

## CHAPTER 1

# *Genius Sperm, Eugenics and Enhancement Technologies*

In 1978, Robert K. Graham, millionaire inventor of shatterproof eyeglasses, set up the Repository for Germinal Choice on the grounds of his Southern Californian estate.<sup>1</sup> The Repository would offer the sperm of exceptional men to women unable, or unwilling, to become pregnant by their husbands. Graham's initial ideas about where to find his 'genius sperm' led the media to rebaptize the Repository, the 'Nobel Prize sperm bank'. However, Nobel laureates proved reluctant donors. Only one of the couple of dozen Californian prize winners approached by Graham ended up contributing his germinal fluid. Therefore, Graham relaxed his criteria. He petitioned the younger scientists who he predicted would be the Nobel laureates of the future. He also took sperm from Olympic athletes and successful businessmen. The Repository did a better job of attracting the attention of journalists than it did customers, and it was shut down in 1999, two years after Graham's death. At the end of its twenty years of operation, the Repository's tally stood at just over two hundred children.

Graham's customers were prepared to pay for the sperm of men who excelled in science, business and sports because they hoped to have children who would also excel in science, business and sports. But what was in it for him? There must have been more lucrative paths open to the successful inventor. Graham was chasing a dream. He hoped that the Repository would be followed by other genius sperm banks, and that jointly they would arrest a calamitous decline in the quality of human genetic material. In his 1970 book, *The Future of Man*, Graham argued that twentieth-century healthcare systems and social welfare programmes were preventing natural selection from purging the feeble and preserving

the strong. He feared that, unless checked, the welfare state would lead to universal mediocrity and communism. Anecdotal evidence suggests that Graham had a small degree of success. When David Plotz, a journalist with the online magazine *Slate*, matched some of the Repository children with their donors, he found that at least a few were taking after their high-achieving fathers. Three children of an Olympic gold medallist were very athletically talented. The sperm of science and mathematics professors had given rise to children gifted in these areas. Children conceived with the sperm of donors described as having happy temperaments were reported to be habitually upbeat.

This book investigates the idea of human enhancement that motivated Graham to establish the Repository for Germinal Choice. I defend the liberal view suggested by the Repository's full name. More specifically, I will argue that prospective parents should be empowered to use available technologies to choose some of their children's characteristics.

A sperm bank is a clumsy tool of choice. Graham's customers may have attributed the intelligence or happiness of their children to their selection of sperm, but how they raised them is likely to have made at least as significant a difference. Prospective parents may soon have technologies that give them greater power to choose what kinds of children to have. In the future, a woman who wants a brilliant child will not be restricted to the random selection of a genius's genes in the sperm that happens to fertilize her egg. She might choose to get pregnant with a genetic copy, or a clone of the genius. Alternatively, she may be empowered to search out the specific genes linked with genius, and have these engineered into her embryo.

If cloning and genetic engineering come anywhere near to meeting the expectations of writers of science fiction they will enable choices quite unlike those humans have made in the past. In chapter 2 I will address the question of what we can realistically expect of human genetic engineering and cloning as technologies of enhancement. I will argue that we should prepare ourselves for futures in which science fiction expectations are met. This presents us with the problem of how to make good moral choices about the technologies. The *method of moral images*, which I describe and defend in chapter 3, achieves this end by reducing the strangeness of the technologies of enhancement. There are not yet any human beings who have been genetically engineered to be very intelligent; nor have any geniuses been cloned. Nevertheless, we can understand the morality of these undertakings by constructing moral images of them. The activities

referred to by moral images must have two properties. First, they must resemble the practices at issue in relevant respects. Second, we should have secure moral intuitions about them. Under these circumstances, we are justified in transferring moral judgements from familiar to unfamiliar practices. Exploring the limits of the freedom to choose children's characteristics will involve testing many moral images. The liberal position I defend is defined as much by what it bans as by what it permits. The very same moral images that establish the freedom to choose children's characteristics will also help us to understand why some choices should not be permitted.

## TWO KINDS OF EUGENICS

**H**uman cloning and the genetic engineering of human embryos are technologies of the future. But the idea of human improvement has a past. Graham was practising *eugenics*, defined by its nineteenth-century inventor, Francis Galton, as 'the science of improving stock, which is by no means confined to questions of judicious mating, but which...takes cognisance of all influences that tend in however remote degree to give the more suitable races or strains of blood a better chance of prevailing speedily over the less suitable than they otherwise would have had.'<sup>2</sup> Galton thought he knew how this improvement in human stock was to be achieved. He shared with his cousin, Charles Darwin, a fascination for human evolution. But while Darwin's main interest was in describing the forces that have shaped us and other living things, Galton was intent on harnessing them to human improvement. He dreamed of a social system that would not hinder natural selection, but would instead help it to make better humans.

Galton could not have foreseen the evil that would be done in eugenics' name.<sup>3</sup> This evil took its most concentrated form in the racist doctrine of human perfection promoted by the Nazis. Hitler's *lebensborn* or 'life spring' project was supposed to increase the number of blue-eyed, blond Aryans by mating racially screened women with SS men and officers in the German regular army. Room had to be created for these superior beings and their purified blood-lines protected from taint. In the early part of the Nazi era, enforced sterilization and legal bans on the intermarriage of superior and inferior humans were the preferred means of excluding bad hereditary material. Later, death camps were judged more expedient.

Some of Graham's rhetoric seems disturbingly similar to that of the Nazis. He appears to have been a racist, a believer in the superiority of Europeans. Notably, all of Graham's sperm donors were white. Among them was the notorious William Shockley, Nobel laureate co-inventor of the transistor. Upon his death in 1989, Shockley's wife reported that he considered his most important work to be, not his enormous contribution to the computer revolution, but his investigation of race differences in intelligence. Shockley thought that bad hereditary factors were disproportionately located in the genomes of black people. He also argued that any successful American eugenics programme would need to address the fact that the people least well equipped to survive had the highest reproductive rates.

But the name of Graham's business, the Repository for Germinal *Choice*, signals an important difference between him and the Nazis. The Nazis' eugenic template was inflexible. 'Nordic bearing', being of good build without 'disproportion between the lower leg and the thigh or between the legs and the body', freedom from alcoholism, 'absence of the Mongolian fold (inner epicanthic eyefold)' and 'reproductive capability' appear on a list of traits sought for entry into Hitler's SS.<sup>4</sup> They were also the goals of Nazi race science. Graham may have bemoaned the dysgenic tendencies of the modern welfare state, but he did not actively seek to prevent the reproduction of the hereditarily poor. The genius sperm went only to women who wanted it. Graham himself was a fan of the hard sciences, and the men he first approached for sperm reflect this bias. The reluctance of Nobel laureates to part with their germinal fluid was certainly one reason he cast his net wider. But customer demand was another. Women came to the Repository with their own ideas about the kinds of children they wanted. Some were after scientific genius, but others sought athletic talents or good looks, and still others sunny temperaments. Graham is reported to have approached Prince Philip of Britain for a sample of his genetic material. Apparently, the prince rebuffed this particular attempt to add breadth to the Repository's offerings. Moreover, Graham did not appear to hold ordinary folk in complete contempt. Among the maths prodigies and business successes on the Repository register is a man reassuringly nicknamed 'average guy'. 'Average guy' turns out to have had a better reproductive record than any of Graham's Nobel laureates. There was never a successful insemination using sperm from a Nobel laureate, but 'average guy' sired a dozen children.

#### 4 LIBERAL EUGENICS

Those whose vision of human enhancement emphasizes individual choice tend to avoid the term ‘eugenics’.<sup>5</sup> They want language that clearly distinguishes them from the Nazis. But this smacks of Orwellian redefinition. Both approaches are broadly true to Galton’s original conception of human improvement. Anyone advocating such a programme must demonstrate an awareness of the errors of the past. To adapt a saying of the philosopher George Santayana, those who do not learn from the history of human enhancement may be doomed to repeat it. And it is not enough to avoid Nazism. Eugenics was practised in other parts of Europe and in the United States.<sup>6</sup> In all of these places, race and class prejudice was permitted to dictate whose reproductive efforts would be encouraged, and whose would be hindered. While some Americans were competing for the titles of ‘fittest family’ and ‘best baby’, the courts were forcibly sterilizing other Americans on the grounds of congenital stupidity or criminality.<sup>7</sup> Retaining the label ‘eugenics’ makes obvious our obligation to show how what we are contemplating differs from the programmes of Galton’s twentieth-century disciples.

Hitler showed us exactly where eugenics in pursuit of a racial ideal could lead us. However, I will argue that switching attention from races and classes of humans to individuals provides a version of eugenics worthy of defence. We would be rejecting *authoritarian eugenics*, the idea that the state should have sole responsibility for determining what counts as a good human life, in favour of what I will call *liberal eugenics*. On the liberal approach to human improvement, the state would not presume to make any eugenic choices. Rather it would foster the development of a wide range of technologies of enhancement ensuring that prospective parents were fully informed about what kinds of people these technologies would make. Parents’ particular conceptions of the good life would guide them in their selection of enhancements for their children.

The freedoms that define liberal eugenics will be defended in the same fashion as other liberal freedoms. Liberal societies are founded on the insight that there are many different, often incompatible ideas about the good life.<sup>8</sup> Some seek huge wealth, others enlightenment; some devote themselves to their families, others to their careers; some commit to political causes, others to football teams; some worship God(s), others would rather go fishing. And this is only to begin to describe the variation in the kinds of lives that people choose for themselves. Living well in a liberal society involves acknowledging the right of others to make choices that do not appeal to us. John Robertson defends a procreative liberty,

which he understands as individuals' freedom to decide whether or not they become parents and to exercise control over their reproductive capacities.<sup>9</sup> His arguments are motivated by the recognition that one of the most significant choices that people make about their lives concerns whether or not, with whom, when, and how often they reproduce. We have invented a range of technologies to assist us in making these choices. Contraceptive technologies help those who want sex without reproduction. Infertility treatments help those who want reproduction but cannot use sex to achieve it. Genetic technologies currently being developed may give us the power to choose some of the characteristics of our children. Nazi eugenicists would have used these technologies to dramatically curtail reproductive choice. Only a narrow range of human beings would have been deemed worthy of cloning; genetic engineering would have been imposed on couples whose reproductive efforts were deemed incapable of producing children sufficiently close to the Nazi ideal. But liberal eugenicists propose that these same technologies be used to dramatically enlarge reproductive choice. Prospective parents may ask genetic engineers to introduce into their embryos combinations of genes that correspond with their particular conception of good life. Yet they will acknowledge the right of their fellow citizens to make completely different eugenic choices. No one will be forced to clone themselves or to genetically engineer their embryos.

The fact that eugenics has its strongest associations with one of the most illiberal regimes of the twentieth century makes the term 'liberal eugenics' seem an oxymoron. Showing that the differences between liberal eugenics and Nazi eugenics run deeper than rhetoric will require careful attention to how the social and economic realities of liberal societies may subvert individual enhancement choices.

## TECHNOLOGICAL POSSIBILITIES

One difference between liberal and Nazi eugenics is that between pluralistic and monistic views of human excellence. Another lies in the technological means available to mid-twentieth-century Nazi eugenicists and the liberal eugenicists of the future.

Suppose that the Nazi programme of human enhancement had not been terminated by Germany's military defeat. Hitler could never have realized his eugenic ideals, simply because the Nazi science of human

heredity was hopelessly wrong. A text called *Human Genetics*, written jointly by geneticists Fritz Lenz and Erwin Baur, and an anthropologist, Eugen Fischer, served as a repository of Nazi wisdom about heredity. According to this work, genetics would explain why it was that Jews are prone to ‘fraud and the use of insulting language’, why Negroes were lazy, and why ‘the Mongolian character... inclines to petrification in the traditional’.<sup>10</sup> The race scientists hoped that an understanding of heredity would enable programmes that would replace these vices with the Nordic virtues. However, it is wrong to think that the biological distinctions between people of different ethnicities mark a distinction between vice and virtue. One of the most salutary lessons of the new genetics has been the biological closeness of people who look very different. Humans share 99.99 per cent of their genetic material.<sup>11</sup> That leaves room for about 2.1 million genetic letters to vary from individual to individual. But the pattern of even this comparatively small amount of variation is a disappointment for scientific racists. In the early 1970s, the geneticist Richard Lewontin showed that only a small part of overall human genetic variability is between what we think of as different races.<sup>12</sup> From the standpoint of genetics, the differences between Africans, Asians, Europeans and the members of other races are almost invisible. All of this shows that a programme of depressing the reproductive rates of the members of some cultures and boosting that of others could not achieve the end of encouraging virtue, whatever one’s conception of it.

Our understanding of human heredity has come a long way since the Nazi era. The experts on human genetics consulted by the prospective parents of tomorrow’s liberal societies will give vastly better scientific advice than that given by Hitler’s scientific lackeys. A collection of technologies that I will call *enhancement technologies* will enable the selection and manipulation of human traits by selecting and manipulating the hereditary factors that contribute to them.<sup>13</sup>

The most topical of these technologies is cloning. A clone is a genetic copy of another organism. The modern history of cloning begins on 5 July 1996 with the birth of a sheep called Dolly. Dolly was the first mammal successfully cloned from an adult cell, produced by a method known as *somatic cell nuclear transfer*. Her embryo was made by transferring the nucleus of an adult body cell into an egg whose nucleus had been removed. This procedure rejuvenated the genes of the adult cell, enabling them to start life all over again. Before Dolly, this rejuvenation was thought to be a biological impossibility. This is part of the reason for

the surprise that greeted her. But even those not at all concerned about science had some idea about where Dolly could lead. The register of cloned mammals now includes sheep, cows, cats, goats, mice, pigs, horses and mules. Although each of these species has presented its own technical challenges experimenters have overcome them. As biologists like to remind us, humans are just another species of mammal. We are just another challenge for cloners.

Advocates of the technology give a range of reasons for cloning humans. Some tout cloning as a means of creating human embryonic stem cells. This so-called 'therapeutic' cloning would involve the creation of a clone embryo from the cell of a patient requiring transplant tissue. The clone would be allowed to develop to the blastocyst stage, at which point it consists of some two hundred cells. The embryonic stem cells that would now be harvested combine two remarkable powers. Their pluripotency means that they can, in theory, be turned into any type of tissue that the patient might require. The fact that they come from an embryo cloned from the patient should make the new tissue a perfect immunological match. If all goes according to plan, doctors will acquire the powers of automotive mechanics. Mechanics replace a seized gearbox with one up to the standard of the original on the day the car was driven out of the factory. Doctors practising 'regenerative medicine' will provide brand new kidneys, pancreases and hearts that are perfect matches for their recipients. Therapeutic cloners must overcome many scientific obstacles before they open an era of regenerative medicine. In addition, they must also overcome moral obstacles. As we will see in chapter 3, opponents challenge the label 'therapeutic cloning', arguing that it obscures a dark side of the procedure. What they would call 'research cloning' necessarily involves the destruction of human embryos, and so the killing of very young human beings.

While therapeutic or research cloners would stop the development of the embryo well before it has any recognizable human features, others hope to turn clone embryos into clone babies. Dolly's presentation to the world in early 1997 triggered a race to create the first human clone child. The most enthusiastic public advocates of what is known as reproductive cloning are an organization known as CLONAIID. In late 2002 and early 2003 CLONAIID announced, but refused to confirm, the births of three human clones.

Creating a human clone baby would be a scientific coup. But is there a reason for doing it other than to demonstrate that it can be done? Some

see reproductive cloning as a treatment for kinds of infertility intractable by other means. Men who produce no sperm and women left without eggs have nothing for practitioners of *in vitro* fertilization to work with. However, cloners could make children for them out of cells taken from almost any part of their bodies. Those behind CLONAIID have more exotic ambitions. The organization was founded by the Raelians, a UFO cult whose creation myth describes aliens' invention of humanity by cloning. They are vague about what the human species was cloned from. For the Raelians cloning is something more than a means of treating infertility. It is the technology of eternal life. The CLONAIID website announces: 'Once we can clone exact replicas of ourselves, the next step will be to transfer our memory and personality into our newly cloned brains, which will allow us to truly live forever.'<sup>14</sup> Much of their funding comes from people sufficiently enticed by this vision to pay the asking price of US \$200,000.

Cloning by somatic cell nuclear transfer might also serve the purpose of enhancement. In the wake of the first successful cloning of frogs in the early 1960s, the distinguished British biologist J. B. S. Haldane suggested that we select the most talented human beings for cloning.<sup>15</sup> He thought it wise in most cases to wait until candidates were in their fifties so as to be sure that their genomes really warranted repetition. Haldane allowed that athletes and dancers might be cloned younger, and suggested that if we were aiming to boost longevity we should clone healthy centenarians. He thought that this measure might 'raise the possibilities of human achievement dramatically'.<sup>16</sup> A programme for the mass improvement of human stock sounds like something of which Hitler would approve, something inimical to reproductive freedom. But it is not hard to imagine how cloning might promote individual enhancement agendas. The technology presents an option that will appeal to those with the right combination of humility and commitment to a eugenic ideal. While combining your egg or sperm with the sperm or egg of a talented person may offer some chance of having a talented child, cloning improves the odds. You could choose an embryo that would be a genetic duplicate of a certified genius or sports star, and thereby not dilute high-quality genes with your own more lowly genetic material. Were Graham to have opened the Repository for Germinal Choice in the year 2078 he might have collected a Nobel laureate's skin cells rather than his sperm. He might have extracted the nucleus of one of these cells, placed it in an enucleated egg, and put the resulting embryo in the womb of a woman in pursuit of Nobel excellence.

Cloning can serve the end of human enhancement so long as the traits that parents want for their children are influenced by genes. Replicating all of a person's genome reproduces, in a new person, all of the genetic influences that helped shape her. Another biotechnology might enable more precise choices of hereditary influences. This is the biotechnology of genomics, whose task is to describe hereditary material. On 26 June 2000 the publicly funded Human Genome Project and the private Celera Genomics announced the completion of drafts of the collection of all human DNA, the human genome.<sup>17</sup> Work continued and on 14 April 2003 members of the International Human Genome Sequencing Consortium, an organization combining the research efforts of eighteen institutions, believed they had progressed to the point of 'completing' the map.<sup>18</sup> The human genome had been described to 99.99 per cent accuracy. The job of identifying all the human genes and determining their functions remains.

The technique of Pre-implantation Genetic Diagnosis (PGD) enables parents to put genomic information to use. PGD involves the fertilization by IVF (in vitro fertilization) of a number of a woman's eggs. One or two cells are separated from the embryos that result, and are tested for the presence of particular genetic variations. Doctors then introduce only embryos that lack the genetic variants the woman is trying to avoid or that possess the variants that she is seeking.

PGD allows parents-to-be to choose from the variation provided by nature. Genetic engineers may allow them to improve on nature. They would insert genes linked with traits valued by parents into the genomes of their future children. Although diseases have been the early focus, the most morally challenging uses of genetic engineering are driven by an ambition that reaches beyond treating disease.

Consider Doogie, a breed of mouse whose genome has an extra copy of a gene called NR2B<sup>19</sup> The breed's name signals a resemblance between it and the television teen genius, Doogie Howser MD. Joe Tsien, Doogie's Princeton University creator, tells us that the mice acquire new knowledge twice as fast, and retain it for around four to five times as long as their normal counterparts. Doogie's creators offer an explanation for the breed's cognitive talents. Memory involves establishing links between bits of information stored in different parts of the brain and the additional copy of NR2B appears to make brain tissue more connective. The greater number of connections allows the mouse to lay down memories more easily, and to hold on to them for longer. Some researchers at Harvard, more concerned with muscles than brains, have created Schwarzenegger

mice.<sup>20</sup> This feat was achieved by adding an additional copy of the gene that produces a protein associated with muscle growth known as insulin-like growth factor type 1 (IGF-1). Mice with additional IGF-1 not only gain muscle with little exercise, but seem immune from the muscle wasting normally associated with aging.

NR2B and IGF-1 exist in humans. Both research teams speculate about what might be achieved by giving humans additional copies of these genes. Tsien hopes that genetic engineers might one day insert additional NR2B genes into human brain cells to repair the damage done by Alzheimer's and Parkinson's. The Harvard team speculates that IGF-1 offers a biotech solution to muscular dystrophy, a condition characterized by fatal muscle wasting. It is easy to see why scientists fighting for research funding should emphasize the less controversial, therapeutic potential of their work. But there is nothing in nature, no stop sign built into the human genome, limiting these techniques to the treatment of disease. Tsien says that Doogie 'points to the possibility that enhancement of learning and memory or even IQ is feasible through genetic means, through genetic engineering.'<sup>21</sup> The Harvard scientists' choice of the nickname 'Schwarzenegger' indicates an awareness of one potential use of their technique. If you can make Doogie and Schwarzenegger mice, then why not go ahead and make real Doogies and replacement Schwarzeneggers?

Although this brief discussion of enhancement technologies makes us aware of their potential power, we should also be aware of their limitations. Some limitations are inherent in the science on which the technologies rely. Journalists tend to describe the possibilities of human biotechnology as if they are only a few experiments away from being realized. In chapter 2 I will describe some of the obstacles in the way of cloning geniuses or inserting additional NR2B genes into human embryos. Other limitations have more to do with us, or at least with our expectations of the technologies. The popular imagination tends to oversimplify the new technologies to make more apparent their potential perils and dangers. We are encouraged to think that all biotechnologists have to do to make a genius is to find the right genes and insert them into a suitable embryo, and that Einstein's clone would, of necessity, achieve scientific breakthroughs on a par with those of Einstein. This is *genetic determinism*. It is based on a misunderstanding about the significance of genes in making persons that overstates what enhancement technologies can achieve. Genes certainly influence intelligence, but they are not the only influence. We will not arrive at sensible moral guidelines for enhancement

if we rely on the cartoon representation of human development presented by genetic determinists. I will investigate the issue of what enhancement technologies can achieve in chapter 2.

## MORAL PERPLEXITIES

**S**uppose we do put enhancement technologies in the hands of prospective parents. The Nazis taught us how badly states can go wrong in implementing their ideas about human improvement. But there are also many ways in which individuals can err.

A contemporary case points us towards the kinds of moral perplexities that liberal eugenics will confront. Although few would go as far as the Repository's customers in pursuit of academic, sporting and business success, these are things that we tend to want for our children. Contrast the choices made by the Repository's customers with a choice that Graham would definitely not have countenanced. Sharon Duchesneau and Candace McCullough were a lesbian couple who wanted a child.<sup>22</sup> In an earlier era the notion of two women starting a family together would have caused scandal; however, what provoked public anxiety was not that the two wanted a baby, but the kind of baby they wanted. Duchesneau and McCullough, both deaf since birth, wanted a baby who would resemble them in this way. Said Duchesneau about their quest, 'A hearing baby would be a blessing. A deaf baby would be a special blessing.'<sup>23</sup> The couple's request for a congenitally deaf donor was turned down by several sperm banks. So Duchesneau and McCullough approached a friend with an impeccable pedigree of deafness – he was not only deaf, but had five generations of deafness in his family. At four months of age Gauvin McCullough was perhaps not quite the perfect baby – he had a slight amount of hearing in one ear.

Consider how the technologies I have just been describing might have helped Duchesneau and McCullough in their quest for a deaf child. Some deaf people perceive a threat to their community from genetic technologies. It is true that our current maps of the human genome point to a number of mutations linked with deafness, and that congenital deafness is a condition that many parents-to-be will want to avoid. But any test that helps them do this would also help Duchesneau and McCullough in their quest for a deaf child. They would choose the embryos that others would discard. The clone of either Duchesneau or McCullough may have a

greater chance of turning out deaf than a child produced from an egg of one of them and the sperm of another person. Their clone child could have other advantages. She would certainly be female and, to the extent that genes influence female sexual orientation, would have a higher chance of being gay.

Duchesneau's and McCullough's choice seems bizarre. Isn't choosing to have a deaf child choosing to have a disabled child? Ever since J. S. Mill, liberals have distinguished sharply between decisions concerning oneself and those concerning others. While the former kind of decision is morally protected, the latter kind must address the interests of the people it affects. The burden of the deafness Duchesneau and McCullough created falls most directly on Gauvin. Critics wonder what separates what they did from the intentional deafening of a hearing child. At least Duchesneau and McCullough can point to a clear difference between them and the Nazis. Hitler's race hygiene laws dictated sterilization for the hereditarily deaf.

The recognition that some choices are harmful, regardless of what parents say in their defence, sets moral limits on the realization of their values in the lives they will create. What grounds should be used to decide whether, their protestations notwithstanding, Duchesneau and McCullough's choice actually harmed Gauvin? The analysis of harm we arrive at must explain how it is that one can ever be harmed by being brought into existence in a certain way. Gauvin may be hard of hearing, but had Duchesneau and McCullough been forced to choose different sperm they would have had a different child. How can deafness harm Gauvin, if the alternative for him is not a hearing existence but no existence at all?

We must also ask whether what Duchesneau and McCullough did is really so different from what others do without any need for justification. Suppose Sharon Duchesneau had not been a lesbian. Instead of being with Candace McCullough, she falls for the profoundly deaf man who in fact donated the sperm used to conceive Gauvin. They have a child together. This sounds like a conventional story about a man and woman who fall in love and decide to start a family. But the procreative consequences of this counterfactual decision could be identical to those of Duchesneau's and McCullough's actual decision. Perhaps Duchesneau and her male partner don't think of themselves as deliberately having a deaf child, but they do confess that their mutual attraction has a great deal to do with their deafness, and the fact that they have faced and overcome

similar hurdles in life. It is possible that Duchesneau and McCullough and the Repository's customers are just consciously doing what everyone else has always done subconsciously. We tell ourselves that we take an interest in the intelligence of our mates so we can converse with them about Martin Amis novels or be guided through the process of setting the time on the VCR. However, evolutionary psychologists tell us that, deep down, the intelligence of a mate matters to us because we see it as influencing how intelligent our offspring will be.

The deaf couple had a ready response to the allegation that they had ignored the welfare of their child. They had taken Gauvin's welfare into account, indeed it was their primary concern. Duchesneau and McCullough argue that their deafness makes them better parents of a deaf child. Furthermore, they reject the description of their actions as the intentional creation of a child with a disability. According to them, there is a sense in which hearing people are disabled. Hearing people are, after all, unable to fully participate in the rich and distinctive culture evolved by the deaf. It is true that our societies are not properly set up to meet the needs of deaf people and this makes their lives more difficult than they would otherwise be, but McCullough says that 'black people have harder lives'. She asks, 'Why shouldn't parents be able to go ahead and pick a black donor if that's what they want?'; answering, 'They should have that option. They can feel related to that culture, bonded with that culture.'<sup>24</sup> Duchesneau and McCullough point out that should Gauvin reject his parents' plans for him, he will have the option of a hearing aid.

We can describe what the Repository's customers and the deaf couple did in ways that make them seem self-centred. People living in liberal societies express their views about the good life by way of their choices about what music to listen to, what clothes to wear, where to live, and what political parties to support. Choosing the characteristics of one's future child appears to be just another mode of self-expression, one that involves not CDs, clothes, apartments, or voting ballots, but instead the lives of the people one brings into existence. This seems to trivialize the having of children. However, the Repository's customers and the deaf couple do not see their choices as motivated by vanity. They present themselves as merely trying to give their children the best possible starts in life. Choosing the best sperm is, for them, much like choosing the best school. Uncharitable people might describe a Catholic parent's selection of Catholic schooling for her child as just the expression of the parent's commitment to her faith, whereas she would insist that her choice was

motivated by what is best for her child. She will point to her own morally legitimate conception of the good life to justify the view that a Catholic education is better than any alternative.

There will surely be some eugenic choices that are beyond the pale. Uses of enhancement technologies that display a callous indifference to a child's future welfare or that are motivated by racism seem clear-cut examples. In his critique of liberal eugenics, Jürgen Habermas argues that the logic of liberalism militates against limiting the choices that individuals can make. He says that from the standpoint of liberal eugenics 'it virtually goes without saying that decisions regarding the genetic composition of children should not be submitted to any regulation by the state, but rather should be left to the parents.'<sup>25</sup> On the face of it, this seems an unlikely claim. Liberal freedoms are always freedoms within limits; no freedom is absolute. The presumption in favour of the freedom of speech does not stop us from banning incitements to commit race crimes or false bomb alerts by passengers on 747s. Therefore, it would seem that liberal eugenicists should be open to the idea that some uses of enhancement technologies are just wrong and should be banned.

However, perhaps there is something about enhancement technologies that rules out interference by the state in individuals' choices. Consider the attempt to transfer to procreative choices the laws that make it illegal for employers to be influenced by racism in their hiring choices. When one chooses a mate one is often also choosing what kind of person will contribute genes to one's children. We accept that racist people can refuse to have children with members of a race they despise because we think that who one is attracted to and repelled by is beyond state regulation. Our negative judgements about their characters do not lead us to force them into relationships with people for whom they claim no attraction. By analogy, perhaps no moral reason could be sufficiently strong to justify the state's intruding on individuals' eugenic choices. Insisting that racism be no motive for the use of enhancement technologies would, in effect, be like insisting that people be sexually attracted to others regardless of skin colour.<sup>26</sup>

Nevertheless, liberal eugenics does permit the state to regulate the use of enhancement technologies. These technologies separate the purely personal choice of what kind of person one will spend one's life with from the choice about what characteristics one's child will have. Prospective parents will be looking to some third party, perhaps the state or perhaps some private organization, to facilitate the second kind of choice. The third

party can and should impose conditions on this co-operation, refusing to assist reproductive choices that are morally defective in some significant way. In the era of human enhancement, it should often withhold assistance. Racists may view the colour of their children's skin as a characteristic chosen by means of their selection of partner, but the results of this eugenic choice are no different from those achieved by those who fall in love with people who just happen to share their skin colour. Enhancement technologies give individuals greater powers to implement their procreative ends, and in doing so magnify the potential harms. The method of moral images will help us to recognize when the providers of enhancement services should withhold their services; the same moral images that motivate a parental prerogative to use enhancement technologies will also establish the prerogative's limits.

## HITHER POSTHUMANITY?

It would be blinkered to suppose that enhancement technologies prompt no questions not already raised by the selection of a mate because of the perceived quality of his sperm or her eggs. If they fulfil their potential, cloning by somatic cell nuclear transfer, genetic engineering and genomics will grant an unprecedented power over the future of the human species. We must look beyond the first, cautious attempts at enhancement to consider where liberal eugenics will eventually take us.

Attempts to describe both the perils and the promise of enhancement technologies have crystallized around the concept of *posthumanity*. The Transhumanist FAQ is the manifesto of an organization called the World Transhumanist Association, established to advocate the enhancement of human beings. It defines a posthuman as 'someone or an entity whose basic capacities so radically exceed those of unaugmented humans as to be best thought of as constituting a new kind of being'.<sup>27</sup> Posthumans will be anticipated by the intermediate stage of transhumans, beings who have benefited from enhancement technologies to some extent, but remain recognizably human.

The transhumanist writer Mark Walker gleefully imagines the benefits that would follow from doubling our cranial capacities from an average of 1,300 cc to 2,600 cc, producing a being who exceeds 'humans in intelligence by the same margin as humans exceed that of chimpanzees'.<sup>28</sup> Geneticists have identified a gene whose manipulation might achieve

this.<sup>29</sup> The ASPM gene on chromosome 1 is thought to play a significant role in the growth of the brain. Scientists have identified a part of this gene whose length seems to dictate how many times neuronal stem cells divide. This part of the fruit fly ASPM gene is shorter than its analogue in mice, which is in turn shorter than the human analogue. It is conceivable, though far from proven, that lengthening this part of the human gene might produce a larger brain. Many questions remain before such a thing could be attempted. Posthuman babies, like human ones, will need to be born. If there were not a correlative widening of the birth canal, this process would become a much greater ordeal for women than it currently is.

Enhancers may not be limited to stereotypically human traits. Lee Silver, a Princeton geneticist whose best-selling book on human biotechnology was published in the wake of the announcement of Dolly the sheep, notes that '[i]f something has evolved elsewhere, then it is *possible* for us to determine its genetic basis and transfer it into the human genome.'<sup>30</sup> He imagines future humans with the ability to detect ultraviolet light and with the olfactory powers of dogs. Silver wonders if we might one day give our children powers not found anywhere in nature, for example, radiotelepathy, the capacity to 'send and receive information as radio waves.'<sup>31</sup>

This sounds like the stuff of science fiction. Why should we want to replace ourselves with beings that seem as close to us as the movie aliens often depicted as intent on our destruction? Nick Bostrom presents the potential pleasures of posthumanity as justification for taking this step.

We can conceive, in the abstract at least, of aesthetic and contemplative pleasures whose blissfulness vastly exceeds what any human has yet experienced. We can imagine beings that reach a much greater level of personal development and maturity than current human beings do, because they have the opportunity to live for hundreds or thousands of years with full bodily and psychic vigor. We can conceive of intellects that are much smarter than our own, that read books in seconds, that are much more brilliant philosophers than we are, that can create artworks, which, even if we could understand them only on the most superficial level, would strike us as wonderful masterpieces. We can imagine love that is stronger, purer, and more secure than any human has yet harbored.<sup>32</sup>

Transhumanists allow that we may have difficulty relating to the inhabitants of the biotechnological future, but if they are free of disease,

super-intelligent, and routinely compose symphonies whose brilliance surpasses that of Beethoven's Ninth, this failure of identification is our problem, not theirs. Or is it?

On one of my first attempts to visit the Transhumanist FAQ I found that its website had been hacked. Rather than being taken to a site that would inform me of posthumans' various virtues, I was taken to a webpage advertising products that would enlarge my penis. The hackers may have been working on behalf of the penis enlargers – happy to find a way of advertising their product other than spam e-mail. But there is another possibility. The hackers may have intended their diversion as a criticism of the transhumanist ethos, the idea that once we identify something as good it must always be better to have more of it. Why be content with an IQ of 100 when you might have one of 180, or 70 years of life when you might have 120, or six inches when you might have...?<sup>33</sup>

The opponents of enhancement technologies say that we need a less simplistic understanding of the impact of enhancement on human beings. We should be asking not whether enhancement technologies will make human beings 'better', but whether they will make humans 'whole'.<sup>34</sup> These opponents are an ideologically disparate group. They include Francis Fukuyama who, in his book *The End of History and the Last Man*, forecasts a liberal democratic future for all of humanity. There is also the environmentalist writer, Bill McKibben.<sup>35</sup> Leon Kass, a conservative social critic, provides the group's intellectual leadership from his position as the chair of President Bush's Council on Bioethics. Kass initially achieved prominence as a critic of IVF in the 1970s and early 1980s.<sup>36</sup> He has since become the most vociferous opponent of human cloning.<sup>37</sup> For simplicity's sake I will refer to these critics of enhancement technologies as 'conservatives'. Like the transhumanists, they use the concepts of humanity and posthumanity to make their moral points. Elsewhere conservatives are people who seek to preserve established customs and social arrangements. However, these thinkers are conservative in a more fundamental sense. Rather than striving to protect some manner of acting, they see themselves as preserving both humanity and human meaning.

Both Kass and Fukuyama appeal to Aldous Huxley's *Brave New World* to explain why we should be horrified by biotechnology's propensity to make us posthuman. In giving us what we ask for, biotechnology empties our lives of meaning. Here is how Kass describes Huxley's imagined technological dystopia:

The Brave New World has achieved prosperity, community, stability and near-universal contentment, only to be inhabited by creatures of human shape but stunted humanity. They consume, fornicate, take ‘soma,’ enjoy ‘centrifugal bumble-puppy,’ and operate the machinery that makes it all possible. They do not read, write, think, love, or govern themselves. Art and science, virtue and religion, family and friendship are all passé. What matters most is bodily health and immediate gratification: ‘Never put off till tomorrow the fun that you can have today.’ No one aspires to anything higher. Brave New Man is so dehumanized that he does not even realize what has been lost.<sup>38</sup>

Kass wonders what is the point of freeing ourselves of biological limitations if doing so leaves nothing worth wanting.

Although they share an interest in posthumanity, the moral visions of the transhumanists and the conservatives are starkly opposed, drawing on very different views about what makes humans morally special and how enhancement technologies impact on these things.

The liberal eugenics that I defend occupies a location between these extremes. Against the conservatives, I argue that enhancement is not incompatible with a meaningful human life. But against the transhumanists, I offer no unconditional endorsement of the idea that we should use technological means to increase the psychological and physical vigour of our descendents. The transhumanist vision of a seamless fusion of humanity with technology may appeal to some prospective parents, but it will certainly not appeal to others. Furthermore, the onus will be on those with very ambitious visions of enhancement to show that they do not harm those they bring into existence.

In the next chapter I address the issue of how we should characterize enhancement technologies so as to enable good moral choices about them.