

somehow dehumanized? As with muscles, so with memory: The fundamental question is not how to assure equal access to enhancement but whether we should aspire to it. Should we devote our biotechnological ingenuity to curing disease and restoring the injured to health, or should we also seek to improve our lot by reengineering our bodies and minds?

Height

Pediatricians already struggle with the ethics of enhancement when confronted by parents who want to make their children taller. Since the 1980s, human growth hormone has been approved for children with a hormone deficiency that makes them much shorter than average.¹² But the treatment also increases the height of healthy children. Some parents of healthy children who are unhappy with their stature (typically boys) ask for the hormone treatments on the grounds that it should not matter whether a child is short because of a hormone deficiency or because his parents happen to be short. Whatever the cause, the social consequences of shortness are the same in both cases.

In the face of this argument, some doctors be-

gan prescribing hormone treatments for children whose short stature was unrelated to any medical problem. By 1996 such "off-label" use accounted for 40 percent of human growth hormone prescriptions.¹³ Although it is not illegal to prescribe drugs for purposes the Food and Drug Administration (FDA) has not approved, the pharmaceutical companies cannot promote such use. Seeking to expand its market, one company, Eli Lilly, recently persuaded the FDA to approve its human growth hormone for healthy children whose projected adult height is in the bottom first percentile—under five feet, three inches for boys; four feet, eleven inches for girls.¹⁴ This small concession raises a large question about the ethics of enhancement: If hormone treatments need not be limited to those with hormone deficiencies, why should they be available only to very short children? Why shouldn't all shorter-than-average children be able to seek treatment? And what about a child of average height who wants to be taller so he can make the basketball team?

Critics call the elective use of human growth hormone "cosmetic endocrinology." Health insurance is unlikely to cover it, and the treatments are

expensive. Injections are administered up to six times a week, for two to five years, at an annual cost of about \$20,000—all for a potential height gain of two or three inches.¹⁵ Some oppose height enhancement on the grounds that it is collectively self-defeating; as some become taller, others will become shorter relative to the norm. Except in Lake Wobegon, every child cannot be above average in height. As the unenhanced begin to feel shorter, they too might seek treatment, leading to a hormonal arms race that will leave everyone worse off, especially those who cannot afford to buy their way up from shortness.

But the arms-race objection is not decisive on its own. Like the fairness objection to bioengineered muscles and memory, it leaves unexamined the attitudes and dispositions that prompt the drive for enhancement. If we were bothered only by the injustice of adding shortness to the problems of the poor, we could remedy that unfairness by providing publicly subsidized height enhancement. As for the collective-action problem, the innocent bystanders who suffer relative height deprivation could be financially compensated by a tax imposed on those who buy their way to greater height. The real question is whether we want to live in a society

where parents feel compelled to spend a fortune to make perfectly healthy kids a few inches taller.

Sex Selection

Perhaps the most alluring nonmedical use of bioengineering is sex selection. For centuries parents have been trying to choose the sex of their children. Aristotle advised men who wanted a boy to tie off their left testicle before intercourse. The Talmud teaches that men who restrain themselves and allow their wives to achieve sexual climax first will be blessed with a son. Other recommended methods have involved timing conception in relation to ovulation, or to the phases of the moon. Today, biotech succeeds where folk remedies failed.¹⁶

One technique for sex selection arose with prenatal tests using amniocentesis and ultrasound. These medical technologies were developed to detect genetic abnormalities, such as spina bifida and Down syndrome. But they can also reveal the sex of a fetus, allowing for the abortion of a fetus of the undesired sex. Even among those who favor abortion rights, few advocate abortion simply because the mother (or father) does not want a girl. But in societies with powerful cultural preferences for boys, ultrasound sex determination followed by the

abortion of female fetuses has become a familiar practice. In India, the number of girls per 1,000 boys has dropped from 962 to 927 in the past two decades. India has banned the use of prenatal diagnosis for sex selection, but the law is rarely enforced. Itinerant radiologists with portable ultrasound machines travel from village to village, plying their trade. One Bombay clinic reported that of 8,000 abortions it performed, all but one were for purposes of sex selection.¹⁷

But sex selection need not involve abortion. For couples undergoing in vitro fertilization (IVF), it is possible to choose the sex of the child before the fertilized egg is implanted in the womb. The procedure, known as preimplantation genetic diagnosis (PGD), works like this: Several eggs are fertilized in a petri dish and allowed to grow to the eight-cell stage (for about three days). At that point, the early embryos are tested to determine their sex. Those of the desired sex are implanted; the others are typically discarded. Although few couples are likely to undergo the difficulty and expense of IVF simply to choose the sex of their child, embryo screening is a highly reliable means of sex selection. And as our genetic knowledge increases, it may be possible to use PGD to cull embryos carry-

ing other undesired genetic traits, such as those associated with obesity, height, and skin color. The 1997 science fiction movie *Gattaca* depicts a future in which parents routinely screen embryos for sex, height, immunity to disease, and even IQ. There is something troubling about the *Gattaca* scenario, but it is not easy to identify what exactly is wrong with screening embryos to choose the sex of our children.

One line of objection draws on arguments familiar from the abortion debate. Those who believe that an embryo is a person reject embryo screening on the same grounds that they reject abortion. If an eight-cell embryo growing in a petri dish is morally equivalent to a fully developed human being, then discarding it is no better than aborting a fetus, and both practices are equivalent to infanticide. Whatever its merits, however, this "pro-life" objection is not an argument against sex selection as such. It is an argument against all forms of embryo screening, including PGD carried out to screen for genetic diseases. Because the pro-life objection finds an overriding moral wrong in the means (namely, the discarding of unwanted embryos), it leaves open the question of whether there is anything wrong with sex selection itself.

The latest sex selection technology poses this question on its own, unclouded by the matter of an embryo's moral status. The Genetics & IVF Institute, a for-profit infertility clinic in Fairfax, Virginia, now offers a sperm-sorting technique that makes it possible for clients to choose the sex of their child before it is conceived. The X-bearing sperm (which produce girls) carry more DNA than Y-bearing sperm (which produce boys); a device called a flow cytometer can separate them. The trademarked process, called MicroSort, has a high rate of success—91 percent for producing girls, 76 percent for boys. The Genetics & IVF Institute licensed the technology from the U.S. Department of Agriculture, which had developed the process for breeding cattle.¹⁸

If sex selection by sperm sorting is objectionable, it must be for reasons that go beyond the debate about the moral status of the embryo. One such reason is that sex selection is an instrument of sex discrimination, typically against girls, as illustrated by the chilling sex ratios in India and China. And some speculate that societies with substantially more men than women will be less stable, more violent, more prone to crime or war than societies with normal distributions.¹⁹ These are legitimate

worries, but the sperm-sorting company has a clever way of addressing them. It offers MicroSort only to couples who want to choose the sex of their child for purposes of family balancing. Those with more sons than daughters can choose a girl, and vice versa. But customers may not use the technology to stock up on children of the same sex, or even to choose the sex of their first-born child. So far, the majority of MicroSort clients have chosen girls.²⁰

The case of MicroSort helps us isolate the moral question posed by technologies of enhancement. Put aside familiar debates about safety, embryo loss, and sex discrimination. Imagine that sperm-sorting technologies were employed in a society that did not favor boys over girls, and that wound up with a balanced sex ratio. Would sex selection under those conditions be unobjectionable? What if it became possible to select not only for sex but also for height, eye color, and skin color? What about sexual orientation, IQ, musical ability, and athletic prowess? Or suppose that muscle-enhancement, memory-enhancement, and height-enhancement technologies were perfected to the point where they were safe and available to all. Would they cease to be objectionable?

Not necessarily. In each of these cases, something morally troubling persists. The trouble resides not only in the means but also in the ends being aimed at. It is commonly said that enhancement, cloning, and genetic engineering pose a threat to human dignity. This is true enough. But the challenge is to say *how* these practices diminish our humanity. What aspects of human freedom or human flourishing do they threaten?

3

Designer Children, Designing Parents

THE ETHIC OF GIFTEDNESS, under siege in sports, persists in the practice of parenting. But here, too, bioengineering and genetic enhancement threaten to dislodge it. To appreciate children as gifts is to accept them as they come, not as objects of our design, or products of our will, or instruments of our ambition. Parental love is not contingent on the talents and attributes the child happens to have. We choose our friends and spouses at least partly on the basis of qualities we find attractive. But we do not choose our children. Their qualities are unpredictable, and even the most conscientious parents cannot be held wholly responsible for the kind of child they have. That is why parenthood, more than other human relationships, teaches what the theologian William F. May calls an "openness to the unbidden."¹

MOLDING AND BEHOLDING

May's resonant phrase describes a quality of character and heart that restrains the impulse to mastery and control and prompts a sense of life as gift. It helps us see that the deepest moral objection to enhancement lies less in the perfection it seeks than in the human disposition it expresses and promotes. The problem is not that the parents usurp the autonomy of the child they design. (It is not as if the child could otherwise choose her genetic traits for herself.) The problem lies in the hubris of the designing parents, in their drive to master the mystery of birth. Even if this disposition does not make parents tyrants to their children, it disfigures the relation between parent and child, and deprives the parent of the humility and enlarged human sympathies that an openness to the unbidden can cultivate.

To appreciate children as gifts or blessings is not to be passive in the face of illness or disease. Healing a sick or injured child does not override her natural capacities but permits them to flourish. Although medical treatment intervenes in nature, it does so for the sake of health, and so does not represent a boundless bid for mastery and domin-

ion. Even strenuous attempts to treat or cure disease do not constitute a Promethean assault on the given. The reason is that medicine is governed, or at least guided, by the norm of restoring and preserving the natural human functions that constitute health.

Medicine, like sports, is a practice with a purpose, a *telos*, that orients and constrains it. Of course what counts as good health or normal human functioning is open to argument; it is not only a biological question. People disagree, for example, about whether deafness is a disability to be cured or a form of community and identity to be cherished. But even the disagreement proceeds from the assumption that the point of medicine is to promote health and cure disease.

Some people argue that a parent's obligation to heal a sick child implies an obligation to enhance a healthy one, to maximize his or her potential for success in life. But this is true only if one accepts the utilitarian idea that health is not a distinctive human good, but simply a means of maximizing happiness or well-being. Bioethicist Julian Savulescu argues, for example, that "health is not intrinsically valuable," only "instrumentally valuable," a "resource" that allows us to do what we

want. This way of thinking about health rejects the distinction between healing and enhancing. According to Savulescu, parents not only have a duty to promote their children's health; they are also "morally obliged to genetically modify their children." Parents should use technology to manipulate their children's "memory, temperament, patience, empathy, sense of humor, optimism," and other characteristics in order to give them "the best opportunity of the best life."²

But it is a mistake to think of health in wholly instrumental terms, as a way of maximizing something else. Good health, like good character, is a constitutive element of human flourishing. Although more health is better than less, at least within a certain range, it is not the kind of good that can be maximized. No one aspires to be a virtuoso at health (except, perhaps, a hypochondriac). During the 1920s, eugenicists held health contests at state fairs and awarded prizes to the "fittest families." But this bizarre practice illustrates the folly of conceiving health in instrumental terms, or as a good to be maximized. Unlike the talents and traits that bring success in a competitive society, health is a bounded good; parents can seek it for their chil-

dren without risk of being drawn into an ever-escalating arms race.

In caring for the health of their children, parents do not cast themselves as designers or convert their children into products of their will or instruments of their ambition. The same cannot be said of parents who pay large sums to select the sex of their child (for nonmedical reasons) or who aspire to bioengineer their child's intellectual endowments or athletic prowess. Like all distinctions, the line between therapy and enhancement blurs at the edges. (What about orthodontics, for example, or growth hormone for very short kids?) But this does not obscure the reason the distinction matters: parents bent on enhancing their children are more likely to overreach, to express and entrench attitudes at odds with the norm of unconditional love.

Of course, unconditional love does not require that parents refrain from shaping and directing the development of their child. To the contrary, parents have an obligation to cultivate their children, to help them discover and develop their talents and gifts. As May points out, parental love has two aspects: accepting love and transforming love. Accepting love affirms the being of the child, whereas

transforming love seeks the well-being of the child. Each side of parental love corrects the excesses of the other: "Attachment becomes too quietistic if it slackens into mere acceptance of the child as he is." Parents have a duty to promote their child's excellence.³

These days, however, overly ambitious parents are prone to get carried away with transforming love—promoting and demanding all manner of accomplishments from their children, seeking perfection. "Parents find it difficult to maintain an equilibrium between the two sides of love," May observes. "Accepting love, without transforming love, slides into indulgence and finally neglect. Transforming love, without accepting love, badgers and finally rejects." May finds in these competing impulses a parallel with modern science; it, too, engages us in beholding the given world, studying and savoring it, and also in molding the world, transforming and perfecting it.⁴

The mandate to mold our children, to cultivate and improve them, complicates the case against enhancement. We admire parents who seek the best for their children, who spare no effort to help them achieve happiness and success. What, then, is the difference between providing such help

through education and training and providing it by means of genetic enhancement? Some parents confer advantages on their children by enrolling them in expensive schools, hiring private tutors, sending them to tennis camp, providing them with piano lessons, ballet lessons, swimming lessons, SAT prep courses, and so on. If it is permissible, even admirable, for parents to help their children in these ways, why isn't it equally admirable for parents to use whatever genetic technologies may emerge (provided they are safe) to enhance their child's intelligence, musical ability, or athletic skill?

Defenders of enhancement argue that there is no difference, in principle, between improving children through education and improving them through bioengineering. Critics of enhancement insist there is all the difference in the world. They argue that trying to improve children by manipulating their genetic makeup is reminiscent of eugenics, the discredited movement of the past century to improve the human race through policies (including forced sterilization and other odious measures) aimed at improving the gene pool. These competing analogies help clarify the moral status of genetic enhancement. Is the attempt of

parents to enhance their children through genetic engineering more like education and training (a presumably good thing) or more like eugenics (a presumably bad thing)?

The defenders of enhancement are right to this extent: Improving children through genetic engineering is similar in spirit to the heavily managed, high-pressure child-rearing practices that have become common these days. But this similarity does not vindicate genetic enhancement. On the contrary, it highlights a problem with the trend toward hyperparenting.⁵ The most conspicuous examples are sports-crazed parents bent on making champions of their children. Sometimes they are successful, as in the case of Richard Williams, who reportedly planned the tennis careers of his daughters, Venus and Serena Williams, before they were born; or Earl Woods, who handed a golf club to young Tiger Woods while he was still in a playpen. "Let's face it, no kid puts themselves into a sport this way," Richard Williams told the *New York Times*. "The parents do it, and I'm guilty there. If you don't plan it, believe me, it's not going to happen."⁶