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Brave new biology

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Brave new biology: the challenge for human dignity

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The urgency of the great political struggles of the twentieth century and the new global struggle against terrorism and fanaticism seems to have blinded many people to a deep truth about the present age: nearly all contemporary societies, East as well as West, are traveling briskly in the same utopian direction. Nearly all are wedded to the modern technological project; all march eagerly to the drums of progress and fly proudly the banner of modern science; all sing loudly the Baconian anthem, “Conquer nature, relieve man's estate.” Leading the triumphal procession is modern medicine, which is daily becoming ever more powerful in its battle against disease, decay, and death, thanks especially to astonishing achievements in biomedical science and technology - achievements for which we must surely be grateful.

Yet contemplating present and projected advances in genetic and reproductive technologies, in neuroscience and psychopharmacology, in the development of artificial organs and computer-chip implants for human brains, and in research to control biological aging, we now clearly recognize new uses for biotechnical power that soar beyond the traditional medical goals of healing disease and relieving suffering. We are promised new and effective routes to better children, superior performance, ageless bodies, and happy souls [1].

According to some enthusiasts, human nature itself lies on the operating table, ready for alteration, for eugenic and neuro-psychic “enhancement,” for wholesale re-design. In leading laboratories, academic and industrial, new creators are confidently amassing their powers and quietly honing their skills, while on the street their evangelists are zealously prophesying a post-human future. For anyone who cares about preserving our humanity, the time has come to pay attention.

Some transforming powers are already here. The Pill. In vitro fertilization. Bottled embryos. Surrogate wombs. Cloning. Genetic screening. Genetic manipulation. Organ harvesting.

Mechanical spare parts. Chimeras. Brain implants. Deep brain stimulation. Ritalin for the young, Viagra for the old, Prozac for everyone. And, to leave this vale of tears, a little extra morphine accompanied by Muzak.

Years ago Aldous Huxley saw it coming. In his charming but disturbing novel, Brave New World (it appeared in 1932 and is more powerful on each re-reading), he made its meaning visible for all to see. Huxley shows us a dystopia that goes with, rather than against, the human grain, animated indeed by our own most humane and progressive aspirations. Following those aspirations to their ultimate realization, Huxley enables us to recognize those less obvious but often more pernicious evils that are inextricably linked to the successful attainment of the things we most often pursue.

Huxley depicts human life seven centuries hence, living under the gentle hand of humanitarianism rendered fully competent by genetic manipulation, psychoactive drugs, hypnopaedia, and high-tech amusements. At long last, mankind has succeeded in eliminating disease, aggression, war, anxiety, suffering, guilt, envy, and grief. But this victory comes at the heavy price of homogenization, mediocrity, trivial pursuits, shallow attachments, debased tastes, spurious contentment, and souls without loves or longings. The Brave New World has achieved prosperity, community, stability, and nigh-universal contentment, only to be peopled by creatures of human shape but stunted humanity. They consume, fornicate, take “soma,” enjoy “centrifugal bumble-puppy” and other technological distractions, 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 passe. What matters most is bodily health and immediate gratification. No one aspires to anything higher: Brave New Man is so dehumanized that he does not even recognize what has been lost.

Brave New World is, of course, science fiction. Our Prozac is not yet Huxley's “soma”; cloning by nuclear transfer is not exactly “Bokanovskification”; video games and virtual-reality parlors are not quite the “feelies”; and our current safe and consequenceless sexual practices are not universally as loveless or as empty as those in the novel. But the kinships are disquieting, all the more so since our technologies of bio-psycho-engineering are still in their infancy, yet they vividly reveal what they might look like in their full maturity. Moreover, the cultural changes that technology has already wrought among us should make us even more worried than Huxley would have had us be when he saw us coming.

In Huxley's novel, everything proceeds under the direction of an omnipotent, albeit benevolent, world state. Yet the dehumanization that he depicts does not really require despotism or external control. To the contrary, precisely because the society of the future that we are striving to create

will deliver exactly what we most want -health, safety, comfort, plenty, pleasure, peace of mind and length of days- we can reach the same humanly debased condition solely on the basis of free human choice. No need for World Controllers. Just give us the technological imperative, liberal democratic society, compassionate humanitarianism, moral pluralism, and free markets, and we can take ourselves to a Brave New World all by ourselves -and without even deliberately deciding to go. In case you had not noticed, the train has already left the station and is gathering speed, although there appear to be no human hands on the throttle.

Some among us are delighted, of course, by this state of affairs: a few scientists and biotechnologists, their entrepreneurial backers, and a cheering claque of science fiction enthusiasts, futurologists, "immortalists," and libertarians. There are dreams to be realized, powers to be exercised, honors to be won, and money -big money-to be made. But many of us are worried, and not, as the proponents of the revolution self-servingly claim, because we are either ignorant of science or afraid of the unknown. To the contrary, we can see all too clearly where the train is headed, and we do not like the destination. No friend of humanity cheers for a post-human future.

Truth be told, it will not be easy for us to do much about it. For there are many features of modern life -perhaps especially in the United States, but also in the West more generally- that conspire to frustrate efforts aimed at the human control of the biomedical project.

First, we believe in technological automatism: where we do not foolishly believe that all innovation is progress, we fatalistically believe that it is inevitable. ("If it can be done, it will be done, like it or not.")

Second, we believe in freedom: the freedom of scientists to inquire, the freedom of technologists to develop, the freedom of entrepreneurs to invest and to profit, the freedom of private citizens to make use of existing technologies to satisfy any and all personal desires.

Third, the biomedical enterprise occupies the moral high ground of compassionate humanitarianism, upholding the supreme values of modern life -cure disease, prolong life, relieve suffering- in competition with which other moral goods rarely stand a chance. ("What the public wants is not to be sick," says Nobel laureate James Watson, "and if we help them not to be sick, they'll be on our side.")

Fourth, our cultural pluralism and easygoing relativism make it difficult to reach consensus on what we should embrace and what we should oppose; and serious moral objections to this or that biomedical practice are often facilely dismissed as religious or sectarian.

Fifth, it also does not help that the biomedical project is now deeply entangled with commerce: there are increasingly powerful economic interests in favor of going full steam ahead, and no economic interests in favor of going cautiously and slow.

Sixth, since we live in a democracy, moreover, we face political difficulties in gaining a consensus to direct our future, and we have almost no political experience in trying to curtail or even slow down the development of any new biomedical technology.

Finally, and perhaps most troubling, our views of the meaning of our humanity have been so transformed by the scientific-technological approach to the world and to life that we are in danger of forgetting what we have to lose, humanly speaking.

It is this last matter of self-misunderstanding to which I wish to devote the remainder of this lecture. For we shall have little chance of protecting ourselves against the dangers of runaway biotechnology if we do not adequately understand what is at stake, if we do not recognize which human goods are in danger and worth defending. The first thing needful is a correction and deepening of our thinking.

To be fair, judging from my own students' reactions to Huxley's Brave New World, Americans are not yet so degraded or so cynical as to fail to be revolted by the society he depicts. But it is instructive to notice the nature of their objections. Sensitive egalitarians, they are first bothered by the rigid class structure of the cognitively stratified society, which is divided impermeably into alphas, betas, gammas, deltas, and epsilons, each class with its distinctive employments and pastimes. Yet they fail to notice that, thanks to effective childhood conditioning, members of each group are utterly and equally content with their lot, and class envy and rivalry are non-existent. What's more, it turns out that there is in the end precious little difference between the kinds of existence enjoyed -if that is the right word- by alphas and deltas. Everyone's needs and wants are perfectly met, everyone is equally healthy. Regardless of class, work is utterly routine, amusements are trivial, human relations are sterile, and life's most intense satisfactions come from the pharmacist. Indeed, one could make the case that, despite the strict distinctions of class instituted to perform the differing levels of needed technical and economic activity, the Brave New World is a more egalitarian society than our own or -let me be provocative- than any society the world has known or is likely to know. The seemingly blatant inequality goes little deeper than the variously colored uniforms assigned to the different classes.

Because we are partisans of liberty as well as equality, our second complaint about the Brave New World is its lack of freedom. Everyone's endowments are predetermined through genetic engineering, all beliefs are conditioned, and conformity is obligatory. Using high-powered psychological and chemical techniques of behavior control, the World Controllers see to it that

nothing disturbs the peace or social stability, and all deviants and misfits who think for themselves are whisked away to an island to live among their kind [2].

Yet the lack of freedom, while serious, is not the central defect. People with freedom are capable, entirely of their own volition, of embracing the same shallow relationships and trivial pursuits as the denizens of Brave New World. If you require a monument, just look around. To be sure, freedom is a great desideratum, but its presence is no proof against willing self-degradation and debasement. Everything will depend, finally, not just on the presence of choice, but on what is chosen. What is most repulsive about Brave New World is not inequality or lack of freedom, but dehumanization and degradation. To the extent that we too cannot recognize the presence of dehumanization, we are already more than halfway there.

Consider some of recent bioethical debates in the United States. First, embryonic stem cell research, where the question is argued almost entirely in terms of the goods of life and health. Those in favor insist that regenerative medicine using stem cells will eventually save countless lives and eliminate crushing incapacity; those opposed insist that, in the meantime, lives would be sacrificed in the process, the lives of human embryos now stored in the freezers of in vitro fertilization clinics. Few people paid attention to the meaning of using the seeds of the next generation as a tool for saving the lives of the present one. Fewer people yet worried about the effects not on the embryos but on our embryo-using society of coming to look upon nascent human life as a natural resource to be mined, exploited, and commodified. The little embryos are merely destroyed, but we -their users- are corrupted, desensitized and denatured by a coarsening of sensibility that comes to regard these practices are natural, ordinary, and fully unproblematic. People who can hold nascent human life in their hands unblinkingly and experiment on it without awe have deadened something in their souls.

Or take human cloning. President Clinton's National Bioethics Advisory Commission, in its 1997 report Cloning Human Beings, and the National Academies of Science, in their 2002 report Scientific and Medical Aspects of Human Reproductive Cloning, could agree only that human cloning is for now unethical, because it is, for now, unsafe -an important objection, to be sure, but- note well-not an objection to cloning itself [3].

Against this view stand the libertarians, who insist that all judgments regarded cloning or other novel forms of baby-making should be regarded solely as matters of private reproductive choice: it's a free country, people have a right to reproduce, by whatever means they wish, and regardless of who thinks otherwise. The professional bioethicists, whether libertarian, egalitarian, or humanitarian, are by and large unconcerned with the positive good of keeping human procreation

human, of upholding the difference between procreation and manufacture, between begetting and making. Few of them ponder what it will mean for the relation between the generations if children no longer arise from the coupling of two but from the replication of one. Few seem to care about what it means for a society increasingly to regard a child not as a mysterious stranger given to be cherished as someone to take our place, but rather as a product of our will, to be molded and perfected by design and to satisfy our wants and our desires for our own self-fulfillment.

Or take allowing commerce in organs for transplantation, a prospect now making a comeback in the United States after almost two decades of legal proscription. Once again, the battle is between the patrons of life and the patrons of justice: one the one hand, financial incentives will increase the supply of organs, hence fewer will die; on the other hand, financial incentives will lead to the exploitation of the desperately poor, compounding the injustice of their already unjust condition in the world. No one seems to be concerned about the meaning of regarding the human body as alienable property or what all this trading of body parts bodes for ideas of human selfhood, identity, and personal dignity.

Or take the coming knowledge of the human genome and the prospect of universal genetic screening and genetic engineering, including perhaps some day so-called germline modifications that will directly and deliberately affect future generations. In the United States the dominant ethical discussions are about genetic discrimination in insurance or employment and the matter of "genetic privacy." No one talks much about the hazards to living humanly from knowing too much about your genetic future. No one talks much about the meaning of acquiring godlike powers of deciding which genetic sins are capital offenses against the holy ghost of Health. No one talks very much about the dangers of eugenics. No one talks anything at all about the hubris of believing that we are now, or can ever be, wise enough to use these powers to engineer "improvements" in the next generation.

Finally, take the use of drugs to enhance performance -in sports, at school, or in the current replacement for what used to be called courtship. Some people are concerned about taking unfair advantage of an athletic rival (steroids and "blood doping") or an attractive female ("Ecstasy"), and others worry about coercive pacification by authorities (the misuse of Ritalin in schools). But there is little attention to what it means to begin to change the character and deep structure of human activity, severing performance from effort or, in other cases, pleasure from the activity that ordinarily is its foundation. We worry about addiction to powerful drugs and the bodily harm it causes or the crimes that are related to the fact that they are illegal. But we have yet to recognize the transformation in our humanity that would come from disturbing, through drugs or

brain implants, our fundamental ways of encountering, enjoying, and acting in and on the world, and from becoming the creatures of bioengineers and bioenhancers.

In a word, we are quick to notice dangers to life, threats to freedom, risks of discrimination or exploitation of the poor, and interference with anyone's pursuit of pleasure and happiness. But we are slow to recognize threats to human dignity, to the ways of doing and feeling and being in the world that make human life rich, deep, and fulfilling.

That this is so should come as no surprise, given who we are. We come by this outlook honestly for we are liberals and we are democrats (both lower case). Americans are the privileged descendants of wise Founders who, in declaring independence from the mother country, defined themselves (and us, their descendants) as a people by holding as self-evidently true that all men are created equal, equally endowed with the inalienable rights of life, liberty, and the pursuit of happiness; and, further, that governments exist among men essentially to secure these rights against the depredations of princes, prelates, and their minions, or anyone else who might seek to deny them.

It is impossible to exaggerate the debt we Americans and the world at large owe to the political triumph of these liberal democratic principles. Thanks to liberal democracy, and its fruitful contract with modern science and technology, many ordinary human beings today live healthier, longer, freer, safer, and more prosperous lives than did most dukes and princes in pre-modern times. Yet, though it may appear ungrateful to do so, especially when modern liberal societies have so recently come under lethal attack from religious zealots, we must acknowledge that these liberal principles are by themselves inadequate for dealing with the threats of the brave new biology. For one thing, they neglect other worthy human goods without which human life will not remain human. For another, they are easily corrupted into debased coinage, even contributing to the forces that make a brave new world seem attractive and render its arrival more likely.

Even a little thought shows how life, liberty, and the pursuit of happiness are perfectly compatible with a slide toward our dehumanization. A preoccupation with supporting life embraces all innovations that will push back mortality, no matter what the moral cost. A preoccupation with preserving liberty is no defense against freely made choices that would contribute, wittingly or not, to our degradation. And a preoccupation with attaining happiness understood as contentment would find little reason to object to shaping our moods or gaining our pleasures through drugs obtained from the pharmacist. In a word, the freedom to pursue happiness -that is, to practice happiness understood as living one's life as one sees fit- is perfectly compatible with utter self-indulgence, mindless pursuits, and the factitious gratifications of high-tech amusements and drug induced euphoria. Brave New World? Why not.

What is missing from the liberal pantheon of goods? What goods besides life, liberty, and the pursuit of happiness do we seek to defend? What has been lost when we discern degradation, debasement, and de-humanization? The obvious candidate is “human dignity.” Yet if “human dignity” is to be more than an empty slogan, we need to articulate its meaning, and in ways accessible and persuasive to our fellow liberal democrats. This is no easy matter.

The first trouble with “dignity” is that it is an abstraction, and a soft one at that. The harm of a broken bone, a burned-down house, or a stolen purse are concrete and easily recognized; assaults on human dignity -especially those that are self-inflicted- are much harder to notice. Second, not everyone agrees about what human dignity means. Third, dignity is, at least to begin with, undemocratic. It is an aristocratic idea, tied to excellence or virtue. It virtually all of it original meanings, dignity is not something which, like a nose or a navel, is to be expected or found in every human being. Fourth, insofar as philosophers do talk today about human dignity in some more universal sense, they tie it to “personhood,” and personhood they define in terms of autonomy -mankind's rational will and its capacity for moral choice.

Though they did not have the term, dignity as honor linked to excellence or virtue would certainly be the view of the ancient Greeks. In the heroic world of Homer and the tragic poets, the true or full human being, the he-man who drew honor and prizes as his dignity, displayed his worthiness in noble and glorious deeds. Supreme was the virtue was courage: the willingness to face death in battle, armed only with your own prowess, going forth against an equally worthy opponent who, like you, sought a victory not only over the adversary but, as it were, over death itself. This heroic dignity -think Achilles and Hector-is poles apart from the bourgeois fear of death and love of medicine, though, paradoxically, it honored the human body as a thing of beauty to a degree unsurpassed in human history. Later, following the Socratic turn, heroic excellence was supplanted in Greek philosophy by the virtue of wisdom; the new hero was not the glorious warrior but the philosopher, a man singularly devoted to wisdom, living close to death not on the field of battle but by a single-minded quest for knowledge eternal.

Attractive though these candidates are (we can still read about Achilles and Socrates with admiration), and right though these views of human dignity may be, the Greek exemplars are of little practical use in democratic times. Moreover, the problem with brave new world is not primarily that it lacks glorious warriors or outstanding philosophers (or artists or scientists or statesmen) -though the fact that they are not appreciated in such a world is telling. The basic problem is the absence of a kind of human dignity more abundantly found and universally shared.

In the western philosophical tradition, the most high-minded attempt to supply a teaching of universal human dignity belongs to Immanuel Kant, with his doctrine of respect for persons. Persons, all persons or rational beings, are deserving of respect not because of some realized excellence of achievement but because of a universally shared participation in morality and the ability to live under the moral law. It is the moral life that gives to rational creatures -and only to rational creatures- their special dignity. However we may finally judge it, there is something highly dignified in Kant's project. For he strained every nerve to find and preserve a place for human freedom and dignity in the face of the Newtonian world view, a mechanized account of nature that captured even the human being, omitting only his rational will. And, in its content, there is something austerely dignified in the Kantian refusal to confuse reason with rationalization, duty with inclination, and the right and the good with happiness (pleasure). “Personhood,” understood as genuine moral agency, would indeed be threatened by powers to engineer our genetic makeup and to fiddle around with human appetites through psychoactive drugs or implanting computer chips in brains. We are not wrong to seek to protect it.

Yet Kant's view of human dignity is finally very inadequate, not because it is undemocratic but because it is, in an important respect, inhuman. Precisely because it dualistically sets up the concept of personhood in opposition to nature and the body, it fails to do justice to the concrete reality of our embodied lives, lives of begetting and belonging no less than of willing and thinking. Precisely because it is universalistically rational, it denies the importance of life's concrete particularity, lived always locally, corporeally, and in a unique trajectory from zygote in the womb to body in the coffin. Precisely because “personhood” is distinct from our lives as embodied, rooted, connected, and aspiring beings, the dignity of rational choice pays no respect at all to the dignity we have through our loves and longings -central aspects of human life understood as a grown togetherness of body and soul. Not all of human dignity consists in thinking or choosing. Human dignity embraces more than thinking and willing.

It is easy to see why Kant's notion of “personal dignity” is of but limited value in meeting the challenges of bioethics. True, a bioethics stressing personhood and rational choice is very useful in defending respect for autonomy against violations of the human will, including failures to gain informed consent in the use of human subjects in research or excessively paternalistic behavior by physicians and other experts. But this moral teaching offers us very little in our battle against the dehumanizing hazards of a brave new world. For Kantian dignity is, in fact, perfectly compatible with fetus farming, surrogate motherhood, cloning, the sale of organs, the us of performance-enhancing drugs, or even extra-corporeal gestation, because these peculiar treatments of the body or uses of our embodiments are no harm to that homunculus of personhood that resides somewhere happily in a morally disembodied place. Pace Kant, the answer to the threat to human dignity arising from sacrificing the high to the urgent, the needs of the soul to the cares of the body, is not a teaching of human dignity that severs mind from body, that ignores the urgent, or

that denies dignity to human bodily life as lived. The defense of what is humanly high requires, as I will shortly suggest, am equal defense of what is seemingly “low.”

The account of human dignity we seek goes beyond the said dignity of rational persons, to reflect and embrace the worthiness of embodied human life, and therewith of our natural desires and passions, our natural origins and attachments, sentiments and repugnances, loves and longings. What we need is a defense of the dignity of what Tolstoy called “real life,” life as ordinarily lived, everyday life in its concreteness. It is a life lived always with and against necessity, struggling to meet it, not to eliminate it. Like the downward pull of gravity without which the dancer cannot dance, the downward pull of bodily necessity and our mortal fate in fact makes possible the dignified journey of a truly human life. It is a life that will use our awareness of need, limitation, and mortality to craft a way of being that has engagement, depth, beauty, virtue, and meaning - not despite our embodiment but because of it. Human aspiration depends absolutely on our being creatures self-conscious of our need and finitude, and hence being creatures capable of lofty longings and deep attachments.

Most of our contemporaries will have a hard time with such a suggestion. What, they may well ask, is so dignified about our embodiment? What is inherently dignified about, say, human procreation? What is so dignified in the fact that we rise from the union of egg and sperm, grow as an embryo and fetus in the darkness of a womb, or enter the world through the birth canal -all rather messy matters, truth to tell- rather than, say, as a result of being designed perfectly in the light and tidy laboratory? What is so dignified about being the product of chance rather than of human design? Of natural sex rather than of human artfulness? What, for example, would be wrong with cloning or any other sex-less form of making babies?

To start to answer these questions, we must begin not with laboratory technique and questions of safety, or with questions of reproductive freedom. We must consider the deep anthropology -both natural and social- of sexual reproduction. We need to understand deeply what it means to be a sexual being and what that fact contributes to human dignity. Permit me to remind you of the basic “facts of life,” told non-reductively, and some of the things that follow from them.

Sexual reproduction -by which I mean the generation of new life from (exactly) two complementary elements, one female, one male, usually through coitus- is established (if that is the right term) not by human decision, culture, or tradition, but by nature; it is the natural way of all mammalian reproduction. By nature, each child has two complementary biological progenitors. Each child thus stems from and unites exactly two lineages. In natural generation, moreover, the precise genetic constitution of the resulting offspring is determined by a combination of nature

and chance, not by human design: each human child shares the common natural human species genotype, each child is genetically (equally) kin to each (both) parent(s), yet each child is also genetically unique.

These biological truths about our origins foretell deep truths about our identity and about our human condition altogether. Every one of us is at once equally human, equally enmeshed in a particular familial nexus of origin, and equally individuated in our trajectory from birth to death - and, if all goes well, equally capable (despite our mortality) of participating, with a complementary other, in the very same renewal of such human possibility through procreation. Though less momentous than our common humanity, our genetic individuality is not humanly trivial. It shows itself forth in our distinctive appearance through which we are everywhere recognized; it is revealed in our “signature” marks of fingerprints and our self-recognizing immune system; it both symbolizes and foreshadows exactly the unique, never-to-be repeated character of each human life.

Human societies virtually everywhere have structured child-rearing responsibilities and systems of identity and relationship on the bases of these deep natural facts of begetting. The mysterious yet ubiquitous natural “love of one's own” is everywhere culturally exploited, to make sure that children are not just produced but well-cared for and to create for everyone clear ties of meaning, belonging, and obligation. But it is wrong to treat such naturally rooted social practices as mere cultural constructs (like left- or right-driving, or like the difference between burying and cremating the dead), that we can alter with little human cost. For what would kinship be without its clear natural grounding? And what would identity be without kinship? We must resist those who have begun to refer to sexual reproduction as the “traditional method” of reproduction, who would have us regard as merely traditional, and by implication arbitrary, what is in truth not only natural but most certainly profound.

Let me test my claim of the profundity of the natural way by taking up a challenge posed to me by a friend. What if the given natural human way of reproduction were asexual -that is, if we were sexless beings that naturally reproduced by something like budding or cloning; and what if we now had to deal with a new technological innovation -artificially induced sexual dimorphism (males and females) and the fusing of complementary gametes (sperm and egg)- whose inventors argued cogently that sexual reproduction promised all sorts of advantages, including hybrid vigor and the creation of greatly increased individuality? Would one then be forced to defend natural asexuality because it was natural? Could one claim that it carried deep human meaning?

The response to this challenge broaches the ontological meaning of sexual reproduction. For it is, I submit, impossible for there to have been human life -or even higher forms of animal life- in the absence of sexuality and sexual reproduction. We find asexual reproduction -natural cloning- only in the lowest forms of life: bacteria, algae, fungi, and some lower invertebrates. Sexuality brings with it a new and enriched relationship to the world. Only sexual animals can seek and find complementary others with whom to pursue a goal that transcends their own existence. For a sexual being, the world is no longer an indifferent and largely homogeneous otherness, in part edible, in part dangerous. It also contains some very special and related and complementary beings, of the same kind but of opposite sex, toward whom one reaches out with special interest and intensity. In higher birds and mammals, the outward gaze keeps a lookout not only for food and predators, but also for prospective mates; the beholding of the many-splendored world is suffused with desire for union, the animal antecedent of human eros and the germ of sociality. Not by accident is the human animal both the sexiest animal -one whose females do not go into heat but are receptive throughout the estrous cycle and whose males must therefore have greater sexual appetite and energy in order to reproduce successfully-and also the most aspiring, the most social, and the most open and the most intelligent animal.

The soul-elevating power of sexuality is, at bottom, rooted in its strange connection to mortality, which it simultaneously accepts and tries to overcome. Asexual reproduction may be seen as a continuation of the activity of self-preservation. When one organism buds or divides to become two, the original being is (doubly) preserved, and nothing dies. In contrast, sexuality as such means perishability and serves replacement; the two that come together to generate one soon will die. Sexual desire, in human beings as in animals, thus serves an end that is partly hidden from, and finally at odds with, the self-serving individual. Whether we know it or not, when we are sexually active we are voting with our genitalia for our own demise. The salmon swimming upstream to spawn and die tell the universal story: sex is bound up with death, to which it holds a partial answer in procreation. Rightly understood, there is no such thing as “safe sex.” However physically undignified the sex act or the deed of childbirth, there is something deeply noble in the self-sacrifice that is the inner meaning of sexuality itself.

The salmon and the other animals evince this truth blindly. Only the human being can understand what it means. As we learn so powerfully from the story of the Garden of Eden, our humanization is coincident with sexual self-consciousness, with the recognition of our sexual nakedness and all that it implies: shame at our needy incompleteness, unruly self-division, and finitude; awe before the eternal; hope in the self-transcending possibilities of children and a relationship to the divine [4]. In the sexually self-conscious animal, sexual desire can become eros, lust can become love. Sexual desire humanly regarded is thus sublimated into erotic longing for wholeness, completion, and immortality, a longing which drives us knowingly into the embrace and its generative fruit -as well as into all the higher human possibilities of deed, speech, and song.

Through children, a good common to both husband and wife, male and female achieve some genuine unification (beyond the mere sexual “union” that fails to do so). The two become one through sharing generous (not needy) love for this third being as good. Flesh of their flesh, the child is the parents' own commingled being externalized, and given a separate and persisting existence. Unification is enhanced also by their commingled work of rearing. Providing an opening to the future beyond the grave, carrying not only our seed but also our names, our ways, and our hopes that they will surpass us in goodness and happiness, children are a testament to the possibility of transcendence. Gender duality and sexual desire, which first draw our love upward and outside of ourselves, finally provide for the partial overcoming of the confinement and limitation of perishable embodiment altogether.

Human procreation, in sum, is not simply an activity of our rational wills. It is a more complete activity precisely because it engages us bodily, erotically, and even spiritually, as well as rationally. There is wisdom in the mystery of nature that has joined the pleasure of sex, the inarticulate longing for union, the communication of the loving embrace, and the deep-seated and only partly articulate desire for children in the very activity by which we continue the chain of human existence and participate in the renewal of human possibility. Whether we know it or not -and in the world of recreational sex and assisted reproduction, we are already well on the way to forgetting it- the severing of procreation from sex, love, and intimacy (or, conversely, of sex from love, intimacy, and procreation) is inherently dehumanizing, no matter how good the product.

It was not an accident that Aldous Huxley introduced us to the Brave New World by inviting us into the fertilizing room of the Central London Hatchery, where new human life is produced to order outside the body and cloning is routine. It was not an accident that “birth” and “mother” are regarded in that society as smutty notions, or that sexual activity is regarded as “no big deal.” For there is a deep connection between these perversions of our bodily beginnings and attachments and the degraded flatness of soul that characterizes the entire society Huxley depicts. Why? Because to say 'yes' to cloning baby manufacture is to say 'no' all natural human relations, is to say 'no' also to the deepest meaning of human sexual coupling, namely, human erotic longing. For human eros is the fruit of the peculiar conjunction of and competition between two competing aspirations conjoined in a single living body, the impulse to self-preservation and the urge to reproduce. The impulse to self-preservation is a self-regarding concern for our own personal permanence and satisfaction; the urge to reproduce is a self-denying aspiration for something that transcends our own finite existence, and for the sake of which we spend and even give our lives. Nothing humanly fine, let alone great, will come out of a society that has crushed the source of human aspiration, the germ of which is to be found in the meaning of the sexually complementary “two” that seek unity, wholeness and holiness, and willingly devote themselves to the well-being of their offspring. Nothing humanly fine, let alone great, will come out of a society that is willing to

sacrifice all other goods (including the seeds of the next generation) to keep the present generation alive and intact. Nothing humanly fine, let alone great, will come from the desire to pursue bodily immortality for ourselves.

Finding our way to such insights is, I admit, an increasingly difficult task in modern America. A culture that offers endless remedies to prolong the lives of the living is less likely to be a culture devoted to or interested in procreation. A society, when it does procreate, that sees its children as projects rather than as gifts is unlikely even to be open to the question of the meaning and dignity of procreation. And a culture instructed about life by a biology that sees whole organisms mainly in terms of parts or, what's worse, as mere instruments for the perpetuation of genes -“A chicken is just a gene's way of making more genes”- will reject the question of meaning altogether, because it believes that it already has the answer.

Here at last we have come to the bottom of our troubles. It turns out that the most fundamental challenge for bioethics posed by the brave new biology comes not from the biotechnologies it spawns, but from the underlying scientific thought. In order effectively to serve the needs of human life, modern biology reconceived the nature of the organic body, representing it not as something animated, purposive and striving, but as dead matter-in-motion. This reductive science has given us enormous power, but it offers us no standards to guide its use. Worse, it challenges our self-understanding as creatures of dignity, rendering us incapable of recognizing dangers of our humanity that arise from the very triumphs derived from the brave new biology. What is urgently needed is a richer, more natural biology and anthropology, one that does full justice to the meaning of our peculiarly human union of soul and body in which are concretely joined low neediness and divine-seeking aspiration. In our search for such an account, we can get help from pre-modern sources, both philosophical and biblical. We can learn, for example, from Aristotle an account of soul that is not a ghost in the machine, but the empowered form of a naturally organic body. We can learn from thinking about Genesis what it means that the earth's most god-like creature is a concretion combining ruddy earth and rosying breath; why it is not good for the man to be alone; why the remedy for man's aloneness is a sexual counterpart, not a dialectic partner (Eve, not Socrates); why in the shame-filled discovery of sexual nakedness is humanity's first awe-filled awareness of the divine; and why respect for a being created in God's image means respecting everything about him, not just his freedom or his reason but also his embodiment and his blood.

Exploring these possibilities is for another day. For now it is sufficient if we have seen the need for both a new bioethics and a new biology, a richer ethic of bios tied to a richer logos of bios, an ethical account of human flourishing based on a biological account of human life as lived, not just

physically, but psychically, socially, and spiritually. In the absence of such an account we shall not be able to meet the dehumanizing challenges of the Brave New Biology.

Notes:

[1] For an evaluation of the moral significance of precisely these four prospects, see Beyond Therapy: Biotechnology and the Pursuit of Happiness, a report from the President's Council on Bioethics, 2003.

[2] Huxley himself apparently regarded the lack of freedom as the central problem of his dystopia. The epigraph he selected for the novel is a passage from Nicholas Berdiaeff predicting that the world's elite will soon turn its back on the march to utopia, calling instead for a society “less 'perfect,' and more free.”

[3] This limitation was overcome in the report of our President's Council on Bioethics, Human Cloning and Human Dignity, 2002. The Council unanimously called for a legislative ban on cloning-to-produce-children, based on a wide variety of moral concerns. By a vote of 10-7, we also called for a legislative moratorium on cloning-for-biomedical research. As of this writing, the United States still has no national anti-cloning legislation.

[4] “And their eyes were opened and they saw that they were naked; and they sewed fig leaves together and made themselves girdles. And they heard the voice of the Lord God walking in the garden.” Genesis 3: 7-8.