, this could mean that finding her model in a pornographic magazine could explain her strong sexual urges (p. 179). For both Kathy and Ruth, "model" has a double meaning: their models are not only the sources of the clones' genetic information, but also the photographic models in magazines. In both cases, the model is a glossy magazine image representing the kind of person that the clone could be – a kind of identification by media.

However in the case of Ruth's possible in Norfolk, the apparent determinism of reading one's future in a model is subverted. The possible was identified perhaps *because* "the office life the woman appeared to be leading was about as close as you could hope to the one Ruth had often described for herself" (p. 157). Once the possible is deemed less like Ruth than first suspected, it becomes apparent that the whole search was a case of inferring one's genetic model from a desired future, rather than reading one's future in a genetic model. It may have been even less than that; Kathy notes that the veterans who took Ruth on the trip "often used to talk of possibles just as a pretext to go on trips" (p. 149); thus even the idea of an ersatz "parent" is itself a falsehood. The clones' truncated surnames, pseudo-parent guardians, and inaccessible models are all ways in which their need for families is expressed as their access to families is denied. For Kathy, even the familial structures among her fellow clones will collapse as they "complete" their organ donations and die, leaving her alone. Not even the play-acted family can provide lasting comfort within the cloning regime.

Authentic Personhood and the Narrating Clone

Although so much of the students' socialisation involves performance and pretence, Ishiguro does not let readers attribute this to the clones' biostatus. Kathy's moment with her pillow-baby is a metonymic example of Ishiguro's strategic narration: clones are depicted in acts of mimesis, but these acts are narrated through a clone's sensitive, nuanced retrospection. Kathy's narration is honest and earnest – naïve in places, but not substantially dissimilar to what one might expect in the narration of a comparable non-cloned character. Karl Luther Shaddox (2008) argues that, by writing the novel in the form of Kathy's journal, Ishiguro allows Kathy the status of a Proustian self: "this is a notion of the self as a compilation of selected fragments arranged into a coherent, identifiable 'literary' person" (p. 83). In other words, by selecting, collating and presenting her recollections, Kathy demonstrates selfhood. Because she narrates with the benefit of selfhood, she is endorsed as a full person; not *merely* a clone, but a human being who happens to have been cloned.

Ishiguro's clones − with their recognisably human, non-futuristic form − negotiate the questions of whether clones have souls in a way that has immediate relevance for bioethics. These are not the constructed beings of a far-off future society, with different social mores, different priorities, and different ethics to our own. Ishiguro writes his clones into a highly recognisable alternative present, where the clones' existence is contentious, and their status is debated. The choice of setting is, according to critic Karla FC Holloway (2011), a deliberately unsettling move: "refusing to allow [the story's] displacement into an unknown era." (p. 75) This is the contemporary Western world, Ishiguro implies, if human cloning goes ahead without some guarantee of clone rights. The reason why Ishiguro's version of the (approximate) present is so unsettling is because readers are led to a fundamental disagreement with their proxies in the novel. In the eyes of the human mainstream in Ishiguro's alternative England, the clones are not possessed of full human selves. But by positioning his narration in the voice of a clone, Ishiguro implies otherwise. He leads his readers to empathise with the clones; to relate to Kathy as they would to the subject of any other *Bildungsroman.* From that position, readers must ask: if these clones are human enough to be endowed with the privilege of a cultured education – to seem, in fact, like normal children – how can they be mere medical instruments? Perhaps the key question in *Never Let Me Go* is explicitly asked by Kathy during her meeting with Madame and Miss Emily: "If we're just going to give donations anyway, then die, why all those lessons? Why all those books and discussions?" (p. 254).

Yet Ishiguro does more than simply endorse the cloned Hailsham students as people. Through his depiction of Kathy's naiveté as well as her humanity, he explores the potential for genetic engineering to build not only useful bodies, but also minds that are simultaneously intelligent and compliant. Kathy is the voice of a repressed and abused outgroup that has not yet developed the vocabulary with which to protest its own exploitation. Kathy and her friends express a desperate desire to live, and to experience the love, careers, and families that most human beings are free to experience. But they attempt to achieve this only within the illusory escape routes (deferrals) offered within their system of abuse. Their dehumanisation is so complete, and so imbued with a sense of false privilege, that they do not conceive of protesting their fates. They are, to return to the metaphor of free-range farming, animals who see the abbatoir as an inevitable price to pay for a short life of green pastures. In this sense, the novel is applicable not only to discussions of bioethics, but to any segregationist regime which would manipulate the minds of its victims to ensure their compliance.

Indeed, Ishiguro has said in interviews that, in earlier iterations, the novel's characters were not cloned at all. In 1990, under the working title "'The Students' Novel'" Ishiguro compiled notes on a group of students who lived in a countryside with no actual university, dealing with some form of nuclear threat which would shorten their lives (Wong & Crummett, 2008, pp. 210-211).[123] In another iteration, the novel followed American lounge singers trying to make it onto Broadway in the 1950s (Freeman, 2008, p. 197). It was not until the early 2000s, when Ishiguro sensed that cloning technology was "very much in the air," (Wong & Crummett, 2008, p. 213) that he added the cloning element. Clearly, *Never Let Me Go* was not composed to be a novel "about" cloning. Ishiguro has said that readers should find more to the novel than a simple anti-cloning message:

> I guess when people have come up to me at these events and try to sum up their response [to *Never Let Me Go*], the ones I've been most pleased with probably are the people who've said, "This is a very sad novel, but there's something also quite affirming in it, because the characters are so decent. But, it's terribly sad." That response is probably closest to what I was trying to get at. You know, the fact is, yes, we will all fade away and die, but people can find the energy to create little pockets of happiness and decency while we're here. I'm probably less excited when people come and say, "Oh, this is a chilling warning about the way we're going with cloning and biotechnology." That's fine, I'm perfectly open to people reading it that way, but if that's all they've got out of it, then I feel that the inner heart of the book has been missed. (Ishiguro, cited in Bates, 2008, pp. 201-202)

[123] Nuclear technologies and cloning are very closely tied in literature. Not only did Ishiguro swap the threat in his novel from one to the other, but both *Where Late the Sweet Birds Sang* and *The Cloning of Joanna May* deal with nuclear catastrophes and a fear of radiation. There is a conceptual similarity between the two technologies: nuclear energy involves the splitting of nuclei to form new atoms; cloning involves the splitting of embryos (in older methods) or the transplantation of a nucleus into a donor cell. There is also a broader overlap between narratives of mediated reproduction and of environmental catastrophe. This is a particularly recurrent theme in Margaret Atwood's *MaddAddam* trilogy and has precedent in her earlier novel *The Handmaid's Tale*, which links forced breeding to pollution and nuclear disaster. It is possible that the roughly contemporaneous emergence of environmental anxieties and reproductive technologies has facilitated a connection in the literary imagination.

From the mouth of the author, this is not a novel intended to argue *against* cloning, and it is not a novel *about* cloning at its core. It is the story of people who, even in the most unjust circumstances, are just trying (as the novel's final three words reiterate) to be what they are "supposed to be" (p. 282). It endorses the value of human decency in the treatment of those perceived to sit at the borders of the tribe.

Chapter Seven: *Cloud Atlas,* the Anti-Übermensch, and Eternally Recurring Slaves

> A man... must always think about woman as *Orientals* do: he must conceive of woman as a possession, as property that can be locked, as something predestined for service and achieving her perfection in that.
>
> – Friedrich Nietzsche, *Beyond Good and Evil* section 238, p.167

> Free will plays no part in my story.
>
> – David Mitchell, *Cloud Atlas*, p.365

Updating Nietzsche for the Era of the Anti-Übermensch

Because he theorised the ideal of the Übermensch (in English, super-man or over-man),[124] Friedrich Nietzsche is sometimes considered one of the earliest philosophers of the posthuman. However, his Übermensch bears little resemblance to the downtrodden genetic posthumans of recent literature. In *Thus Spake Zarathustra* (1883), Nietzsche designates the Übermensch as something corporeal which is built as a tangible replacement to the notion of a god:

> "Once you said 'God' when you gazed upon distant seas; but now I have taught you to say 'Superman'. God is a supposition; but I want your supposing to reach no further than your creating will. Could you *create* a god? —So be silent about all gods! But you could surely create the Superman." (Z 2:2 pp. 109-110).[125]

This vision of the godlike human creation remains relevant to much mainstream posthumanist scholarship which assumes an enhancement motive. But given that so many recent works of fiction go *against* the enhancement assumption and envisage the development of stunted or abused underclasses of genetic posthumans, the notion of the Übermensch requires some revision. In the section of *Cloud Atlas* (2004) entitled "An Orison of Sonmi~451,"[126] David Mitchell subtly shows an awareness of the inverted Übermensch concept by describing *Üntermensch* (subhuman) slums (p. 331). In his genetic posthuman characters, he develops a vision of the anti-Nietzschean posthuman

[124] Translations vary; the Walter Kauffman translation used here refers to the "Superman."

[125] Following the standards of *The Journal of Nietzsche Studies* (The Journal of Nietzsche Studies submission guidelines, n.d.), this chapter cites works of Nietzsche using the following abbreviations: BGE for *Beyond Good and Evil,* Z for *Thus Spake Zarathustra*, GS for *The Gay Science*, and GM for *On the Genalogy of Morality*. In-text citations give the text abbreviation, followed by the volume or part number within that text, then the fragment number, followed by the page number within my edition. For example, this citation refers to the second fragment in Part Two of *Thus Spake Zarathustra*, which appears on pages 109-110 in my edition.

[126] There are two sections with this title. As is the case for all plot strands except the last, the Sonmi~451 story features a first part as the novel moves forward in time, and a second part (continuing the plot of the first) as the novel moves back in time. The two Sonmi~451 sections are separated by a section called "Sloosha's Crossing' an' Ev'rythin' After," which is set further into the novel's future.

by depicting beings who could not be further (at least at first) from Nietzsche's godlike ideal. Mitchell's contribution to the fiction of genetic posthumanism is to revise not only the notion of the Übermensch (as do many of his contemporaries), but to use several strands of Nietzschean philosophy to show how genetic posthumanism could merely add another element to the historically recurring practice of keeping slaves.

Cloud Atlas features a multi-generational epic plot of six nested narratives presented in eleven inter-connected palindromic sections, told first in chronological order, and then in reverse chronological order. As an added complication, Mitchell's oeuvre is deeply inter-connected, and many of the characters in *Cloud Atlas* appear in his other novels – sometimes in the same role, time, and place, but sometimes displaced. As he is wont to do, Mitchell places a phrase – not central to the novel's story but acting rather as an interpretive key – to hint at how this works for *Cloud Atlas:* "Time's Arrow became Time's Boomerang" (p. 149). Put simply, Mitchell explores the idea that history repeats; he is, as *The New Yorker* critic James Wood wrote, "obsessed with eternal recurrence" (2010) – another Nietzschean invention. The formal complexity of Mitchell's oeuvre, and particularly the boomerang structure of *Cloud Atlas*, create opportunities to make connections between the parallel practices of people in different places and times. That is exactly what Mitchell does when writing a genetically engineered posthuman future. "An Orison of Sonmi~451" follows a "fabricant" (cloned and genetically designed humanoid creature) named Sonmi~451. Sonmi~451 is one of many Sonmis, and the Sonmis are one "batch" among many types of fabricants whose collective role is to form a labour force in service of non-cloned humans. The Sonmi~451 narrative is written as an interview between Sonmi~451 and an archivist who is tasked with capturing her version of events. It follows her as she achieves "ascension" (becomes aware of her own enslavement) and escapes to a university to study and be studied. *Cloud Atlas* directly relates Sonmi~451's genetic posthuman slavery narrative to the historical enslavement of Moriori people in New Zealand in the first of the six nested narratives, and Sonmi~451 reappears as a deity in the sixth narrative. As Mitchell links genetic posthuman slavery to other times in the past or the imagined future, he creates an impression of history repeating. This extends the kind of recycled alterity examined in this thesis. For Mitchell, genetic posthuman exploitation is not simply another *instance* of outgroup politics; it is one example in a recurring *series* of endlessly repeating moments of exploitation.

Several critics have identified similarities between Mitchell's notion of history repeating and Friedrich Nietzsche's philosophy of eternal recurrence (Hicks, 2010; Parker, 2007). Mitchell hints at this within the "Letters from Zedelghem" section when Vyvyan Ayrs, a famed but dying composer,

plans to name his final work "*Eternal Recurrence* in honor of his beloved Nietzsche." (p. 84)[127] The theory for which the composition is named posits a non-linear view of time. In *The Gay Science* (1882), Nietzsche's first notions of eternal recurrence appear:

> What, if some day or night a demon were to steal after you into your loneliest loneliness and say to you: "This life as you now live it and have lived it, you will have to live once more and innumerable times more; and there will be nothing new in it, but every pain and every joy and every thought and sigh and everything unutterably small or great in your life will have to return to you, all in the same succession and sequence - even this spider and this moonlight between the trees, and even this moment and I myself. The eternal hourglass of existence is turned upside down again and again, and you with it, speck of dust!" (GS 4:341 p. 273).

The same idea – that history repeats – echoes throughout *The Gay Science* and in Nietzsche's later works. The similarities between this notion of the repeating life and Mitchell's temporality throughout his oeuvre, but particularly in *Cloud Atlas*, are self-evident. The life, once lived, is lived again and again in Mitchell's work – through characters who reappear in different times and places in different novels,[128] through soul-entities that move through bodies in *Ghostwritten* (1999), and through characters who are implied to be reincarnations of one another in *Cloud Atlas.* In each of the six nested narratives, one character has a distinctive birthmark, which matches the birthmarks mentioned in each of the other narratives. In this way, Sonmi~451 (a birthmark-bearer) is implied to be an embodiment of the same soul shared by five others.[129] Because his characters are linked across space and time, Mitchell can anchor the sweeps and changes of history in his single, six-bodied über-character. Masters become slaves; slaves become gods.

One of the foci of *Cloud Atlas*'s eternal recurrence is the relationship between consumerism (as enabled by slave labour or exploitation) and collapse. In "The Pacific Journal of Adam Ewing," the first of the six narratives, Moriori slaves are worked and beaten; New Zealand readers will recognise this as a depiction of events preceding the end of the Moriori race. Similarly, in "An Orison of Sonmi~451," genetically engineered fabricants are created to work in the environmentally destructive hyperconsumerist future Korean state of Nea So Copros, which precedes the post-apocalyptic environment in "Sloosha's Crossin' an' Ev'rythin' After." Over the course of the first half of the novel, as time progresses from Adam Ewing's narrative to Sonmi~451's, civilisation destroys

[127] Nietzsche was himself a composer. He wrote music throughout his life, and many of his works of philosophy either include or are about music (Liébert, 2004).
[128] For example, major characters from *Cloud Atlas* have also appeared in Mitchell's 1999 debut *Ghostwritten* (Louisa Rey, Timothy Cavendish) and his 2006 novel *Black Swan Green* (Robert Frobisher), and minor characters have appeared in many others. There are many more recurring characters across Mitchell's seven novels to date.
[129] The six characters who bear the birthmarks are (in order of appearance) Adam Ewing, Robert Frobisher, Luisa Rey, Timothy Cavendish, Sonmi~451, and Meronym. In all but the latter case, the birthmark belongs to the protagonist of each section of narrative.

itself; yet as time reverses in the second half of the novel, the destruction is rewound. As Heather J. Hicks writes:

> through its basic structure *Cloud Atlas* invites us to consider how cyclical understandings of time might serve as a way out of apocalyptic events, since this is what the book itself enacts: put simply, as readers we come to the apocalyptic end, only to find that half of the book remains to be read. By the time we have finished the book, we have arrived back in the 19th century, creating a sense of coming full circle: the apocalyptic end of civilization becomes the occasion for the beginning of a new chapter or phase of each of the stories Mitchell had begun earlier. (Hicks, 2010 para. 8)

The threat of apocalypse still hangs over these later chapters, but with a sense that it might be reversible if only the societies in each of the narratives were to take preventative measures.

Jo Alyson Parker (2007), another scholar who notes Mitchell's focus on eternal recurrence, claims that the novel's use of time supports an overarching plot of the "good man" amidst the "eternal recurrence of predatory behavior" (p. 209). While Parker contributes a useful account of some of the major recurrences within the novel (p. 208), her designation of some characters as the "good man" archetype is problematic. In terms of slavery and exploitation, the novel does depict Adam Ewing taking pity on a Moriori slave and Hae-Joo Im trying to aid Sonmi~451's escape. But these are not straightforwardly virtuous actions.[130] Nietzsche famously argued *against* a neatly polarised view of morality. In the aptly named *Beyond Good and Evil* (1886), Nietzsche espoused the notion that good and evil are relative and shifting concepts, and that this is particularly true within the master-slave dynamic.

In addition to the novel's use of theories of the Übermensch, eternal recurrence, and even the will to power (as identified by Hicks, 2010; Johnston-Ellis, 2010; Parker, 2007), I contend that Mitchell makes productive and critical use of Nietzsche's theories on master-slave morality. In *Beyond Good and Evil* (1886), Nietzsche described the morality of the nobility (strong will, power, self-defining values) and the morality of the underclasses (weak, anti-oppression, pro-equality). In Nietzsche's thinking, so-called slave morality is defined against master morality, as a reaction to oppression. The master – in Nietzsche's example, the Roman hero type – acts brutishly if necessary to serve "the welfare of the whole" (BGE 5:201 p. 113). In the figure of the slave, meanwhile, Nietzsche sees a suspicious, conspiring type. "The slave's eye is not favourable to the virtues of the powerful: he is sceptical and suspicious, *subtly* suspicious, of all the 'good' that is honoured there – he would like to persuade himself that even their happiness is not genuine" (BGAE p. 207). The idea is developed further in *On the Genealogy of Morality* (1887), in which Nietzsche writes:

[130] Adam Ewing continues to benefit from the "rescued" slave's labour, and Sonmi~451's escape is revealed to have been part of a conspiracy to turn human consumers against the idea of a fabricant uprising.

> While the noble man is confident and frank with himself... the man of *ressentiment* is neither upright nor naive, nor honest and straight with himself. His soul *squints*; his mind loves dark corners, secret paths and back-doors, everything secretive appeals to him as being *his* world, *his* security, *his* comfort; he knows all about keeping quiet, not forgetting, waiting, temporarily humbling and abasing himself. A race of such men of *ressentiment* will inevitably end up *cleverer* than any noble race, and will respect cleverness to a quite different degree as well (GM 1:10 p. 21).[131]

Here, the slave (or more generally, a member of the underclasses) is described as a clever but shifty creature. This type of argument has been widely critiqued, largely because Nietzsche used Judean people as examples of slave morality (leading to charges of anti-Semitism, particularly from post-World War Two scholars). However, it is useful to a reading of *Cloud Atlas* for one significant reason. In contemporary accounts of abolitionist movements, the victorious end of the righteous struggle for slaves' freedom is the attainment of that goal. Slaves are freed, and that freedom (while not without ongoing struggles) is permanent; the society in which slaves were kept learns its lesson, and slavery is outlawed. Nietzsche's theories of master and slave morality do not allow for such resolutions. The notions of master and slave morality are linked with eternal recurrence to produce a vision of power dynamics which is cyclical and contains grey areas. Master and slave morality can occur in the same person, and slave revolts are merely temporary power shifts. Mitchell makes productive and often critical use of these ideas as he works to progress a view of slavery in which abolition does not guarantee a future of equality. Slavery in *Cloud Atlas* is updated and renewed as the past progresses into the future, and genetic technologies are posited as the next wave of slavery innovation.

Master Morality in Slave Bonding and Psychological Control

Nietzsche's view of master morality is almost gladiatorial. Nietzsche claims in *Beyond Good and Evil* that every society begins as follows: "men of prey who were still in possession of unbroken strength of will and lust for power, hurled themselves upon weaker, more civilized, more peaceful races" (BGE 9:257 p. 201). This description of the master type might appear critical to the modern eye, but Nietzsche wrote admiringly of the nobility he saw in those who control and dominate others. For him, the noble master would pursue a greater good consisting of human achievement, not comfort or equality: "such a type of man is actually proud of the fact that he is *not* made for pity" (BGE 9:260 p. 205). In his writings, the slave is weak, clever by necessity, and ignorant of the objectives that the noble masters achieve by his or her enslavement. Mitchell's is a decidedly more egalitarian

[131] *Ressentiment*, as one might expect, is related to resentment. Didier Fassin describes Nietzsche's use of *ressentiment* as encompassing both the origin and the psychological basis for slave morality; the slave views the world as a hostile place, develops a sense of bitterness, and is led to a state of devious vengefulness (Fassin, 2013, p. 252).

perspective, but it remains steeped in Nietzschean language. A phrase alluding to predation of the weak by the strong appears on the novel's opening page, and then similar phrases recur: "the strong engorged themselves on the weak" in Dr. Goose's account to Adam Ewing of New Zealand's history of cannibalism (p. 3), and later, this is named Goose's law: "the weak are meat the strong do eat" (p. 508). Dr. Goose goes on to poison Ewing, and he explains his philosophy as Ewing lays seemingly dying from the poison: "But Adam, the world *is* wicked. Maoris prey on Moriori, Whites prey on darker-hued cousins, fleas prey on mice, cats prey on rats, Christians on infidels, first mates, on cabin-boys, Death on the Living. 'The weak are meat, the strong do eat.'"(pp. 523-524) But Mitchell's use of Nietzsche's language and ideas is deeply critical. While Mitchell engages with the notion that slave and master roles recur throughout history, he does not accept Nietzsche's claims that slave-masters act from nobility. The masters in *Cloud Atlas* are far from noble, and they aim only for personal gain. However, with the benefit of posthuman technologies, they are able to create slaves who are incapable of displaying the revolutionary instincts that Nietzsche so reviled in enslaved races.

In "An Orison of Sonmi~451," Mitchell's masters use genetic technologies to produce, control, and optimise their slaves. Genetic engineering is positioned as a technologically enabled update to historical methods of limiting the freedoms and ambitions of chattel slaves. Fabricants appear to be designed before being grown, depending on the job for which they are destined. For instance, Sonmi~451's friend Wing~027 is designed to work in disaster zones, and thus has only "minor genomic refinements" to his brain so that he can reason and prioritise in dangerous situations (p. 215).[132] Sonmi~451 herself is one of many "stem-type servers" (p. 204), each of which is produced numerous times to create a pool of workers both (theoretically) uniform within their type, and varied across types. This limited variation would presumably stop the fabricants from seeming completely robotic, while making them recognisable as non-humans. The batch production of fabricants is not only a practicality of constructing low-cost server body-units; it also opens up the possibility of using fabricants as a kind of consumer novelty. A new stem-type is considered "a new attraction… they drew long queues of nikoning fabricant-spotters" (p. 205). The clone here is constructed as an economic tool not just for its use-value, but for its novelty value as well.

Sonmi~451 and her fellow server clones are constructed for the demands of the Papa Song's

[132] Wing~027's design allies him to Asimov's robots. His purpose is to prevent humans from having to enter dangerous situations, and he therefore needs to be able to think. Just as Asimov's laws of robotics create a simulacra of cognition that prioritises human safety, so too Wing's designed cognition enables human safety.

dinery. Their customer service credentials are built into their genetic makeup: “we smile because we are genomed to do so” (p. 192). For a fabricant, to be in good health is to be “working as genomed” (p. 195), and any characteristic that doesn’t help the fabricant complete their job – such as birthmarks, blushing, or the ability to retain memories – is “genomed out” (pp. 204-205; 230). This allows slave owners to control, manipulate, and exploit slave populations while almost eliminating the likelihood that abolitionist movements could emerge. Here the master and slave roles are filled not according to personal virtues or failings, but according to access to technology and capital. Masters are only masters because they control the bodies of others; slaves are only slaves because they are genetically designed to lack human autonomy.

It might be logical to assume that a genomed slave labour force would not require the same level of psychological manipulation as a human slave population. But Mitchell does not let genetic control act as the only means by which his masters control their slaves. Instead, he makes strong use of recycled psychological control mechanisms to create connections between this imagined slavery of the future, and the slavery of the past and present. For instance, fabricants are denied property ownership and are “born into debt” (p. 198); this closely resembles the modern practice known as “debt bondage,” in which a human trafficker sells victims to businesses (often brothels), which then force the victims to pay back the “debt” of their purchase price with unspecified amounts of interest (Scarpa, 2008, p. 19). Mitchell also plants hints that the fabricants’ cognition is controlled by brainwashing and drugging in addition to the aforementioned genoming. Fabricants are denied secrets (p. 195) and thoughts of their own (p. 196); the punishment for having “ideas above their strata” (status) involves being “kept unconscious” for extended periods of time (p. 200). “Amnesiads and soporifix” are used to control the fabricants in times of tension (p. 205), and they are kept constantly reliant on a form of sustenance called “soap,” which their masters control. Placating lies are also a major part of the psychological control of the fabricants. For instance, the fabricants are kept unaware that the soap they consume consists of the recycled corpses of their fabricant “sisters,” whose Xultations (emancipations) to Hawaii are in fact trips to an execution chamber (p. 359). The fabricants can thus be seen to occupy a self-sustaining biological loop: they work, fuelled by soap, and then they are killed to produce the soap to feed those still working. The only input to this system is their genetic material; the output is human wealth enabled by their labour.

In addition to debt bonding, drugging, and placating lies, Mitchell’s slave masters make extensive use of another historically recycled psychological control mechanism: imposed religion as

explanatory narrative. The novel's human masters create distorted, vaguely Christian theologies to help the fabricants understand the version of the world that their masters wish them to know. Religious narratives thus enable the control of the genetic posthuman in a way that recalls Frederick Douglass's arguments against slavery in the American South. Douglass, himself an escaped slave, famously spoke and wrote of the abuse of the Bible as a justification for slavery. In one speech, he said that religion "sanctifies the system under which I suffer, and dooms me to it, and the millions of my brethren in bondage." (Blassingame, 1979, p. 24) Mitchell's slave-masters – Seer Rhe and Aide Cho in Papa Song's diner, but also, more broadly, the corporate leaders of Nea So Copros – devise and sustain a pseudo-religion which subjects fabricants alone to strict rules. The ties between capitalism, slavery, and religion are hegemonic: the servers are kept in line with their promise of their heavenly "Xultation,"[133] they learn their rules of service via "Catechisms," they attend Sermons at which they make "the sign of the dollar" (p. 190), they refer to their "Logoman" as "Him" with a capital H and live for his praise (pp. 188-189), and their misconduct is labelled blasphemy (p. 192). Theological rhetoric is used, in fact, for every stage of the fabricants' lives. The wombtanks in which they are gestated are housed in the "ark" of a genomic nursery (p. 339), and their "recycling" also takes place on "Papa Song's golden ark," recalling not only Noah's ark, but also the golden arches of a McDonald's-style fast food empire (p. 357). Even having escaped this system, Sonmi~451's experience of ascension is, necessarily, couched in her understanding of a life governed by pseudo-religious mores. Upon arrival at Taemosan University, she asks herself: "What Catechisms governed my life in this place?" (p. 212)

One of the most notable aspects of Nea So Copros' corporate religion is its redefinition of the soul. Souls – with a capital S – are no longer metaphysical entities, but egg-shaped metal implants with which corporate entities can track citizens. Souls are used as currency to purchase goods and services, and are also used to enable and monitor movements. In the corpofaith, citizens must spend and even gamble with their Souls (p. 218). Thus in Mitchell's revisionist theology, the Soul is expended and not protected or preserved. But the Soul also becomes a marker of status and freedom. The fabricants' lack of a Soul is what keeps them contained within their places of work. Soulless fabricants cannot escape their slavery because, without a Soul, they cannot operate the elevators to get out of their workplaces (p. 189). They aspire to earn a Soul so that they may live as free consumers (p. 190).[134] Until then, they are owned as possessions of their "corp" (p. 191).

[133] The removal of the letter "e" from words beginning with ex- perhaps suggests a linguistic denial of any past tense in Nea So Copros. The past is not a useful tool in consumer culture, and so would not be a useful concept from the perspective of a hypercapitalist government.

[134] It warrants mention, though, that non-fabricant consumers are also slaves to money. Their social strata depends on their job and income, and they purchase biomodification in the form of "dewdrugs and facescaping" to improve their

The only way to earn a Soul, they are told, is by completing twelve years' service in unpaid labour. To manufacture a sense of progress in the lives of the fabricants, their masters impose a star system to rank fabricants according to their years of service. Each fabricants wears a collar (which includes an identifying barcode), and one star is placed on the collar for every year of unpaid labour. The fabricants are conditioned to wear their collars with pride; though Yoona-939, an early ascended fabricant, is depicted with her collar embedded in the flesh of her throat (p. 200), suggesting a growing discomfort with the collar system as fabricants attain thoughts of their own. The collars are closely linked to the promise of Xultation, with those who have completed twelve years' service shown to lose their collars and retire to Hawaii.[135] However, the promised trip is mythologised as more than simply a holiday. Upon Xultation, fabricants are promised recognition of their humanity in the form of a Soul implanted in their finger (p. 190). The association of collars and (false) economic freedom emphasises the fabricants' tenuous economic roles. There is a wide chasm between the reality of service – the collar, a symbol of status in relation to economic role, as in blue collar, white collar, and so on – and the dream of release, which is tied to a level of wealth that the fabricants are promised, but will not "earn." They will never be paid, with Souls or trips to Hawaii; their labour sits outside of any economic reward system.

Mitchell uses the notion of the Soul to wryly comment on the status of the genetic posthuman. So much opposition to cloning focuses on the metaphysical impact that creating a life is assumed to have; by denying fabricants Souls, Mitchell plays on the question of whether clones would have souls. But the relevance of the Nea So Copros Soul is completely changed. It is, firstly, a physical object. Souls are essentially tracking devices which are physically attached to the body as implants or rings; a clear nod to transhumanist technologies which aim to modify the human body. The disembodied Soul is connected to (or implanted in) the body, but is never an intrinsic part of it. One can, for instance, "cut out his Soul" if under attack (p. 329). Souls are, secondly, mockingly biological. Although they are synthetic, the implanted Souls are egg-shaped. This adds a layer of irony; Souls are modelled on the symbol of biology and fertility, yet they are made from sterile metal. Given that they are allocated or withheld on the basis of biological status (humans receive them; clones do not) this synthetic-natural quality mocks the arbitrariness of the line between human and clone. Souls

status (p. 194).

[135] Hawaii features in the novel not only as the imaginary site of fabricant emancipation, but also as Adam Ewing's destination in "The Pacific Journal of Adam Ewing" and Zachry's home in "Sloosha's Crossin.'" These are the three narratives to feature Sonmi~451 and/or slavery, and the shared location further binds them together.

are, thirdly, used to maintain the system of hyperconsumerism on which Nea So Copros society is based. They act as both a form of currency, and a curtailment device. Those without Souls cannot move about freely; those with Souls cannot move without being tracked. The ideal possessor of a Soul, from the state's perspective, is someone who uses their Soul to spend liberally, without ever travelling outside the hypercapitalism of main centres, and certainly without venturing to the rebel communities in rural areas. Finally, the Soul has accrued a capital S. Throughout the Sonmi~451 narrative, Mitchell uses capitalization as a marker of specialness. Brands, which are ubiquitous in Nea So Copros, lose their capitals and become part of language to show that they are no longer "marked off" but have become pervasive. By contrast, entities that are marked with capitals demand special attention, and are usually elements of state control (for instance Papa Song). Accordingly, the capital-S Soul is no longer the ill-defined nebulous soul of contemporary and historical religion and philosophy; it is something material and political.

To withhold Souls from fabricants is a political choice made by humans. *Cloud Atlas* does not further the debate about whether animals or clones have souls. Instead, it posits that the Soul is a human invention, and possession of one is merely a sign that the holder has been endorsed as a member of an ingroup. While the Soul is a physicalised embodiment of this idea, Mitchell also writes of Sonmi's self – lower case s – as the part of her which is unique or soulful. The archivist, after speaking with Sonmi~451 for some time, grants her the honour of alluding to her having a "self." However he can speak the word only after a pause. Sonmi's genetic status makes her so deeply non-human – so meat-like, so animalised, so constructed – that she cannot possess an unproblematised self in the eyes of a human; she can only hesitantly be granted a "…self" (p. 217). The ellipsis signifies not only the hesitation to consider Sonmi~451 as a person, but also the sense that something is missing – there is something omitted in her selfhood. Of course, it is an observing human (the archivist) who applies the ellipsis, and thus Sonmi~451's selfhood is hesitant and partial only in the eyes of a character who is compromised by his own status as an insider in the Nea So Copros state regime. The frequent reminders that Sonmi~451's soulfulness or selfhood is something mediated by humans is a reminder that debates over the souls of genetically engineered beings rely on human definitions of the soul. Mitchell suggests that any declaration on the soul-status of genetically engineered posthumans – like that of any other enslaved group – is a socio-political decision, and does not necessarily respond to the innate nature of the beings themselves.

This kind of system draws upon and extends historical slavery regimes; and as such, it requires a great historical amnesia in order to function. Accordingly, the Nea So Copros state "outlaws *any*

historical discourse" (p. 243). Learning must be done in secret. Mitchell plants a reference in Sonmi's name to reinforce this notion. With her ~451 identifying code, Sonmi~451 recalls Ray Bradbury's *Farenheit 451.* As in Bradbury's novel, knowledge in Nea So Copros is seen as a dissenter's tool, and after her ascension, Sonmi~451 must access historical texts covertly. The irony in this is that, although oppression of cognition is required for the economy to function, Sonmi~451 is worth more ascended – in auctions for research access – than she is worth as a server (p. 229). Her ascended value is just as isolating as her server value: in both guises, she is kept contained in a designated space (p. 232). In both guises, she is exploited: "In Papa Song's I had been a slave; at Taemosan I was a slitely more privileged slave." (p. 241)

The Genomed Slave: Product and Performer

Having established Nea So Copros master morality as an ignoble and selfish reversal of Nietzsche's master morality, Mitchell gives slave morality the same treatment. Whereas the Nietzschean slave is wily, underhanded, and incapable of comprehending the "greater good," Mitchell's slaves are pure-hearted, unjustly exploited, and honourable. The novel's traditional (human) slave, Autua of "The Pacific Journal of Adam Ewing," is characterised as scared and beaten, but principled. It is Autua, for example, who saves Adam Ewing from Dr. Goose's poison. Similarly, Sonmi~451 (once ascended) is depicted as a character of great intellect, humanity, and sensitivity. But under the Nea So Copros masters, a pre-ascension Sonmi~451 and her fellow fabricants are denied the opportunity to develop full characters of their own. Because they are genetically engineered for labour, they are – at first – lacking in even the humanness necessary to be considered slaves by their customers. Mitchell uses the term "server" – or rather, has the corpocracy (the Nea So Copros corporate political system) use the word "server" and conspicuously *not* the word "slave" – to emphasise fabricants' work without overtly referencing their captivity. But in his word choice, Mitchell gives us slaves in the robes of workers. His word "server" comes from the Latin *servus*, which means slave. Sonmi~451 and her kind are thus slaves only very thinly veiled.

Indeed Sonmi~451 (pre-ascension) and her fellow fabricants might be described as the Nietzschean master's ideal slaves: they are created to be docile, compliant, limited, and willing to delay their freedom until their "Xultation" to Hawaii. In *Beyond Good and Evil*, Nietzsche wrote: "A man... must always think about woman as *Orientals* do: he must conceive of woman as

a possession, as property that can be locked, as something predestined for service and achieving her perfection in that" (p. 167, italics in original). Sonmi~451 would be the pinnacle of this questionable goal: a Korean woman designed to serve exactly as instructed, locked away, and able (in theory) to do no more than her masters wish of her. In this sense, Mitchell's depiction of the fabricants draws heavily on the figure – related to the noble savage – of the grateful slave. George Boulukos (2008) identifies this as a recurring character type in American slavery-era fiction: "the slave is a faithful, reliable servant, stoic and uncomplaining on his own behalf; his focus is on the next world." (p. 233) Unascended fabricants appear to fit this typology, except of course that their smiling enslavement is engineered rather than voluntary.

Because they are designed for a purpose, Sonmi~451 and the other fabricants are, in effect, products. They are genetically engineered as economic tools, and are treated as disposable goods – in some cases literally, as Sonmi~451 witnesses a "pureblood" throwing away a living fabricant doll (p. 351). Post-ascension, Sonmi~451 recognises and emphasises the culpability of the corpocracy in promoting this view of fabricants as Soulless and subhuman beings: "To enslave an individual distresses the conscience, but to enslave a clone is merely like owning the latest mass-produced six-wheeled ford." (p. 191) They are designed like any other consumer product:

> Fabricants cost very little to cultivate, Archivist, and have no awkward hankerings for a better, freer life. As a fabricant xpires after forty-eight hours without a highly genomed Soap whose manufacture and supply is the Corp's monopoly, "it" will not run away. Myself xcepted, fabricants are the ultimate organic machinery. (pp. 341-342)

Sonmi~451's product-status is alluded to in the title of the thesis written about her: "*In-Dormroom Cerebral Upsizing the Service Fabricant: A Feasibility Case Study on Sonmi~451*" (p. 215). The term "upsizing" is associated with McDonald's meals, and given the similarities between Papa Song's and McDonald's,[136] this title describes Sonmi~451's ascension in terms which allude to the product she sold.

The subtle allusions to McDonald's restaurants are just one way in which Mitchell grounds Sonmi~451's enslavement in twenty-first century capitalism. The economic environment in which the fabricants serve extrapolates from and exaggerates the contemporary commingling of corporate and political interests. Mitchell's vision of *Brave New World*-style clone labour sits within a context of extreme consumerism: "How the consumers seethed to buy, buy, buy; a many-celled sponge of demand that sucked goods and services from every vendor, dinery, bar, shop and nook as it spilled

[136] In an interview, David Mitchell called it "a subterranean McDonald's of the future" (Begley, 2010).

dollars." (p. 236) In order to perpetuate this consumerism, corporate entities are elevated to the level of political powers, and their branding is absolutely everywhere: "AdVs dazzling, blaring; words, logos; neonized, amped… I marveled at the city of new symbols sliding by." (p. 209) This amounts to a kind of corporate semiotics. Brand names have been absorbed into language, and are no longer marked by capitalisation. Shoes become nikes; electronic devices become sonys, cameras become nikons, (p. 204) etc. This goes further than the Sellotape effect[137] we see in modern capitalism – while a car is a ford, a traffic jam is also a fordjam (p. 210); while a shoe is a nike, showshoes are icenikes (p. 226). Thus the brand-as-language effect extends beyond simple noun replacements. But the exact same thing has happened with Biblical terms. Someone betraying a friend, rather than being labelled a Judas (noun), is said to have judased (verb) (p. 201). Corporate messages are even integrated into natural landscapes. The moon becomes a platform for a "lunar sponsor" (p. 236). The natural is commodified in other ways too: hills become billboards (p. 344), and water and oxygen are owned by corporations (p. 349). In keeping with the corporate slant on bioengineering, those who oppose the corpocracy are called "Union" and are vilified in corporate narratives: "Union wants to become the most powerful corp in plutocracy by changing consumers into terrorists; by killing consumers who oppose them" (p. 203).[138] In this hyperconsumerism, nature and culture are co-opted for corporate gain; as is, of course, the human genome. Because so much of Nea So Copros is recognisable as extensions of modern capitalism, Mitchell suggests that this is not merely a *fictional* future, but a *likely* future.

Within this likely future, the fusion of nature and culture with advertising copy creates an environment of hyperrealism in which simulation is more powerful than reality. This plays directly into Umberto Eco's hyperreality: "'we are giving you the reproduction so you will no longer feel any need for the original.'" (Eco, p. 19). Accordingly, the food in Sonmi~451's fast food restaurant is synthetic; real food is present in Nea So Copros, but "nature was more trouble than it was worth" (p. 339) and engineered foods such as "synthetic melon" (p. 222) are implied to be preferred. The environment in which they eat is pure simulation: "The décor is starred and striped in reds, yellows and the rising sun. Its Celsius is adjusted to Outside; warmer in winter, cooler in summer." (p. 187) It is not even called a diner, but a "dinery" (p. 201); the term is perhaps inspired by "eatery," but also suggests that Papa Song's is merely *like* a diner rather than actually being one. This noun-becoming-adjective, a frequent device in Mitchell's linguistics, suggests a constant state of imitation; Nea So

[137] Wherein the Sellotape brand is so ubiquitous that even other brands of tape are referred to as Sellotape.
[138] Ironically, given that Nea So Copros' hyperconsumerism is predicated on clone labour, our own society is described as "the abortive European democracy"(p. 243). The choice of a reproductive term – abortive, meaning cutting off the creation of life – indicates that, to a society which artificially produces life, our reticence to do the same is considered a poor move on the part of the state.

Copros is not based on some fixed idea of reality, but on the unstable ground of representation and simulation. The sonic hyperreality of the dinery's manipulated music is such that Sonmi~451 does not recognise human singing once outside its walls (p. 226). Visual stimuli, too, are manufactured. Nea So Copros is media-saturated, with consumers and fabricants alike being constantly (sometimes physically) surrounded by projected images. But the camera is on them as well; via EyeSats (p. 344; 347), which are seldom mentioned, but which offer a hint that citizens are as much watched as they are watchers.

Ironically though, posthumans are often depicted as being narrative-incompetent. Narratives do not exist in the world of *Cloud Atlas*'s servers; there is no reality to compete with the hyperreality of the dinery. When they do discover a representation of an outside world in the form of a child's fairy book, they cannot conceive of it as a representation. They imagine that the pictures, remaining still on a page, must be broken: "Why didn't the pictures move like the pictures on diners' sonys?" (p. 197) Books become Sonmi~451's refuge and window to the world after her ascension. But even the "sony" on which she reads is dubiously real: it is "'unlost'" (p. 216); presumably stolen, given that clones would not own possessions, let alone those which might impart knowledge. When she learns to understand narrative, Sonmi~451 becomes entranced by performance; by the power of "a long-dead actor playing a character conceived a century ago," (p. 245) The servers' life goal is one of the few fictions they are exposed to, though it is never revealed to them as fiction. They work for their supposed retirement in Hawaii; though they will actually be euthanised. The fiction is maintained until the last possible moment. Sonmi~451 witnesses her fellow fabricants excitedly moving through the boat that they believe will take them to Hawaii, and notes the "xcited smile frozen in death" (p. 359) as the server, still believing the story, is killed. Only Sonmi~451 knows that "xultation is a sony-generated simulacrum dijied in Neo Edo. In the real Hawaiian archipelago, there is no such location." (p. 360)

As a pre-ascended fabricant, Sonmi~451 lives in between the hyperreal environment of the diner, and the personal space of her dreams (p. 189); because she cannot go outside the diner, there is no "real world" to give context to the artificial world in which she lives. She has no access to anything which could qualify as authentic; her experience of the sun is the simulated "yellow-up" (p. 188) each morning; her experience of the natural environment is, like the diner's cutlery, a plastic simulation of an original (p. 192). Insofar as servers have thoughts, they are controlled by the sermons given by the Papa Song entity (himself a disembodied representation). The servers literally "stood inside his mind" (p. 203) as his projected image told them what to think. His father-like image

is so widely accepted as authoritative that it is a scandalous revelation to Sonmi~451 when she realises he might be simply propaganda (p. 206). Mitchell writes the effect of Sonmi's immersion in this exclusively hyperreal environment as being total and crippling. Upon ascension – that is, on exposure to a "reality" outside the dinery –Sonmi~451 crumbles. Her knees buckle and her language fails (pp. 208-209), showing the extent to which she has been weakened by her artificial environment.

Mitchell applies his interest in the hyperreality of the cloning future to the structure of the novel itself which, as Helene Machinal (2011) points out, shows a heavy engagement with postmodern tropes of discontinuity, fragmentation, hybridity, and simulacrum (p. 27). By the time a reader encounters Sonmi~451, they have traversed four mini-books already, and have probably picked up on what Machinal calls Mitchell's "phylogenic" approach to characterisation (p. 127). In other words, they have realised that the novel is about multiple related (possibly reincarnated) individuals across space and time. However Mitchell's characters are not straightforwardly phylogenic. They are not merely *related*, in a genetic or familial sense; rather, they are *conflated*. By the birthmark reading, Sonmi~451 *is* – or perhaps shares a soul with – Adam Ewing and the other birthmark-bearers. Thus she is both enslaved, and the beneficiary of slavery. She is both privileged and exploited. Mitchell suggests that slave and master roles are determined by context, not character. To put this in Nietzschean terms, Sonmi~451 is not enslaved because she is inherently weak; neither is Adam Ewing in a position of privilege over Autua because he is particularly noble. Their circumstances are accidents of historical context. Once ascended, Sonmi~451 realises that her enslavement is not a natural or inevitable state; if purebloods can be convinced that fabricants are actually purebloods, then the system of enslavement can be overthrown (p. 362). It is thus the *perception* of difference, and not biological difference, which lies at the root of Nea So Copros' inequality.

The fabricants' exploitation is familiar; it is just one recurrence among many across space and time, and their genetic status merely facilitates (as opposed to prompting or justifying) their abuse. Accordingly, their mentality as slaves is itself historically familiar, involving the same tendencies toward play-acting and "passing" that have been ascribed to genetic posthumans in so many other works of fiction. In her interview, Sonmi~451 describes her entire experience – at the dinery, and afterwards at Taemosan University and on the run – as a "theatrical production" (p. 363) in which the people she came into contact with were merely actors "in Unanimity's

disney" (p. 364).[139] The lack of authentic identity is so extreme that, even long after her ascension, Sonmi~451 considers herself to have been complimented by being called a person (p. 235). She is still, post-ascension, an actor controlled by an unseen director: among her final words in her interview, she asserts that "free will plays no part in my story." (p. 365) The fabricants are so excluded from selfhood – their self/Other distinction is so non-existent – that they display no agency. Their personal thoughts and feelings are written as imitations: their emotions are wrapped in scare quotes, and their "happiness" is not a positive emotion but the lack of negative ones (p. 193).

But this is reported to be a matter of human perception rather than the reality of the clones: "We fabricants lack both the means and the rights to xpress emotion, but the notion that we cannot xperience it is a widespread myth" (p. 219). Yet upon ascension, the point at which they start to acquire self-awareness, they demonstrate a performative impulse. Yoona~939 "pretended to be an ill-mannered pure-blood. She yawned, chewed, sneezed, burped and acted drunk." (p. 191) She was "server acting pureblood" (p. 195); the language here – acting, pretended – suggests a staginess but also a kind of adolescence. To ascend is, for a server, to negotiate one's place by acting like others. Yoona becomes an "animated self" (p. 197), implying firstly that her selfhood is new, and secondly that her new self is a Frankenstein's monster, animated into sentience and thus primed for the role of freak. Her acting, once identified, is recognised as dangerous. Sonmi~451 asks Yoona to "fake normalcy" (p. 198); thus suggesting that acting can be acted over, so that the ascending server can act "normally" to prevent acting suspiciously. But the ascended server is so incongruous that her falseness (according to server norms) is itself suspected to be fake. The interviewer reveals that the consumer response to Yoona's case was incredulity: "we were sure a Union terrorist had facescaped herself to *look* like a server." (p. 202) Similarly, when Sonmi~451 leaves the dinery, it is assumed that she is passing as a server. An onlooker assumes Sonmi~451 to be a consumer like herself: "she said I was the first consumer she'd seen to go the whole way and facescape like a well-known service fabricant." (p. 238) The ascended fabricant is thus wrapped in layers of pretence. Even as they display the authentic thoughts and feelings of fully fleshed-out human characters, they cannot grasp an authentic sense of self.

[139] This again plays into the notion of the posthuman context as a hyperreal environment, given that Disneyland is a frequently cited example of a hyperreal space (Baudrilliard, 1981; Eco, 1986).

Accordingly, Sonmi~451 is forced to "pass" in almost every stage of her post-ascension existence. At first she must pass as an ordinary server; later she must pass as a human consumer when authorities seek to kill her (pp. 338-339). She literally cloaks herself in order to pass as human for long enough to get into a lecture theatre to begin her formal education (p. 230).[140] Ultimately, she must change her entire appearance via "facescaping" to effectively pass as a pureblood. Finding a new self (in Sonmi's case, a safe identity) is as easy as bringing out "'the face inside the face'" (p. 337). Physical appearance is, in this view, something unbound. There are nested possible faces, and thus nested possible identities, within each being: "'anyone can become anyone else'" (p. 349). Appearance is replicable. Even paintings are duplicated "'molecule-for-molecule… one may argue no originals remain in our world.'" (p. 227) This links Sonmi~451's ascension to yet another form of hyperreality; as she changes faces, she loses her "original" face, which was itself unoriginal in that it was identical to many others. At no point in her lifetime does she attain a sense of uniqueness, despite the clearly unique and sensitive voice in which Mitchell writes her narration.

Recycled Emancipation

The clone-as-slave story invites what Mark Jerng (2008) calls an "emancipation narrative" (p. 371) in which the enslaved population fights for, and wins, its own freedom. In recent clone slavery narratives, emancipation is a fantasy fuelled by human slave masters – a promise of tropical paradise in both *The Island* and *Cloud Atlas,* or of deferrals in *Never Let Me Go* – but the realisation of those fantasies is precluded by those same slave masters. The fight between an enslaved population growing in awareness, and a master race with an economic interest in enslavement, is of course a historically familiar battle. Mitchell, again employing Nietzsche's notion of eternal recurrence, makes the historical parallels to the Sonmi~451 story explicit by pairing it with a historical slave narrative. In the first of the six nested narratives in *Cloud Atlas*, "The Pacific Journal of Adam Ewing," the titular English seafarer witnesses the lashing of a Maori slave whose "insensible face bespoke the serenity of a martyr already in the care of the Lord" (p. 6) – in other words, a classic grateful slave type (Boulukos, 2008). The Ewing narrative shows Adam befriending a Moriori stowaway named Autua, and learning to see the "savage" as a much more merciful, tender man than any of the ship's white crew (p. 526). Adam's growing sympathy for Autua across ingroup/outgroup lines parallels the archivist's (and some other human characters') growing sympathy for Sonmi~451 across

[140] Her fellow students' reaction to her uncloaking ("'This is *our* row. Go to the back.'" (p. 230)) recalls Rosa Parks and reinforces the racial overtones to Sonmi's passing.

human/fabricant lines. Adam is allied with Sonmi~451's human sympathisers; whereas Sonmi~451 is allied with Autua.

Yet many scholars read the comet-shaped birthmark which adorns some major characters as a signal that they are reincarnations or versions of the same soul. Both Sonmi~451 and Adam Ewing share the birthmark. If Sonmi~451 and Adam's shared birthmark is read according to this reincarnation or transmigration interpretation of the novel, then Sonmi~451's enslavement is a role-reversal. Where Adam was a member of the privileged white ruling class, his future reincarnation is herself a slave. Adam's narration addresses these types of swings of fortune in the final pages of the novel, in terminology which vividly recalls Nietzschean eternal recurrence:

> Scholars discern motions in history & formulate these motions into rules that govern the rises & falls of civilizations. My belief runs contrary, however. To wit: history admits no rules; only outcomes… If we *believe* humanity is a ladder of tribes, a colosseum of confrontation, exploitation & bestiality, such a humanity is surely brought into being, & history's Horroxes, Boerhaaves & Gooses shall prevail. You & I, the moneyed, the privileged, the fortunate, shall not fare so badly in this world, provided our luck holds. What of it if our consciences itch? Why undermine the dominance of our race, our gunships, our heritage & our legacy? Why fight the 'natural' (oh, weaselly word!) order of things? Why? Because of this: - one fine day, a purely predatory world *shall* consume itself. Yes, the devil shall take the hindmost until the foremost *is* the hindmost. (pp. 527-528, italics in original)

The notion that the foremost (most privileged) and hindmost (least privileged) can so easily trade places puts a metaphysical spin on the traditional emancipation narrative. Sonmi~451 does not, within the limits of the events that the novel relates, achieve any kind of revolution for her non-ascended peers. The fabricants are not freed, and in the final stages of her narrative, Sonmi~451 reveals that her own ascension was part of a corpocracy plot to "make every last pureblood in Nea So Copros mistrustful of every last fabricant" and "manufacture consent for the Fabricant Containment Act" (p. 364). Just as most fabricants' compliance is by human design, so too is Sonmi~451's rebellion.

The fantasy of emancipation is therefore not realised within the Sonmi~451 narrative. However, by the "Sloosha's Crossin'" narrative, fabricants are apparently no longer enslaved – in fact, Sonmi~451 is worshipped as a deity. Her posthumous rise to god-status once again demonstrates that individual fates are not tied to intrinsic traits, but to the swings and roundabouts of history. The slave, once conditioned to accept her own slavery in a hyperconsuming society until her false retirement to Hawaii, becomes the new deity of a post-consumer, post-apocalyptic Hawaiian wasteland. Her god status is not precluded by her genetic status. Indeed, language of birth and heredity surrounds her use as a theological figure, making her godliness deeply ironic for a fabricant grown in a genomics unit. She is prayed to for rebirth despite never having been born herself (p. 264); though believers

have revised her story so that she had "been birthed by a god o' Smart named Darwin." (p. 291) The orison into which she recorded her story becomes – ironically, considering her vat-grown heritage – an "egg" to those who do not recognise it as a piece of technology (p. 277). While he worships Sonmi, the narrative's protagonist Zachary valorises the "beautsome purebirth" (p. 285) over the "freakbirthed," all the while believing that Sonmi~451 had been purebirthed. Sonmi~451 is not a fabricant in her religious incarnation; she is not only purebirthed (human), but birthed by the king of naturalism. She is, here, as close to Xulted as she could get: free from service, treated not only as human but as godlike, and even worshipped in Zachary's Hawaii, the promised land of Xultation (p. 190). It would be tempting to read this as an off-the-page emancipation. The Hawaii in which Sonmi~451 metaphysically lands, though, is not the Hawaii of her promised paradise. It is a destroyed eden of barbarism, left to waste by a consumer society that has churned through the world's resources. In this sense, Papa Song had broken its promise twice: firstly by declining to send fabricants to Hawaii, and secondly by contributing to the ecological destruction of paradise.

More significantly, Mitchell's boomerang of time prevents a reading of Sonmi~451's god-status as a form of emancipation. Her future status as a deity would, according to the novel's logic, be impermanent. As Mitchell lets his characters rise and fall on the tides of time, their fortunes change. Emancipation suggests a resolution; Mitchell resists resolutions. Those who are foremost and hindmost are implied to eternally trade places, and the novel's patterns of recurrence invite extrapolation: slavery, like other human evils, is implied to be a perpetual part of history's cyclical structure. Sonmi~451 is thus neither a Nietzschean slave nor a master; she is at various times both noble and weak, articulate and voiceless, honest and surreptitious. Her status as a genetic posthuman does not change her place in history, and she is subject to its whims like any other character. Mitchell suggests that the creation of genetic posthumans is not a watershed moment. Like so many of his contemporaries, he predicts their exploitation by human corporate bodies and their struggles to attain identity and personhood in light of their evident humanity. But ultimately, Mitchell casts his genetic posthuman protagonist as just another soul riding the waves of time.

Chapter Eight: Composing the Hybridised Body in the *MaddAddam* trilogy

> Royal anthropotechnology, in short, demands of the statesman that he understand how to bring together free but suggestible people in order to bring out the characteristics that are most advantageous to the whole, so that under his direction the human zoo can achieve the optimum homeostasis.
>
> – Peter Sloterdijk, "Rules for the Human Zoo," p.26

> 'Nature is to zoos as God is to churches.'
>
> – Margaret Atwood, *Oryx and Crake*, p.206

In almost every contemporary text which engages with themes of genetic engineering, the engineer is either minimally depicted or left absent. In *A Number*, the cloning doctor is alluded to, but never seen; in *Never Let Me Go*, the managers and scientists behind the cloning-for-organs system are veiled; in *The Island* and *THX1138,* clones are managed by visible humans, but their creators are obscured; in *Where Late the Sweet Birds Sang* and *The Cloning of Joanna May,* the cloners are only briefly glimpsed; in *Cloud Atlas*, the designers of Sonmi~451 and her cohorts are kept out of sight. The "mad scientists" that were de rigueur in the fiction of vivisection – Drs. Frankenstein and Moreau, for instance – are notably absent when the technology of the day changes from stitching limbs to switching genes. The mechanics of genetic engineering have miniaturised, as Donna Haraway (1991) notes: "writing, power, and technology are old partners in Western stories of the origin of civilization, but miniaturization has changed our experience of the mechanism" (p. 153). Now that bioengineering has moved beyond narratively appealing limb-grafting and toward more subtle gene-editing methods, the role of the scientist appears to have lost its appeal to writers. Instead, interest in the posthuman product has piqued. In *Oryx and Crake* (2003), Margaret Atwood departs from this status quo by asking not only what it means to be genetically modified, but what it means to be driven to *do the modifying*. By focusing on the genetic engineer as well as his creations, Atwood diverts the direction of the debates over the ethics of genetic technologies. Her portrayal of genetic engineering includes not only the product, but the society that creates the conditions for its invention. She invites readers to consider the impulse to genetically modify ourselves as a continuation of a wider human drive for improvement. It is human nature, she suggests, to desire to change our human nature. Indeed, a form of creator's idealism emerges as a unique feature of *Oryx and Crake*. Genetic technologies featured in other works of fiction are motivated by greed or a desire to exploit the genetic posthuman; in *Oryx and Crake*, the genetic engineer is motivated by a

sociopathically benevolent desire to "improve" the human race by exterminating it and replacing it with something he considers superior.

In this chapter, I propose that Atwood depicts bioengineering as an extension of the historical agenda of education in the humanities. In other words, *Oryx and Crake* (and its partner texts *The Year of the Flood* (2009) and *MaddAddam* (2013))[141] act as satirical denouncements of the human attempt to "write ourselves better." I will use Peter Sloterdijk's notion of humanism as the literary taming of the human to reveal Atwood's reframing of genetic engineering as a process of composition. I will demonstrate how Atwood depicts a Sloterdijkian scenario in which a decline in *belles lettres* occurs at the same time as a rise in corrupting media and commercialisation of the body. Once the decline of the humanities is established, Atwood uses the language of textual and artistic composition to describe genetic engineers' work. The titular Crake, a brilliant but nihilistic "genographer," is cast as an "author" of his creations the Crakers. In the sense that he composes their genetic code, Crake (and other genetic engineers) is conceptualised as a kind of writer. Using Crake's friend Jimmy (known to the Crakers as Snowman) as a counterpoint, Atwood positions genetic engineers as successors to writers who compose fine poems or stories. In Atwood's art-deprived world, Jimmy's words are mere advertising copy designed to create demand for genetic self-improvement; Crake's compositions take the notion of human self-improvement too far. Crake is a Prometheus of the posthuman: instead of sculpting human beings from clay, he scripts human-like creatures from genetic material.[142] Because the common notation for nucleotide bases is letters (A for adenine, C for cytosine, G for guanine, and T for thiamine), Crake creates his Crakers by composing a genetic script. Atwood's Prometheus has abandoned his clay and is equipped, metaphorically, with a pen.

Writing the Post-Humanism Posthuman: Sloterdijk's "Genetic Reform"

The idea that text is a tool for shaping human nature has a great deal of precedent. The modern term "humanities" derives from the Latin *humanitas*, described by Cicero as personal betterment

[141] Citations throughout this chapter will refer to O&C for *Oryx and Crake*, TYOTF for *The Year of the Flood*, and MA for *MaddAddam*. Collectively, they are referred to as the *Maddaddam* trilogy.

[142] In Greek mythology, Prometheus transgressed against Zeus by creating mortal human beings out of clay. He was frequently depicted undergoing punishment for creating and educating humans, and for giving them fire; the play "Prometheus Bound" (c. 5th century B.C.), usually attributed to Aeschylus, conveys in its title and text the common image of the champion of human knowledge, bound and tortured. Since the Industrial Revolution, the figure of Prometheus has come to represent science and technology, and the dangers of overreaching with either. Mary Shelley most famously referenced the Prometheus myth in the subtitle to *Frankenstein: The Modern Prometheus* (1818). The image of "Prometheus bound" has been used as a metaphor for the state of scientific research in recent years (Ziman, 1994).

through reading and study (Nybakken). To Cicero, an education in the humanities made for better citizens. To the German philosopher Peter Sloterdijk, genetic engineering holds the same promise. In 1999, Sloterdijk made subtle yet controversial arguments for the genetic improvement of the human race in his now-infamous speech and essay "Regeln für den Menschenpark" (usually translated as "Rules for the Human Zoo"). After establishing that human beings have historically been civilised through exposure to the *belles lettres*, and noting the rise of "bestializing impulses" in contemporary media, Sloterdijk identifies "genetic reform" as a tool in the fight against the bestialization that has weakened the power of a humanities education (p.24). It is through such reform, he suggests, that the Nietzschean ideal of the Übermensch (super-human) can be achieved.[143] Sloterdijk connects the contemporary relevance of human genetic engineering to the failure of the written word. For Sloterdijk, humanism was a once-successful political project, which used a shared literary canon to encourage "the thinking animal [to become] the thinking man" (p. 20). Ever since Ciceronean *humanitas* defined itself in opposition to the gladiators' ring, Sloterdijk argues, the choice to read, to become sensitive, to ponder and to think, has been considered a higher alternative to the base entertainment of the public spectacle (pp. 15-16), and the careful management of "bestial" and cultural influences has been central to the establishment of a harmonious nation-state (p. 14). Thus the written word holds a taming function. But it is a function that is on the decline, and the rise of so-called bestializing media – according to Sloterdijk, radio, television, and the internet[144] – marks the failure of humanism's agenda of domestication: "from now on the question of how a person can become a true or real human being becomes unavoidably a media question" (p. 16). It is here that the human being ceases to be perfectible through culture (which is degraded), and becomes instead perfectible as an anthropotechnological product.

I do not wish to suggest that Atwood was exposed to Sloterdijk's argument prior to writing her MaddAddam trilogy; indeed, his essay was not available in English translation until 2010, seven years after the publication of *Oryx and Crake*.[145] However, there are several key points in Sloterdijk's philosophy that inform a critical reading of Crake's role as a biowriter of the

[143] Sloterdijk is not, however, purely pro-genetic engineering. He calls the prospect "risky" and expresses doubts about its power to overcome "an unparalleled wave of social developments that seems to be irresistibly eroding inhibitions" (p. 24).
[144] Readers need not agree with Sloterdijk's arguably snobbish definition of bestializing media to see its relation to Atwood's depiction of online and television media in *Oryx and Crake*. Sloterdijk's views are given here for their value as a catalyst for interpretation; and their inclusion should not be taken as an endorsement of their validity.
[145] Atwood lived in Germany from 1983-4, and speaks some German. It is possible that she may have read the essay between its German publication in 1999 and the publication of *Oryx and Crake* in 2003. She may also have been aware of the storm of intellectual debate and controversy that followed Sloterdijk's original presentation of his ideas in a conference talk.

posthuman.[146] Firstly, I read Atwood's vision of a future media state as analogous to Sloterdijk's view of the culture of bestialization in popular media. Secondly, I read Crake's actions as a genographer as an updated way of taming via writing – in other words, Crake tames the human animal by writing its genetic code as a scripted human-animal hybrid code. Thus Crake's project is a form of statesmanship, as he tames and controls his creations in order to produce a more "harmonious" (according to his own priorities) society. However, Atwood departs from Sloterdijk's conclusions; rather than "taming" the human race, genetic modification creates an *overly* tame niche species that is perpetually childlike and helpless. For Atwood, the process of rewriting human nature is merely another anthropotechnological process; and like any other, it will fail as nature overwrites the human script.

The Decline of the Human: Atwood's Theatre of Degradation

Sloterdijk uses the "bestializing media" as evidence that humanism has failed, and is no longer an effective tool in the production of intelligent and sensitive citizens; genetic improvement, in his view, is a justified solution. Atwood dramatises exactly this situation, but critiques the notion that genetic engineering is an easy fix. In the world of the Craker novels, the arts and humanities have lost their influence. Art is "'a stab at getting laid'" in Crake's opinion (O&C p. 168); a phenomenon interesting only for its biological function, and therefore the domain of "neurotypicals" (O&C p. 194) who lack the insight to recognise its worthlessness. Accordingly, arts students and their institution, the Martha Graham Academy, are poorly funded, and come across as more squalorly than scholarly. As the increasingly biotech-focused society drains value from the arts, the Martha Graham Academy witnesses the "erosion of its former intellectual territory" (O&C p. 187) and must fight to reassert its relevance. It must demonstrate that its

[146] This is not the first piece of literary scholarship to read *Oryx and Crake* in terms of Sloterdijk. Hannes Bergthaller's 2010 article "Housebreaking the Human Animal: Humanism and the Problem of Sustainability in Margaret Atwood's *Oryx and Crake* and *The Year of the Flood*" offers an ecocritical reading using Sloterdijk's ideas of taming in the human zoo. Casting both literacy and genetic engineering as Sloterdijkian anthropotechnologies, Bergthaller reads *Oryx and Crake* as an indictment of contemporary society's failure "to produce workable strategies for taming the human animal" (p. 732). In Bergthaller's view, Snowman represents the failure of the humanist tradition, and Crake the failure of the posthumanist challenge: they are "two different but equally flawed answers to the problem of taming the human animal" (p. 737). Bergthaller's analysis assumes that we are obligated to "discipline people's desires" (p. 733), and that failure to do so is catastrophic to the health of the planet. That may be a fine message, but it is not quite Atwood's. The conclusion of *Oryx and Crake* suggests an attitude of ecological nihilism. Ultimately, in Atwood's treatment, *any* form of taming using writing is fleeting; for, as she closes the novel, the natural resurges to erase traces of anthropotechnology. As plants overrun buildings, engineered animals revert to their true natures, and the Crakers revert to the type of human nature Crake had tried to eliminate, all acts of writing upon the natural are for naught. In this way, Atwood suggests that "all works of Man will be as words written on water" (TYOTF p. 373). The conclusion to this chapter examines Atwood's nihilistic view of anthropotechnological (as opposed to literary / humanistic) writing with particular reference to *MaddAddam,* which was published several years after Bergthaller's paper was written.

graduates can apply practical skills in corporate environments. This results in two slogans: "*Ars Longa Vita Brevis*"[147] and below that, "Our Students Graduate with Employable Skills" (O&C p. 188). The Martha Graham Academy relies on the fact that advertisers will always need people who can spin tales, because consumers will always respond to rhetoric. It is only with this corporate arts focus that the Martha Graham Academy can survive.

The arts and humanities are also depicted in states of decay outside the academic context. There is no more traditional theatre; because of the dangers of gathering in large groups, "theatrical events had dwindled into versions of the singalong or the tomato bombardment or the wet T-shirt contest" (O&C p. 187). Instead of seeing *Macbeth* in a theatre, Jimmy watches a media personality read the text (badly) from a toilet seat (O&C p. 84);[148] when he eventually does see *Macbeth* performed more traditionally at the Martha Graham Academy, he deems the theatrical performance less convincing than the toilet reading (O&C p. 187). Jimmy adds his own productions to the genre of the corrupted classic, having "put together a naked *Pride and Prejudice* and a naked *To the Lighthouse*" just for fun (O&C p. 187). Canonical texts are further devalued as repositories of meaning when Crake claims that "'gnawed bones and old bricks'" serve the same function as cultural artefacts (O&C p. 167). Here, canonical texts survive and are still part of the fabric of the arts, but they are degraded in service of "low" culture. In what I will refer to as Atwood's "theatre of degradation," the hallmarks of high culture are turned into cheap entertainments.

The theatre of degradation marks Atwood's extrapolation of the kind of "theater of cruelty" (p. 16) that Sloterdijk sees in the stadium games of the Romans, and in the mass entertainments of his (circa-2000) present. Like Sloterdijk, Atwood suggests that the degradation of the canon marginalises the intelligent alternative that humanism traditionally offered to the entertainments of the masses; thus eliminating any sense of meaningful audience choice. Her characters have a vast amount of internet and television content to choose from, but they are not asked to choose whether to "better" themselves through high culture, or indulge their base instincts through low culture; all culture is homogenously bestializing, in the Sloterdijkian sense. However, where Sloterdijk used the term "theaters of cruelty" to describe historical mass entertainments (p. 16), I use "theatre of degradation" for Atwood's equivalent because many of

[147] This phrase, adapted from Hippocrates' *Aphorism,* translates to "Art is Long, Life is Short." The coupling of this with the reference to "employable skills" in the context of promoting the school turns an ancient piece of wisdom (from Hippocrates) into a piece of advertising.

[148] Even the name of the media star (Anna K.) has origins in high culture, suggesting Anna Karenina; though again, the literary origin of the name is corrupted as she reads from her toilet seat.

her media stars choose their own humiliation. In the Noodie News, or on niteenite.com, people are the architects and actors of their own ruin; they elect to become merely bodies, to be admired or expired, for the pleasure of the viewer. Their deaths are televised with "logos painted in bright yellow on the background walls" (O&C p. 82), and death becomes a form of fame, with a "lineup of people willing to pay big bucks for a chance to appear [on suicide sites] and snuff themselves in glory" (O&C p. 84). Even those who are executed against their will are required "to put on a good show," "hamming it up for the cameras" (O&C p. 83) in a way that makes it impossible for the viewer to tell a simulation from a real execution. Sex is also a media phenomenon. If Jimmy and Crake couldn't go to pleebland brothels, they could visit simulated brothels online: "the next best thing to being there" (O&C p. 89). If that seemed too tame, they could watch filmed bestial acts involving "a couple of well trained German shepherds and a double-jointed ultra-shaved albino tattooed all over with lizards" (O&C p. 315) – this turns Sloterdijk's bestializing media into literally the media of bestiality. Even when watching clothed news, Jimmy imagines the newsreaders as bodies and heads: "It was weird to imagine what all those serious-faced talking heads would look like minus their fashion items, full frontal on the Noodie News" (O&C p. 180).

The people who populate this vast mediascape exist as simulacra. According to Crake, "with digital genalteration you couldn't tell whether any of these [onscreen people] existed anymore" (O&C p. 82). Survivors of the death-game Painball are even described as "not quite human" (MA p. 368), a label which speaks to both their demeaned status before the game (as criminals used for entertainment), and their dehumanised status after the game. In this sense, the actors in Atwood's theatre of degradation are of a similar status to the Crakers – they are somewhat human, but not fully human. The cheapening of human dignity enables a culture of callousness to emerge. The board and computer games played by Crake and Jimmy, the pornographic news shows they watch, and the live suicide sites they visit, all serve to disconnect the viewer or player from the action by inserting intermediary forces or layers of simulation into representation. In other words, Atwood's media-saturated society enables depictions of horrific scenarios, because everything is several degrees removed from a source. This representational society is directly linked to the body: "the body had its own cultural forms. It had its own art. Executions were its tragedies, pornography was its romance." (O&C p. 85) The executions and pornography are linked as parallel expressions of the same dance of the body:

> the body parts moving around the screen in slow motion, an underwater ballet of flesh and blood under stress, hard and soft joining and separating, groans and screams, close-ups of clenched eyes and clenched teeth, spurts of this or that. If you switched back and forth fast, it all came to look like the same event. (O&C p. 86)

Because representation is not quite real, and the body's groans and screams can be equally depicted as part of the same simulation, the integrity of the human subject is degraded alongside the realness of the image.

Indeed, when Crake enacts his genetic reform by spreading a pandemic through his BlyssPluss pill, even death and disease are aestheticized. As the human race dies off, making way for the Crakers, the mass deaths are subject to the same reductive media treatment as any other event. Jimmy, witnessing the pandemic, describes a "splotch of bioterrorism" and plague maps "spackled with red as if someone had flicked a loaded paintbrush at them" (O&C p. 324). As the disease sets in, it becomes a mere media product: "it was porn with the sound muted, it was brainfrizz without the ads. It was melodrama so overdone that he and Crake would have laughed their heads off at it, if they'd been fourteen and watching it on DVD." (O&C p. 326) That Jimmy mentally superimposes a media gloss onto such dire events is evidence of his immersion in the theatre of degradation. For Atwood, as for Sloterdijk, the rise of "bestializing" media and the decline of the humanities are desensitizing events, and plague-era Jimmy's reaction to the destruction of almost all humankind shows the extent to which an education by media blurs the line between reality and simulation.

Taming the Human Animal: Writing the New Human

For Sloterdijk, the failed project of humanism must be followed by the alternative sensitizing force of biotechnology via "genetic reform" (p. 24) to ensure that "an elite is reared with certain characteristics, each of which must be present for the good of the whole" (p. 26). This is meant to correct the effect of a decline in letters; but Atwood implies that genetic engineering *is itself* a form of writing.[149] Whichever agenda of human curtailment is followed – the humanist or the post-humanist; Jimmy's or Crake's; taming by literary or genetic means – the method by which humanity is changed is through the inscription of an ideology. Reading *Oryx and Crake* in light of

[149] There is literary precedent for connecting body modification to writing. In Yevgeny Zamyatin's *We* (1924), as the lobotomy-like Great Operation looms for citizens of the OneState, characters are likened repeatedly to a "blank, white page" (pp. 205, 208) or "a book that had vanished except for the title" (p. 211). Atwood similarly describes the Crakers as being "like blank pages" (O&C p. 349). The thoughts and doubts that are to be expunged from OneState citizens are referred to not as *questions* but as "question marks" (pp. 114, 200); the ideal mind then being composed of "exclamation points, commas, and periods." (p. 114) Zamyatin goes so far as to close D-503's last moment of emotional lucidity with problematic punctuation: "I wanted to put a period… but suddenly the pencil jerked and fell out of my hand. . . ." (p. 223) The effect of these repeated textual metaphors is to emphasise how the alteration of humans is a process of composition, and that those performing the alteration presume to know how to "write" superior beings.

Sloterdijk, Crake's creation of gentle, harmonious posthumans makes him a Sloterdijkian hero; a Prometheus of the posthuman. However his raw material is not the clay of Prometheus, but the code of the gene. By borrowing genetic code from a variety of species and using it to amend human embryos, Crake can script his Crakers to take the best – whatever Crake determines that to be – from the entire animal kingdom, and combine the choicest traits in one human-like species.

This, indeed, is Crake's stated objective. Crake is himself human and therefore imperfect (O&C p. 321); but to a genius with a background in "transgenics" (O&C p. 198), imperfection need not be tolerated. The original Crakers are carefully forged from human embryos (O&C p. 303), with genes spliced from a variety of animals, in an attempt to overcome many of the perceived faults of human nature. This is intended to produce creatures which are far removed from the human form, and which are aesthetically optimised: "they're amazingly attractive, these children – each one naked, each one perfect, each one a different skin colour – chocolate, rose, tea, butter, cream, honey – but each with green eyes. Crake's aesthetic." (O&C p. 8) Their beauty makes them distinctively non-human; they are referred to as statues on more than one occasion (O&C p. 55; 100). Crake is motivated by a drive for perfection not only in terms of aesthetics, but also in terms of "the biggest problem of all, which was human beings" (TYOTF p. 364). His funders at the RejoovenEsense Compound intend his project to be a contribution to the business of designing babies; however to Crake, his Crakers are an end in themselves: a demonstration in "the art of the possible" (O&C pp. 304-305). This is represented as a kind of maniacal philanthropy. Like his father before him, Crake wanted to contribute "to the improvement of the human lot" (O&C p. 183).[150]

Ironically, though he shares this trait with his father, heredity is among the human flaws Crake aims to fix, by breaking the bond between father and son and eliminating family structures (O&C p. 305). With multiple men involved in each mating ritual, there are no more paternal relationships: "it no longer matters who the father of the inevitable child may be, since there's no more property to inherit, no father-son loyalty required for war" (O&C p. 165).[151] To Crake, the human desire to pass down genes in a personal, linear way (from parent to child) is too

[150] Crake's father was murdered for his efforts; in Crake's imagining, his father's murderers would have justified their actions in by claiming that they, too, were "acting for the general good" (O&C p. 212). Clearly, the "general good" has no fixed definition.

[151] When Jimmy claims that he "didn't want to have a father anyway, or be a father, or have a son or be one" (O&C p. 176), he endorses the anti-heredity of Crake's creations. However the other side of Jimmy's desire – to be "himself, alone, unique, self-created" (O&C p. 176) – can never be realised for the Crakers, who will always be creat*ed*.

overpowering and counter-productive. He claims that continued reproduction in the midst of a resource crisis is an example of poor evolutionary logic:

> "A dog or a rabbit doesn't behave like that. Take birds – in a lean season they cut down on the eggs, or they won't mate at all. They put their energy into staying alive themselves until times get better. But human beings hope they can stick their souls into someone else, some new version of themselves, and live on forever." (O&C p. 120)

In Crake's view, the drive to replicate oneself is biologically irrational. However the Crakers and the BlyssPluss pill would solve all this: "the Pill would put a stop to haphazard reproduction, the Project would replace it with a superior method" (O&C p. 304). Even the name of the disease spread by the pill – JUVE, for Jetspeed Ultra Virus Extraordinary (O&C p. 341) – suggests rejuvenation. Though the name is coined by an outside "they" of the media, it recalls the RejoovenEsense compound where Crake designed the Crakers, and where technologies for the improvement of the physical body were developed. This links the disease to the idea of commercialised rejuvenation, cleansing, and improvement of the body. Accordingly, the BlyssPluss disease is meant as a cleansing agent. With humankind wiped out, the Crakers can form the new model of heredity.

All of Crake's changes to human nature – his work on appearance, mating rituals, and succession, among other characteristics – are editing choices. We can therefore think of Crake as, ironically, a descendent of humanists. He works with a symbolic genetic pen; where humanists rewrote human nature by writing sensitizing and educating text, Crake rewrites human nature simply by tweaking its underlying script. Indeed, when we think of the work of genetic engineers, we think of script. Genes do not take the form of letters, of course – the shortening of base names to letters is merely part of a hermeneutic device – but the notation system commonly used to describe genetic sequences, and known to laypeople, consists of text. Because nucleotide bases are written as letters, an association is formed between the work of genetic engineers and that of writers,[152] and that association is reinforced through the common use of text metaphors in which "'letters' are bases, the 'words' are genes, and the 'book' is the complete genome" (J. C. Wilson, p. 168). Therefore, to a reader familiar with the symbolically textual substance of genetic code, Crake's work is an act of biological "writing."

At first glance, reading Crake as a biowriter may seem like a stretch. After all, he works as a scientist, and has been described by J. Brooks Bouson (2004) as the "numbers man" to Jimmy's

[152] That association has recently been deepened as bioengineers have developed even more creative power over the "alphabet" of nucleotide bases. It is now possible to create new "letters" synthetically, creating a living creature (in one recent case, a bacterium) with bases that do not occur in nature (Malyshev et al., 2014).

"word man" in a representation of the supposed epistemological poles of science and the humanities (p. 140). In many respects, the polarisation of these is clear-cut in the novel. Students go to *either* the Watson-Crick Institute *or* the Martha Graham Academy; graduates (at least those portrayed in any detail) work *either* as corporate scientists *or* in marketing. This interpretation assumes a simple distinction between the two epistemologies, and casts *Oryx and Crake* as a simple "cautionary tale" about the dangers of too much emphasis on science (Bouson, pp. 140-141). However, interpreting Crake and Jimmy as representatives of the sciences and humanities drastically oversimplifies the significance of their divergent competencies. Atwood does not cast Jimmy and Crake as simple science/humanities opposites; instead, she muddies the distinction between the sciences' and humanities' agendas in subtle ways to subsume the work of scientists *within* the metaphor of composition. In other words, Crake writes in the new medium of genes, while Jimmy writes in the old medium of alphabetic characters; but, crucially, they both *write*. Authorship in the novel, defined widely, equates to a kind of imperialistic agency. Whosoever writes, controls.

Atwood encourages this view of Crake as a scribe of the textual posthuman body by subtly representing the work of genetic engineers as acts of graphical and textual composition. The job title Atwood gives to those who work with genes is "genographer" (O&C p. 22); a term which expresses the genetic manipulation key to the role, but also the graphical – geographical, topographical, cartographical, stenographical – view of the body. Etymologically, Atwood's choice of term gives genetic scientists the status of authors. With *–graph* formations coming from the Latin *–graphus* and the Greek *–γραφος,* for "one who writes, delineates, or describes" ("-graph," n.d.), the term "genographer" implies that the genome of the genographer's subject is actively written. The term "bioprint" is also used to describe the biological record of an organism (O&C p. 19), implying that genomes are associated with both image and text. Like a fingerprint, a bioprint gives a "picture" of an organism's composition; and indeed, both fingerprints (on identification cards) and bioprints form part of the class system of the Modules and the pleeblands (O&C p. 27). However the word "print" also conjures a printed – or textual – sequence like a modern genomic sequence. Atwood's word choices in terms like "genographer" and "bioprint" contribute to the idea that the bioengineered creature is composed like a poem. Atwood also uses grafted names to emphasise the hybridity of genetically composed entities. Katherine Harrison notes the extensive use of grafted names for bioengineered products (p. 190): the pigoon, for pig-racoon, and OrganInc Farms, for (presumably) Organs Incorporated, are just two of many examples. This again implies that the work of a genographer is to compose. They make genetic portmanteaus; by combining the text of different organisms' genes, they can

create something new and hybridised.

This allies Crake with those posthumanist scholars who (building on the work of their poststructuralist colleagues) designate the posthuman body itself as a textual object (Hayles, 1999; Lenoir, 2002). It is marked as "primarily, if not entirely, a linguistic and discursive construction" (Hayles, p. 192). In the posthuman body, genetic information becomes part of the "entanglement of signal and materiality" (Hayles, p. 29); in other words, it can be thought of as a manifestation of genetic information. While Hayles's characterisation of the body as *primarily* linguistic is not compatible with the materiality we all experience in our bodies, it does indicate that the pendulum of thought in posthuman circles is swinging towards a view of the body as an informational entity. Under this view, the relationship between humanist and posthumanist taming methods is one of continuity, not change. Where humanism, in Sloterdijk's view, was the politically-motivated taming of human citizens via letters, posthumanism (at least in the form Atwood describes) is the politically-motivated taming of *posthuman* citizens via alterations to the "letters" of their genetic code. *Oryx and Crake* demonstrates a move from humanist taming (via text) to post-humanist taming (via the text of the body); thus it appears to dramatise a Sloterdijkian fantasy of the genetically "reformed" being as a solution to the death of humanism.

However, even as the Crakers appear to fulfil Sloterdijk's view of the genetically reformed human zoo, they reverse it. Despite their careful composition, they are not depicted as a superior species. Their intellects are not advanced, and their naïveté leaves them vulnerable once they must leave the Paradice dome for the post-apocalyptic wasteland that Crake leaves after him. Most significantly, because they are designed to incorporate animalistic traits, they undermine Sloterdijk's ideal of the Übermensch. At one point, Atwood describes the Crakers as being observed "from a distance, like the zoo" (TYOTF p. 476) – thus employing Sloterdijk's rhetoric as she refutes his de-animalised view of the genetic posthuman. Rather than taming the human zoo, Crake's work – at least at first – *creates* a human zoo.

Crake's recipe for the optimal human-like species involves customising a human embryo using adaptations found in the animal kingdom: "*Think of an adaptation, any adaptation, and some animal somewhere will have thought of it first.*" (O&C p. 164; italics in original) Thus the Crakers' digestive system is modelled on that of rabbits (O&C p. 158) and their body colourings during mating rituals are borrowed from baboons and octopi (O&C p. 164). This should not be taken to imply that Crake prefers animal traits over human; his view is much more complex. On the one hand, he mocks unmodified humans for being *too* crudely animalistic, with their "monkey paws,

monkey curiosity, the desire to take apart, turn inside out, smell, fondle, measure, improve, trash, discard – all hooked up to monkey brains" (O&C p. 99).[153] On the other hand, he keeps the hallmarks of human civilization out of the Craker model. Gone are "woodworking, hunting, high finance, war, and golf" and in their place, the smell of "a rarely cleaned zoo" (O&C p. 155). Thus Crake does not take a simple pro-human or pro-animal stance as he builds the Crakers; rather, he views humans and animals as part of a catalogue of design options. His choice of a human embryo as his starting point is not an endorsement of human excellence; but a signal that his project is one of anthropocentric citizen optimization. His aim is the same as that prescribed by Sloterdijk for statesmen: "to bring out the characteristics that are most advantageous to the whole, so that under his direction the human zoo can achieve the optimum homeostasis" (p. 26). But because the Crakers' genome is crafted from both human and non-human genetic material, readers are led to ask "if you can call them human" (O&C p. 105). This is never an easy question to answer. As genetic products that exist outside any readers' experience, the Crakers must be interpreted as compositions. Like paintings, symphonies, and poems, they must be interpreted not simply as "human" or "not human," but as new artefacts born of the creative mind of Crake's Prometheus.

Yet the Crakers are not the only genetic posthumans in the trilogy. Here, Atwood departs from her fellow authors of genetic posthumanism narratives. While many depict human / posthuman societies in which only certain classes are genetically engineered, Atwood makes genetic alterations a fundamental part of medical and cosmetic science. This is explicitly linked to the idea of bestialising media; as the body becomes mere image, its beauty is prioritised. First, the theatre of degradation reduces the body to its appearance. Then authors of advertising copy provide the specific words telling citizens to get this or that procedure as they "present the vision of what – oh, so easily! – could come to be" (O&C p. 248). Finally, during those procedures, genographers write genomic changes to produce a result.[154] In this way, Atwood twists the fictional predictions for the commodification of technology. Like Niccol, Churchill, and Ishiguro, Atwood imagines that future directions in bioengineering technology will capitulate to buyers' desires (as current technologies already do). However she imagines a much wider, more pervasive, and arguably more manipulative regime of body commodification than any of her fellow authors. In her fictional future, the natural body is written as a site of inadequacy; Jimmy,

[153] Ironically it is the Gardeners, with their equality-with-animals credo, who deny the equivalency between humans and monkeys: "we are not Chimpanzees: our females do not bite rival females, our males do not jump up and down on our females and hit them with branches." (TYOTF p. 191)

[154] Gene-altering procedures are hinted to be often ineffective (O&C p. 289). Nevertheless, buyers *believe* that their bodies are being rewritten.

remembering his marketing career, notes that "hope and fear, desire and revulsion, these were his stocks-in-trade" (O&C p. 248).[155] The inadequate body can then be written over with genomic surgery, advertised with snappy slogans: "Blue Genes Day? Jimmy read. Try SnipNFix! Herediseases Removed. Why Be Short? Go Goliath! Dreamkidlets. Heal Your Helix. Cribfillers Ltd. Weenie Weenie? Longfellow's the Fellow!" (O&C p. 288). The body is scripted at every juncture.

This is a process designed not only to make money for the Compounds that come up with each new biotechnological development, but also to maintain the political status quo by distracting citizens with narcissistic self-improvement and obtaining their DNA. In the Compounds, there is no such thing as separation between commerce and state. Each Compound is essentially a city-state built for the employees of a particular company, and their families. For purposes of "security," they are almost entirely self-contained – they are castles and jails at the same time (TYOTF p. 245) – and residents require special passes to leave. Every aspect of their day-to-day lives is contained within, and controlled by, unseen corporate governors. Thus, for the Compounders at least, their company is their country – so much so that disrupting the distribution of goods is considered treason (O&C p. 286). These corpostates operate within a system that could be roughly described as oligarchic capitalism; in what could be a comment on 21st century wealth and power relations, Atwood imagines that those who control biotechnology (and the Compounds are almost exclusively biotech firms) will control capital. Thus the Compounds employ security guards, the CorpSeCorps, to control their residents' movements and eliminate dissent. When residents question the ethics of the Compound, as Jimmy's mother does, they must either disappear, or *be* disappeared. As Toby puts it, "once you were in their system you never got out of it except by turning up as a corpse with dental work and DNA that matched their records." (TYOTF p. 319)

In order to disguise their tyranny and maintain their "guileless as bunnies" image (TYOTF p. 318), the Compounds must distract their residents. Suddenly, biotechnology is not only a business, but a political tool. By creating a sense of shame around the natural body, and appealing to an aesthetic ideal, the Compounds can encourage their residents to spend their money and energy on being "improved" – a scenario very similar to the genetic enhancement industries envisaged by so many posthumanist scholars. The result is a sociosomatic hegemonic economy; in other words, a system in which social stigma is built around the body, creating an impression that it is

[155] As the eventual pandemic would prove, "desire and fear were universal, between them they'd been the gravediggers" (O&C p. 273).

diseased or lacking, in order to draw citizens into a distracting, endless and pointless obsession with bodily improvements.[156] Reflecting on this system after its collapse, Jimmy wonders:

> When did the body first set out on its own adventures... having ditched its old travelling companions, the mind and the soul, for whom it had once been considered a mere corrupt vessel or else a puppet acting out their dramas for them, or else bad company, leading the other two astray. 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. (O&C p. 85)

The prioritization of the perfect body over the mind or soul is disguised as helping people to achieve what they want, and according to one within this system, "'What people want is perfection'" (O&C p. 246). But the Compounds are shown as the drivers of this distracting drive for perfection. Indeed, the political ideal of the perfect, docile citizen is what convinces Crake's Compound to fund work on the so-called Paradice project to create his Craker species (O&C p. 304). It is this depiction of "paradice" – a play upon the false ideal of controlling the genetic dice roll – that critiques Sloterdijk's view of genetic reform.

Genetic reform is dangerous, Atwood suggests, insofar as it has the potential to be tied to writing. It is not genetic copies that Atwood reviles, but advertising copy. The body, once coded as a site of fixable inadequacy, can only be conceived of as a collection of parts. This materialist view of the human body is most clearly illustrated in Jimmy's tendency to explain his circumstances in terms of biological factors. If he is happy, "it's probably a vitamin deficiency"; if a creature looks at him, it must be "picking up on his chemical aura" (O&C p. 41); if he's depressed, it must be "damaged membranes" (O&C p. 260); if he has a memory of his mother, it's just a result of a stubborn connection between neurons (O&C p. 232). When he needs to manage his pain, he fears overdosing on medication not because it might kill him, but because "his cells will pop like grapes" (O&C p. 337); indeed, at an early age, Jimmy learned to think of his body as a collection of cells that were subject to rearrangements beyond his control (O&C p. 20). When he sees Oryx's corpse, his impulse is to take some of her hair with him (O&C p. 338). That his "romantic impulse" is to preserve a part of her that is typically considered an accessible source of DNA is testament to the importance of genetic material to the understanding of the

[156] It should be noted that Atwood does not depict the cycle of bodily improvements in great detail in any of her major characters. In *Oryx and Crake*, her major characters are the architects of the cycle – Crake as a genographer, and Jimmy as a copywriter – whereas in *The Year of the Flood*, her major characters are excluded from the cycle through their involvement with the anti-establishment group God's Gardeners. The existence of a body buying and selling cycle is largely implied through Jimmy and Crake's work, through the Compound's products (which must have buyers), and through the existence of modified bodies in the media and at the strip club Scales and Tails. Though Atwood does not focus on the commodified body through her major characters, she does postulate its inevitability in the age of biotechnology, and in minor characters (Lucerne in *The Year of the Flood*, for instance) we catch glimpses of its pervasiveness among ordinary citizens.

human in Atwood's fictional world.[157] When Jimmy cannot comprehend the deaths of (seemingly) all humans, it is not because of the horror of the event; rather, it is because "*Homo sapiens sapiens* was not hard-wired to individuate other people in numbers above two hundred, the size of the primal tribe" (O&C p. 343; italics in original). Thus in almost every aspect of his understanding of humanity, Jimmy is trapped within a materialist mindset.

Indeed, the notion that bodies can be reduced to component parts is at the crux of human economic and social life in the novels. Children learn splicing in school (O&C p. 76), and subjects such as "family heredity research" and "wise genetic match-mating" are considered key life skills (O&C p. 42). Even the God's Gardeners – the trilogy's most holistically-minded characters – hold body-reductive views. They sing of their bodies as Arks "builded firm of genes and cells" (TYOTF p. 111), and consider death to be a mere relinquishment of one's protein (TYOTF p. 415). In this context, characters' self-images revolve around the materiality of their bodies. Atwood's future society views the animal body in similarly material terms. It is subject to genographers' authorship, and can be picked apart, constructed, or altered simply by tweaking its genetic script; thus it can be seen as no more than the sum of its parts. In fact, animals are often literally just specific parts. Chickens, for instance, are redefined as "growth units" which specialise in either breasts or legs, and lack heads and cognition (O&C pp. 202-203). By extension, the human body – which uses "pieces" and "parts" from animals (TYOTF pp. 262-263) – is also seen as an amalgamation of component bits. This parallel view of human and animal materiality – that both are collections of parts, that both are biological debris – establishes an equivalency between the human and animal body.

After the plague, the material view of the body is so entrenched in Jimmy (now Snowman) that he cannot escape it; yet there is no more civilisation – no more genetic alteration or accompanying advertising copy – to sustain the pretence that the material body can be perfected. At that point, Snowman's material body becomes animalistic. He is repeatedly likened to animals, but never to any one kind of animal consistently: he "reeks like a walrus" (O&C p. 7), "grunts and squeals like a pigoon, or howls like a wolvog" (O&C p. 10), is an "orang-utang" (O&C p. 169), has a "curious monkey brain" (O&C p. 222), is the jackal to Crake's "alpha wolf" (O&C p. 300). Sometimes Snowman's behaviour is generically animalistic: "he guzzled, he yelled, he gibbered... he feels as if he has tongue fur all over his body" (O&C p. 147); he "drinks like a dog" (O&C p. 272), and imagines himself "gnawing the odd bone" (O&C p. 201). He hangs "like a

[157] This could also be seen in the context of the romantic tradition of keeping a lock of a loved one's hair; though taking a lock from a corpse is less traditional.

spider... making speared animal noises" (O&C p. 334). His adopted name, Snowman, places him somewhere between human and animal; "apelike man or manlike ape" (O&C p. 8). In the cosmology he presents to the Crakers, he is bird, beast, and fish all at once; not only is he a Snowman, but he was also "*once a bird*" and "*once lived underwater*" (O&C pp. 8-9; italics in original). He is even jealous of animal life: "everything is fine with them, not a care in the world. Eat, fuck, poop, screech, that's all they do." (O&C p. 148) Ultimately, he sees his own mind as the fiercest animal: "Perhaps he was the danger, a fanged animal gazing out from the shadowy cave of the space inside his own skull" (O&C p. 261).[158] As these animal references accumulate it becomes clear that Snowman is, like the Crakers, something between the poles of human and animal. He is not fully human, and not fully animal, but a product of both. Thus even disregarding the development of the Crakers, Atwood casts her characters into a Sloterdijkian human zoo, as if to suggest that a biotechnologically advanced society – when it promotes alterations for profit – is prone to a reductivist, animalised view of humanness.

Writing on Water

The effort of human biowriters to overwrite nature is near-total in Atwood's future. They compose new types of animals, humans, and landscapes, in a belief that technology can improve upon the flaws of the natural. But after the pandemic, nature quietly takes control again. Engineered animals revert to type (O&C p. 38), and weather whips up "like a huge animal unchained and raging" (p. 237). Despite efforts by the bioentrepreneurs at Watson-Crick to overwrite the natural environment with imitation rocks that regulate humidity (O&C p. 200) and mood-sensing wallpaper (O&C p. 201), real natural materials flourish. When buildings no longer house people, they are taken over by flora: "the botany is thrusting itself through every crack… it won't be long before all visible traces of human habitation will be gone" (O&C pp. 221-222). Where people had contained garden areas to the rooftops of urban buildings, the shrubbery takes over until the buildings are "top-heavy" with plant life (O&C p. 95). This swift return of wilderness to the groomed urban environment suggests that nature is an ingrained habit of the planet that cannot be overwritten by engineers. As Snowman realises, "every habit he's ever had is still there in his body, lying dormant like flowers in the desert. Given the right conditions, all his old addictions would burst into full and luxuriant bloom" (O&C p. 276). Flora and fauna are the

[158] Snowman's animalism is not unique to the post-plague landscape. Even before he becomes Snowman, Jimmy is associated strongly with animals. He was "'a tiger'" (O&C p. 17) and "would caper around the room, crossing his eyes and cheeping like a monkey" (O&C p. 31). His schoolyard larks were described as a "chimpanzee act" (O&C p. 54) and he identifies strongly with the anthropomorphised parrot Alex in an educational video (O&C p. 54) and his pet rakunk Killer (O&C p. 59).

planet's habits, and even if they are forced to lie dormant under human constructions, they maintain the power to bloom again. The physical and ideological environment in *Oryx and Crake* recalls that of Zamyatin's shiny glass OneState environment in *We*, which "was all doomed… would all be grown over in grass." (p. 222)

As the natural reasserts itself, Snowman is exposed to it for the first time. It is only after the pandemic, for instance, that he first sees the ocean (O&C p. 350). He is so accustomed to seeing natural effects only in simulation, that he sees morning light as an illusion (O&C p. 357). He muses on what future humans might make of the remnants of pre-pandemic civilization: "Perhaps they'll say, *These things are not real. They are phantasmagoria. They were made by dreams, and now that no one is dreaming them any longer they are crumbling away*" (O&C p. 222; italics in original). Indeed, Atwood implies that these things were never real; they were built in the hubristic belief that humankind had any kind of power over the natural. Genetic engineers labour under the assumption that, in Crake's words, "'Nature is to zoos as God is to churches.'" (O&C p. 206) Here, Crake shows the fallacy in his own reasoning. In the common theological view of God and churches, the church is seen as a house of worship, not containment; God is understood to be everywhere and uncontainable. By likening nature to God, Crake – who doesn't believe in God or Nature when capital letters are in play (O&C p. 206) – shows that he feels both belong within boundaries. But to a reader, it is clear that neither will stay there. Just as God is imagined to be omnipresent, so too nature will flourish outside of zoos. And when Nature flourishes – the type Crake didn't believe in, with a capital N – the individual is diminished: "Can a single ant be said to be alive, in any meaningful sense of the word, or does it only have relevance in terms of the anthill?" (O&C p. 371) By attempting to destroy their own anthills, their own landscapes, their fellow creatures, human beings destroy the context of their relevance. But the damage is not permanent: as the God's Gardeners teach, "all works of Man will be as words written on water" (TYOTF p. 373).[159] Atwood implies that when we rewrite genes, we write on water; even if it takes the death of civilization, our mistakes will be washed away.

Crucially, Atwood heavily hints even the drive to write cannot be overwritten. The Crakers are meant to be "like blank pages" (O&C p. 349), yet they clearly desire narratives. They beg Jimmy (Snowman) for stories throughout *Oryx and Crake*, and they beg Toby for stories throughout

[159] The God's Gardeners are shown in *The Year of the Flood* to be averse to writing. They make their students wipe their chalkboards down each evening, and collect their wisdom only in the form of oral songs and poems. Their philosophy demands that they not write "on" anything – not paper, and not the body or the earth.

MaddAddam. Indeed, the latter novel features regular chapters with titles varying on the formula "The Story of…" in which Toby relates various stories to the Crakers. Her narration is included, but their responses are omitted; yet it is clear from her constant "because…" statements that the Crakers' interludes consist largely of childlike questioning and requests for elaboration.[160] The Crakers' desperation for stories is one of their most defining features, and one which goes directly against Crake's biodesign philosophy. Despite his best attempts to write out narrative, it reemerges in his creations. The trilogy closes with Blackbeard, one of the Crakers, committing his own story to paper. In much the same way that Craker sought the power of writing his ideologies into posthuman life, the Crakers seek the power to document stories. With Toby's help,[161] Blackbeard discovers writing, and discovers how to continue writing, even as the human world collapses:

> And Toby showed me what to do when there should be no more pens of plastic, and no more pencils either; for she could look into the future, and see that a time would come when no pens or pencils or paper could be found any more, among the buildings of the city of chaos, where they used to grow… And Toby gave warnings about this Book that we wrote. She said that the paper must not get wet, or the Words would melt away and would be heard no longer, and mildew would grow on it, and it would turn black and crumble to nothing. And that another Book should be made, with the same writing as the first one. And each time a person came into the knowledge of the writing, and the paper, and the pen, and the ink, and the reading, that one also was to make the same Book, with the same writing in it. So it would always be there for us to read. (MA p. 386)

The use of capital letters for Book and Words in this passage shows that the Crakers have reverted to the kind of reverence for writing that Crake eschewed for God and Nature. Where he rejected capital letters, they reinstated them; thus giving power in their own minds to the act of writing, and adding to the status of the author. At the very close of the trilogy, Blackbeard writes his name into his book: "I have put my name here – Blackbeard – the way Toby first showed me when I was a child. It says that I was the one who set down these words." (MA p. 390) The arrogance Crake showed as a biowriter is set to continue as his creations seek to write their own names upon the earth.

The questions Atwood raises about genetic technology throughout the novels – what does it mean to want to rewrite our genes? is the modified human real? are we just cells, and therefore animals? – are all answered, nihilistically: it doesn't matter. While other authors and filmmakers recycle the ingroup-outgroup models of past generations to examine the role of the genetically

[160] There are, for instance, seven responses beginning with "Because…" in the two pages of "The Story of Zeb and Thank You and Good Night" (MA pp. 84-85).

[161] This is a particularly strong endorsement of the human drive to write given that Toby, as a former God's Gardener, had been taught to fear writing altogether: "your enemies could trace you through it, and hunt you down, and use your words to condemn you" (TYOTF p. 7).

modified posthuman, Atwood takes the view that the very process of trying to overwrite human nature is, itself, recycled. We can try to leave our stamp on our own biology, just as Snowman tries to leave his footprint in the sand in the closing pages of *Oryx and Crake* (O&C p. 373), but ultimately, the tide will come and erase the marks we make. It is Atwood's ecological premise that humankind is locked into an anthropotechnological cycle in which we write on our world, and the writing is erased. Even when Crake tries to write out the human penchant for writing, human nature prevails and the Crakers revert to their Book. Prometheus may have picked up a pen, Atwood hints, but his ink will fade; writing is impermanent, and yet the drive to write is innate.

It is noteworthy that, after the *MaddAddam* trilogy concluded, Margaret Atwood turned her attention to the Future Library project. At the project's launch, one thousand trees were planted outside Oslo. The project will collect one literary work per year for one hundred years, all of which will remain unseen. After one hundred years, the Future Library forest will be felled to provide the paper to print the one hundred literary works in the project's collection (Paterson, 2014). Like the *MaddAddam* trilogy, the Future Library project proposes that writing and the natural world are linked; that one obscures the other, and then vice versa. Atwood's next novel after *MaddAddam*, entitled *Scribbler Moon*, was the 2014 contribution to the project.[162] In a short essay on the Future Library project, Atwood wrote a phrase that would seem to explain the motivations of anyone choosing to write – be they copywriters, biowriters, or narrative-obsessed Crakers:

> I am sending a manuscript into time… How strange it is to think of my own voice – silent by then for a long time – suddenly being awakened, after a hundred years. What is the first thing that voice will say, as a not-yet-embodied hand draws it out of its container and opens it to the first page? I picture this encounter – between my text and the so-far non-existent reader – as being a little like the red-painted handprint I once saw on the wall of a Mexican cave that had been sealed over for three centuries. Who now can decipher its exact meaning? But its general meaning was universal: any human being could read it. It said: *Greetings. I was here.* (Atwood, 2014)

Atwood could almost be describing the project of the genetic scribe who writes a genomic script to achieve some measure of influence through time. The underlying instinct is pure Darwinism: one seeks to achieve immortality through the propagation of genetic material. But when we attempt to make our own mark upon that material, Atwood suggests, nature will override us.

[162] The 2015 contribution is by David Mitchell, showing (so far) a clear connection between the Future Library and writers of an occasionally futurist bent.

Conclusion

As I finish writing this thesis, genetic engineering technologies appear to be reaching their long-touted potential for medical application. Gene therapies have already been used in the context of clinical trials for HIV, spinal cord injuries, and other diseases in adults (Hotta & Yamanaka, 2015). Genetically engineered immune cells from the patient's own body have been used successfully to treat (and potentially cure) a baby of leukaemia (Le Page, 2015). Some types of blood disorders have been treated by inserting a gene into the patient's stem cells, then implanting them into the body; this has been so successful that the United States Food and Drug Administration issued a "breakthrough therapy" designation to fast-track the method's development (Weisman, 2015). Gene therapy, in other words, appears to be gaining legitimacy as a future mainstream form of medical intervention. At the same time, areas of promise are opening for new directions in gene therapy. CRISPR gene editing can now be used to target RNA as well as DNA (Fonfara, Richter, Bratovič, Le Rhun, & Charpentier, 2016), and given findings that RNA plays a significant role in tumour growth (see for example Matouk et al., 2007) this could enable new cancer treatments. Genomic diagnostics are also starting to become widespread, with personal genome sequencing now available commercially, and initiatives such as the 100,000 Genomes Project in the UK enabling research on genetic factors in rare diseases (Genomics England, n.d.).

The question of whether therapeutic gene technologies will become part of mainstream medical science remains to be answered; but the public acceptance or rejection of genetic technologies *in principle* will have a significant bearing on the outcome. For that reason, fictional depictions of genetic technologies (insofar as they influence public opinion) have a unique power to direct the cultural conversation on scientific ethics, and to impact real-world medical treatments. Jon Miller (2012) notes that, for adults who have completed their formal education, cultural and media sources (in his examples, television and the internet) form a significant potential source of scientific literacy (p. 224). Media and cultural sources often combine when newspaper reports use familiar works of fiction to frame (and influence the reception of) real advances in science and technology. Thus, as Nerlich, Clarke and Dingwall (2000) point out, literary characters such as Frankenstein's monster are used as quick reference points in the reporting of new ideas (p. 225). For example, when Dolly's birth was reported in 1997, newspaper articles likened Dolly's cloner Dr. Ian Wilmut to Mary Shelley's Dr. Frankenstein (see for example Krauthammer, 1997; Ross, 1997). Numerous articles have discussed genetically modified crops by talking of the

"Brave New Pharmacy," recalling Aldous Huxley's *Brave New World* (1932) (see for example Lemonick, 2001); or "Frankenfood" (see for example Kanter, 2014). An article on Dolly in TIME Magazine referred to "The Sheep From Brazil" (Whyte, 1997), conjuring Ira Levin's story of Nazi cloning run amok in *The Boys from Brazil* (1976). In a delightfully reflexive turn, *The New York Times* published an article on the tendency for articles to use Franken- as a prefix (Safire, 2000).

José Van Dijck (1999) argues that the reason why literary works are so often incorporated into public discussions of science and technology is because of an "imagination deficit" among scientists and journalists, whose jobs do not permit them time to give extended consideration to the philosophical implications of genetic technologies (p. 9). Works of fiction can fill this deficit by acting as recognisable, pre-packaged "units" of thought on the implications of new technologies; thus fiction becomes a serious part of the language in which cultural discussions of science and technology take place. But the role of fiction in scientific literacy can be problematic. Firstly, not all fiction gives sensitive and balanced consideration to scientific issues. For every nuanced exploration of genetic posthuman selfhood in the context of forced organ donation (*Never Let Me Go*) there is an organ donation narrative that forgoes serious ethical contemplation in favour of sensationalism and car chases (*The Island*). In some cases, fiction may even be scientifically inaccurate. *The Cloning of Joanna May*, for instance, implies that clones' lives would be almost mystically intertwined even if they were raised separately – an idea that, even when the novel was published in 1989, must have struck scientifically literate readers as dubious. If inaccurate or unbalanced works of fiction are used to represent genetic engineering in public discourse, the quality of that discourse will suffer.

But perhaps the most concerning repercussion of using fiction to inform scientific debate is that complex fictional works can be reduced to soundbites. When journalists use fiction as shorthand, their headlines often do not carry the subtleties of the original source material. Frankenstein headlines seldom refer to the construction of creatures who are sensitive to their own difference, as Dr. Frankenstein's monster was in Mary Shelley's novel. Instead, they refer to "mad" projects and roguish scientists, which is a gross oversimplification of Dr. Frankenstein's character and owes more to scaremongering monster movies than to Shelley's novel. These headlines also load new scientific ideas with old baggage. By the time a novel is sufficiently well-entrenched in the popular imagination to act as a soundbite, it will tend to be scientifically outdated. Novels written decades or centuries ago are not accurate descriptors of contemporary genetic engineering science; *Frankenstein* has little relevance to cloned sheep, and *Brave New World* was not written to respond to the specific dangers of genetically engineered crops. While

both novels do articulate concerns relevant to the ethics of modern genetic intervention, the complexities in their treatments of bioengineering are lost when headlines boil them down to soundbites. If the novels studied in this thesis are used in future discussions about bioengineering, it is likely that they will be scientifically outdated and reduced to soundbites too. If real science news is to be filtered through invented science narrative, the subtleties, sensitivities, and relevance of those narratives must be well understood by the reading public; if not, the complex and considered bioethics of classic novels are lost to "Franken-" scare tactics. This risks overstating potential negative outcomes and diverting public opinion and political favour away from scientific research that has great potential for positive outcomes.

Leon Kass, one of the loudest voices in the bioconservative movement to curtail biotechnology research, provides an excellent example of how fiction can sway the bioethical perspective of even the most scientifically literate among us. Kass holds a PhD in biochemistry from Harvard University and spent his early career as a molecular biology researcher. But when he transitioned to a career as a bioethicist, he cited a work of fiction as one of the major impacts on his views. *Brave New World* showed, he claimed, "how the perfectly reasonable and laudatory humanitarian project to conquer disease, master nature, relieve suffering, could, if we are not careful, lead to our degradation"[163] (Manier & Grossman, 2001). This is an egregious failure of interpretation: in *Brave New World*, as in many of the fictions explored in this thesis, it is not science or research that causes the degradation of human beings, but the misuse thereof by a state with too much power. Yet Kass does not limit his objections to the misuse of scientific knowledge. In the aftermath of the Dolly announcement, Kass wrote a piece called "The Wisdom of Repugnance" (1997) in which he argued against human cloning (and research in the field of human cloning) largely on the basis of his belief in the sanctity of the nuclear family, despite his own admission of the potential therapeutic gains to be made. For a scientist to oppose promising scientific research on the basis of its conflicts with his personal value system is anti-intellectual in the extreme. Yet at various points in his career, Kass has argued against in-vitro fertilisation (which now helps infertile couples to conceive),[164] embryonic stem cell research (which holds immense promise for medical research), lifespan-enhancing technologies, cosmetic surgery, and even, as Steven Pinker mocked in a brilliantly acerbic article entitled "The Stupidity of Dignity" (2008), public ice-cream cone licking. It is highly unlikely that misread fiction is to blame for such diverse personal objections; however, it is fiction (in part) that Kass uses to justify his views.

[163] Kass made this statement in relation to C. S. Lewis' *Abolition of Man* (1943) as well as *Brave New World*.
[164] In 1979, Kass eventually endorsed the use of IVF in cases of marital infertility in an article that described his evolving views on fertility technology. But in that same article, the influence of *Brave New World* on his conservatism was evident as he wrote of his fears of "laboratories filled with many living human embryos, growing at various stages of development" (p. 49).

Kass was chosen by George W. Bush to lead the President's Council on Bioethics in 2001; at that point, Kass could apply his misinformed reading of *Brave New World* to the actual science policymaking environment of the entire United States of America.

In the words of science writer Philip Ball (2013), *Brave New World* has been "co-opted as an off-the-shelf warning" against all sorts of questionably relevant biotechnologies (p. 339). The same can be said of numerous other works which highlight the need for *cautious* science, but should not be interpreted as warning against *all* science. Most of the contemporary novels examined in this thesis are highly popular, praised, and cited works of literary fiction. The plots of *Never Let Me Go, Cloud Atlas*, and the *MaddAddam* trilogy are widely known, their authors are literary celebrities, and they have been (or in the case of the *MaddAddam* novels, are about to be) adapted for the screen.[165] My selection of widely known works of fiction is not a coincidence. The texts examined in this thesis have been chosen mainly for their relevance to genetic posthumanism, but also in part for their potential use in future science reporting. But how will *Never Let Me Go*, *Cloud Atlas*, and the *MaddAddam* trilogy (among others) be used in future public discussions of genetic posthumanism? It is possible that they will be used as reductively as their predecessors. They may be cited as examples of potential missteps: it is easy to imagine headlines about Sonmi~451 cells or CRISPR Crakers. The soundbites that will be made of contemporary science-themed novels in the future will slant one way or another depending on how the source material is received and reinterpreted. But overwhelmingly, the fictions examined in this thesis are (like many of their predecessors) anti-exploitation, *not* anti-science. They often endorse the value of exploited genetic posthumans by demonstrating their inherent humanity, and they tend to take a stance against exploitative (often corporatized) science rather than science itself. None takes a simple stance against the use of genetic technologies, though they could easily be misread as doing so. If commentators can be trusted to use these stories sensitively and accurately (a big "if"), then references to Sonmi~451, or the Crakers, or Hailsham, should be used as shorthand for human rights abuses, not scientific transgressions.

In fact, the works examined in this thesis map remarkably well onto Stephen Levick's analysis of the types of social and psychological issues that could affect human clones. In his book *Clone Being* (2004), Levick considers that clones could suffer from identity issues, could be abused,

[165] The film adaptation of *Never Let Me Go* was directed by Mark Romanek (Macdonald, Reich, & Romanek, 2010); the film version of *Cloud Atlas* was directed by Tom Tykwer, Andy Wachowski, and Lana Wachowski (Arndt, Hill, Tykwer, Wachowski, & Wachowski 2012). American pay-channel HBO is developing a series based on the *MaddAddam* trilogy, with Darren Aronofsky attached to direct (Vineyard, 2014).

could be considered commercial products, could be animalised, and could fantasise about forms of family to which they might belong.[166] The stories of genetic posthumanism examined in this thesis represent those issues perfectly, as if they were designed specifically as activist works in support of genetic posthuman rights. Indeed, fiction can be viewed as a form of activism in that it promotes empathy and can be used to bring readers to understand those different to them. Brian Boyd (2013) links the advent of the printing press and the rise of the novel to the decline in social ills around 1650 to 1850: "book production, literacy, and the novel exploded and despotism, judicial torture, capital punishment, and slavery shrank from the norm to the exception" (p. 580). In his excellent book *Human Rights, Inc* (2007) Joseph R. Slaughter argues that literature plays a large part in establishing norms for human rights. Human rights may be enshrined in law, his argument goes, but they are entrenched and normalised in fiction. This is, Slaughter argues, especially true of the *Bildungsroman*, wherein authors have scope to represent and validate "the free and full development of the human personality" which is at the heart of the United Nations Universal Declaration of Human Rights (p. 4). *Bildungsromane*, therefore, normalise the humanity and justify the rights of their subjects.

Katherine Rollo (2012) contends that *Never Let Me Go* and *Cloud Atlas* – and, I would add, numerous other recent works of fiction which take the perspective of genetic posthumans – have examined the social development of clones to such a degree that they qualify as posthuman *Bildungsromane*. In Rollo's words, "the clone is created and raised for a certain purpose and without the situatedness of origins or family or the freedom to choose her own path of development... [the fictional clone is] a marginalised figure who makes a claim for inclusion." (p. 3) Rollo claims that Slaughter's argument applies to these posthuman *Bildungsromane*; that they function to normalise the humanity, and thus the human rights, of clones. I would agree and go further: the contemporary fiction of genetic posthumanism entrenches the humanity of genetically engineered or cloned characters, *and* pre-emptively exposes the immorality of exploitative or discriminatory genetic engineering projects.

But why would so many authors and filmmakers of the past few decades – Ishiguro and Mitchell, yes, but also such diverse creatives as Margaret Atwood, Michael Marshall Smith, Fay Weldon, Kate Wilhelm, Michael Bay, George Lucas, Duncan Jones, Ridley Scott, Caryl Churchill, and Ira Levin – invest their creative time and energy for the issue of genetic posthuman rights? Furthermore, why

[166] Perhaps because he focuses specifically on clones, and not on vaguely defined biotechnological beings, Levick avoids the enhancement assumption that is so prevalent amongst his peers in the wider posthumanist community.

would almost all of them choose to depict genetic posthuman characters as fundamentally human creatures, disadvantaged by various forms of genetic discrimination and exploitation?

As I have mentioned, gene therapies are gaining traction in the medical community. But beyond these specific and (usually) only mildly controversial applications of genetic engineering, there are already signs that a more comprehensive use of human genetic technologies is approaching. The novels studied most closely in this thesis were all written in the first few years of the twenty-first century, when non-therapeutic genetic technologies first appeared possible, and the furore over cloning and engineering so-called "designer babies" was at its most vociferous. In the decade that has followed, the first steps toward genetically engineering embryos have taken place. For example, the United Kingdom Human Fertilisation and Embryology Authority (HFEA) has approved an application from the Francis Crick Institute in London to edit the genomes of human embryos (Callaway, 2016). While this step will not result in the birth of genetically engineered babies,[167] it is a cautious and limited step toward validating the practice of editing the human genome. This step follows the legalisation of three-parent embryos in the UK (Callaway, 2015), and recommendations for the same in the US (Reardon, 2016). While the sensationalism of the designer baby claims has not come to fruition,[168] it now seems reasonable to expect that genetic posthumans may constitute a significant proportion of the population in the coming centuries. The cloning and designer baby controversies of the early 2000s gave authors and writers of a futurist bent good reason to consider the social implications of human genetic engineering; the recent steps toward the creation of actual genetic posthumans give their works renewed relevance.[169]

Given that texts of the posthuman depict the approach of a new type of people, it is perhaps unsurprising that race relations form part of the historical framework that authors draw from as they write the human / genetic posthuman interface. It may be that timing contributes to this; the twentieth was a banner century for racial segregation, and particularly for *opposition* to racial segregation. White Australia anti-immigration policies, the segregation and murder of Jews in

[167] The proposed research involves experimenting with genetically engineered embryos, but terminating them once they reach around 250 cells in size. The embryos will not be implanted in wombs.
[168] There is a significant difference between genetically engineering embryos for fertility research (as these recently approved procedures are doing) and engineering embryos to create desirable offspring (as the "designer baby" controversy implied). Both types of genetic engineering could arguably lead to the creation of genetic posthumans (particularly in three-parent cases), but genetic engineering technologies used purely for fertility purposes would not create any deliberate changes to the characteristics of the subject.
[169] As fiction grapples with the question of what it means to be genetically composed and recomposed, researchers move on. Recent research has found that genetic information from maternal bacteria can transfer to an embryo (Funkhouser & Bordenstein, 2013). How fiction will deal with this revelation – that we may be influenced, in gestation, by something as seemingly arbitrary as our mother's microbiome – remains to be seen.

Europe, South African apartheid, and the famous separate-but-equal doctrine of the post-Civil War American South were regular news items, and were regularly contested and protested. Given the frequency with which racial segregation rested on dehumanising propaganda, it forms an irresistible model for those authors who write of genetic posthumans as a dehumanised Other. As I have shown, it is a model that many have taken up, and echoes of racial segregation can be found across the spectrum of contemporary cloning and genetic engineering narratives. The Othering of the genetic posthuman is likened to the Othering of recent racial outgroups, and through the comparison, genetic discrimination is framed as an unfair and inhumane practice.

The word “humane” is pertinent here. In *Never Let Me Go*, the guardian Miss Emily uses it to describe the Hailsham project (p. 256), and in *Cloud Atlas*, Sonmi’s friend Hae-Joo uses it to describe the Papa Song work environment (p. 332). Neither Hailsham nor Papa Song could be considered humane, given that they are contained spaces in which engineered beings wait to die (and in the Papa Song case, where they work very hard before their deaths). Even if the microcosms of Hailsham and Papa Song are comparatively humane within the worlds of the novels, the systems in which they operate are certainly not. Yet the word “humane” is perfectly pitched for those considering the case of the dehumanised genetic posthuman. In modern usage, it means showing care towards others. This implies the mistreatment of genetic posthumans, because if elements of a system are described as “humane,” there is implied inhumaneness elsewhere within that system. It is commonly applied to the treatment of animals; this further reinforces the animalisation of the genetic posthuman. Most significantly, it is etymologically tied to “human” ("Humane," n.d.); thus the term “humane” carries with it the question that so much genetic posthuman fiction raises: who qualifies as human?

I would like to revisit Claude Lévi-Strauss’s famous assertion that “humanity is confined to the border of the tribe” (p. 12) to illustrate how the fiction of genetic posthumanism uses the concept of humanity’s borders. Fiction which depicts the dehumanisation and exploitation of genetic posthumans serves to complicate and interrupt traditional ingroup/outgroup politics. Relative to the unaltered human, fictional genetic posthumans sit at the border of the tribe. They are neither obviously in, nor obviously out of the bounds of humanity. They are created differently to unaltered humans, yet often resemble humans and/or possess an inherent and recognisable humanness. When works of fiction elicit sympathy for genetic posthumans, they build recognition that what exists at the borders of the tribe – at the edges of humanity – is something relatable. In order to be repulsed by the dehumanisation of genetic posthuman characters, readers must first recognise the

humanity of those characters; and in order to recognise genetic posthuman characters' humanity, readers must reject the notion that they are different to any significant degree.[170] In other words, the fiction examined in this thesis expands the borders of the tribe to promote the view that a being's genetic posthuman status should not preclude their human status. Genetic posthumans become – to use Peter Singer's classic notion – part of the expanding circle of moral concern (1981).

Yet I do not contend that the creators of genetic posthuman fiction are motivated exclusively by a desire to influence the public reception of actual genetic posthumans, now or in the future. While many of these works of fiction appear to pre-emptively assert the humanity of genetic posthumans, they may be using the genetic posthuman as a proxy. Olivia Parkes Banner (2010) suggests that, in the years since the completion of the Human Genome Project, selfhood and the genome have become inextricably linked in the popular imagination; in other words, "'the gene' functions as a central hub for contemporary experience" (p. 3). With the gene as the hub of experience, the genetic posthuman is a perfect proxy for those who might experience being unfairly deemed genetically sub-human. Othered genetic posthumans extrapolate and exaggerate the perceived genetic differences of those already denigrated as being, for one reason or another, inferior. Through scientific and technological metaphors, genetic posthumanism narratives draw attention to the practice of placing genetic Others at the border of Lévi-Strauss's tribe. Those who are discriminated against because of some purported genetic defect or difference are, by extension, the ones whose humanness genetic posthumanism narratives defend. With that in mind, the racial alterity metaphor used in so much recent genetic posthumanism fiction operates in two directions. Just as racial genetic alterity acts as a metaphor for genetic posthuman alterity in fiction, so too genetic posthuman alterity acts as a metaphor for racial (and other forms of) alterity. By exploring the false otherness of the genetic posthuman, the author or filmmaker can comment on the false otherness of numerous groups whose purported sub-humanity has been justified on shaky genetic grounds. Either way, these works advocate for an inclusive human tribe which does not discriminate against or attack segments of its own membership.

Genetic engineering themes are particularly effective tools with which to explore racial (and other forms of genetic) alterity because both hinge on concepts of sameness and difference. Many of the dehumanising regimes of the twentieth century aimed to create racially homogenous populations – either by segregating races, or by means of genocide. These were

[170] Even the Crakers, who are only part-human, evoke feelings of empathy; while they *are* recognisably different to human adults, their helplessness and incorruptibility makes them comparable to human children. They gain in humanity as they learn to read and write, encouraging readers to view the Crakers as innocents coming of age.

projects which employed Othering to exaggerate differences between races, thereby diminishing diversity and promoting homogeneity. The view that homogenous societies made for harmonious societies was central to this agenda. Cloning is a particularly relevant parallel here because it has been described (misleadingly) as a homogenising technology. Jean Baudrillard, one of the most prominent postmodern thinkers of the twentieth century, reasoned that cloning would end otherness entirely. Baudrillard, who devoted a full chapter of his highly influential book *Simulacra and Simulation* (1981) to cloning, wrote that "the clone is the materialization of the double by genetic means, that is to say the abolition of all alterity and of any imaginary" (p.97). Baudrillard's immense body of philosophical works on the nature of the clone frequently attended to what he perceived as the loss of male/female differentiation when sexual reproduction is made obsolete by cloning. For Baudrillard this is primarily a loss of sexual/gender difference or mystique – Ferreira (2005) calls this Baudrillard's perceived "source of seduction" (p. 257) – leading to dull sameness. Baudrillard's fears would clearly not be realised in any but the most extreme cloning regime; such a regime would need to ban sexual reproduction entirely and clone only individuals of one gender in order for all gender differentiation to be lost.

Although Baudrillard's claims are specious, a loss of difference in general is a broadly intuitive claim to make of cloning. Gender difference aside, a copy of a living being *in theory* brings no genetic diversity to the community in which it lives. A philosophical account of cloning could make the argument that human cloning would reduce the overall diversity of the human population and promote sameness. In other words, it would be intuitive to accept that cloning would *diminish* alterity. The enhancement assumption of posthumanist scholars enables this conjecture, because it predicts a posthuman future in which the powers of human beings are heightened and perceived weaknesses are eliminated.[171] However, the degree of sameness that could be expected in cloned populations tends to be overstated based on several misconceptions. Firstly, genes are not wholly deterministic. In practice, a clone may begin from existing genetic material, but stochastic development and environmental factors will influence the expression of genes and result in a being that is not identical to its "original" (Levick, 2004, p. 183). Secondly, cloning would not necessarily replace sexual reproduction. Cloning regimes *alongside* sexual reproduction would not eradicate difference. Thirdly, the group to be genetically replicated is often conceptualised as some ill-defined "we" – humanity *en masse*. Debbora Battaglia (1995) identified exactly this tendency after the controversy over Dr. Jerry L. Hall's cloning experimentation in 1993. In the subsequent media

[171] Some posthumanist scholars do attend to the possibility that enhancements may not be applied equally; see Chapter One for examples of this view.

hysteria, Battaglia detected an unproblematised representation of "a stable, noncontingent value for the autonomous person" (p. 674) – in the language of anthropology, a "selfing" as part of the "Othering" of the potential clones. In practice, human cloning could be only very selectively employed to a small group.

Fiction destabilises the notion that cloning would result in the homogenisation of the gene pool. Because the fiction examined in this thesis depicts genetic technologies in social contexts, it considers the effects of applying those technologies unevenly. Some classes of characters are cloned; others are not. Rather than homogenising an entire population, these works of fiction depict cloning and other genetic technologies splitting a population into genetically-defined castes. Yet even where they engage with the theoretical perspective of the clone-as-double, as advanced by Baudrillard and others, they refute the idea that the clone's purported copy status should diminish their humanness. *Never Let Me Go*, for instance, features clones who are denied the freedoms afforded to their "originals." The theoretical perspective of the clone demands that clones are materially indistinct from their "originals." If the "original" is deserving of the rights and respect afforded to a human being, then a creature genetically indistinct from the original should deserve the same rights and respect. By that logic, if Kathy's "model" is able to live to old age and exercise her free will, Kathy ought to have the same opportunities; the same must be true for Ruth and Tommy, and the less privileged clones outside of Hailsham. If a clone is to be considered a double – and again, this is not scientifically realistic – then it cannot be comfortably Othered. Amit Marcus (2011/2012) writes: "clone narratives jeopardize the idea of a unified and coherent subject and dissolve the differences between oneself and the other" (p. 368). To dehumanise clones would mean accepting, in theory, that organisms genetically near-identical to ourselves could be considered invalid as humans. What would remain of our definitions of humanness? If my copy is demeaned and enslaved, what stops the same from happening to me? As I have argued, a clone would not be a strict double of its original. But by entertaining the notion of the clone as copy, Ishiguro and others create an irrefutable argument for the rights of the clone. If it is a double, it should logically enjoy the same freedoms as its identical original; if it is not a double, it possesses a measure of uniqueness and must be considered more than a mere copy. Either way – whether the clone brings sameness or difference to the population in which it lives – discrimination and exploitation cannot be justified.

Notions of sameness and difference are at the heart of these narratives. The Hailsham students of *Never Let Me Go* are different to one another but theoretically similar to their models, yet considered a different class to non-cloned human beings. The fabricants of *Cloud Atlas* are bred in

identical batches, and are theoretically the same as their "siblings," yet all are considered a sub-species relative to non-cloned human beings. The Crakers of the *MaddAddam* trilogy are (aside from their coloration) largely indistinct from one another in *Oryx and Crake*, yet begin to differentiate themselves and develop more distinctively individual personalities by the conclusion of the trilogy. Yet none of the novels allow their genetic posthuman characters to be identical to one another because of their genetic status. Contrary to the Baudrillardian scenario of diminished or destroyed alterity at the level of the individual, recent fiction shows cloning and genetic technologies resulting in *systemic* alterity at the level of the whole society. Genetic posthuman characters are rarely written to be the same as each other, or less than human; rather, they are *treated* as such by human counterparts who fail to recognise their uniqueness and their humanness.

Refuting the enhancement assumption, these works depict societies which systemically dehumanise (and in some cases, genetically disable) living organisms so as to maintain the dominance of unaltered humans. The genetic posthuman is Othered, exploited, and stunted. This body of fiction overwhelmingly rejects the notion that genetic engineering will create fitter, stronger humans. I contend that contemporary fiction counteracts the biases of posthumanist theory by positioning the genetic posthuman as a (potential) subject of (future) abuse. But depictions of abuse do not constitute arguments against it. In fact, authors of the fiction examined in this thesis do not moralise explicitly against the abuse of genetic posthumans. Instead, they align the (possible, future) abuse of genetic posthumans to the (real, historic) abuse of other marginalised peoples, allowing readers to come to their own moral conclusions. This is a call for inclusiveness that refutes the Baudrillardian notion that cloning brings sameness; that refutes, in fact, the desirability of sameness. By drawing on historical instances of racial alterity, these works of fiction suggest that attempts to reduce social and genetic diversity are counterproductive to the project of building a harmonious society.

In other words, these works of fiction are kind to those at the borders of humanity. As Kathy and her friends think and create, as Sonmi~451 ascends, as the Crakers show their compassion, and as numerous other genetic posthuman characters demonstrate their varying forms of humanity, readers and viewers are led to empathise. The cloning and genetic engineering processes leading to the creation of these characters are often obscured, drawing attention away from the ethics of their genesis. Instead of asking *whether* genetic engineering technology should proceed, the fiction of genetic posthumanism has begun to ask: what have we learned from the mistreatment of other groups based on their purported genetic difference? And in light of those lessons, how should we treat genetic posthumans once they're made? As therapeutic genetic engineering gains momentum,

and genetically engineered people make up an ever-greater proportion of the population, these questions will become increasingly relevant. The remarkably consistent humanity of fictional genetic posthuman characters would seem to lead to one answer: we should treat them as humans.

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