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## **Androids, Extropians, and Engineered Mutants: Ethics Uploaded into Cyberspace**

by

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When popular culture was admitted to universities as a teaching subject, doom-sayers forecast that it was a fatal concession to cinema- and television-induced illiteracy. The shaman of the day, Marshall McLuhan, said as much. The Gutenberg era was about to be displaced by the dynamic electric image. Books were yielding to the box as the medium of thought transmission.

Three decades down the track McLuhan's forecasts have, in some points, exceeded even his florid imagination. The web, internet, on-line data-retrieval, CD-ROM, interactive multimedia—these electric image innovations come on stream with astonishing velocity, and there is no apparent end to them. McLuhan thought that instantaneous transmission of evening news integrated the globe into a village. The fax, the mobile phone, teleconferencing, the evening news and 30 million internet users make the global village a fact of life.

For McLuhan the electric image is not merely an improved communications technology, a nifty new marketing gadget; it marks a watershed of consciousness.

For a long time I was skeptical of this claim. I hosed down media puffery with the wisecrack that television is just visualised radio. And what is radio but a conversation overheard? Ergo, television is a conversation seen and heard. Most televised conversations are drastically dumbed-down. The editorial rule of thumb for the evening news is 'if it bleeds, it leads'. Investigative television journalism lives by the rule 'keep it simple'. If electric image technology marks a watershed in human consciousness, it is a plunge from the lofty peak of print culture. So I thought.

Ethics, like all else, has been digitally upgraded. Nowadays the electric image is the primary avenue for the communication of ethics where it really counts—change in significant public norms and values. This is so because imaging technology has advanced well beyond the relatively primitive technology of McLuhan's time. Today's electric image is comprehensive. It includes text with graphics. It is no longer a unilateral transmission, like television; it can be manipulated by the user. The electric image database is already vast; potentially it includes all texts and graphics whatever. This means, in cyber argot, that the whole human ideosphere will be mapped into digital information and uploaded into cyberspace. Cyberspace has three components: the hardware carrying signals; the software that routes information transmission; and the web of 'wired' users. The third level of cyberspace has been called an immense collective mind; a new level of consciousness; a distinctive culture—cyberculture. Media shamans make the extravagant claim that it is a human turning point, a step toward control of human evolution.

I make it a rule, on encountering puffery, to remember the Hollywood maxim that you can fool all the people all the time if the advertising is right and the budget is large enough. Touting cyberculture is a promo for the web; and the web in turn is the latest marketing tool. Every web site promotes goods, services, or people. If you doubt, visit university home pages. Of course, promotion need not be untruthful or misleading. But marketing is the art of arousing desire, making friends and elevating prestige. University home pages are commonly designed by marketing agencies that handle the university account. Now it is a truism that knowledge sometimes has marketable outcomes; but sometimes it does not. Disregard of marketability

as a criterion for selecting curriculum and research was the hallmark of the traditional university. Mainstreaming universities into the marketplace suggests that the new consciousness attained by the creation of cyberspace is hucksterism and puffery refined to a new game; let's call it 'interactive theatre without walls'. Anyone can play, and there are no entry requirements. The web is like the TV show, Funniest Home Videos. Wannabe film directors submit their clips hoping for 15 seconds of celebrity. So the web enables corporate and individual selves to design and play an interactive theatrical game with a potentially large audience. The literate classes that Microsoft lures into the web will find themselves 'wired' to this theatre.

If this is right, we would expect that uploading ethics into cyberspace transforms it into promotional theatre. Ethics traditionalists look upon it with an ill eye. They complain that the media 'sensationalise' ethics, meaning that complexities of conduct and judgment are reduced to arresting images. This cannot be the whole story. Religious teachings are packed with sensational images conveyed by stories and pictures. Is there a more riveting image than Jesus on the cross? However, in traditional moral teaching, images iconically interpret discursive complexity by providing models for conduct. But the media have no responsibility for hands-on moral education. The media affect only attitudes. Thus ethics by media fits minds with a gallery of images affecting attitude, but the attitudes are unattached to any particular conduct. This leaves the attitudes without a reality test.

The promotion of animal liberation illustrates the point. Animal lib is an outgrowth of traditional anti-vivisectionism and novel deep ecology. When environmentalism became fashionable, animal lib did not hitch a ride on the popular wave. It seemed flaky to the meat-eating mainstream. Greenpeace changed that by pioneering cyberethics as the televised ethics theatre. The basic idea stems from Sixties protest. Protest impresarios realised that the impact of a demonstration tends to be proportional to the publicity it attracts. No press, no impact; lots of press, high impact. Thus they designed demos for expected media impact. The ostensible action, a sit-in for example, was merely journalist bait. This is called 'the media event'. Greenpeace developed the media event to its logical conclusion by designing the

crowdless protest. The crowd is replaced by teams of stunt men and women who perform dramatic ethical actions involving conspicuous personal risk. Greenpeace also eliminated dependence of television news teams by putting its own camera team at the scene of action. The footage is relayed on the spot by satellite to news services. In the case of animals, they selected the ice flows of Newfoundland, where baby seals are harvested. The bloody business of clubbing seal pups to death as their mothers shriek in horror threw the Canadian seal and fishing industries into a tailspin. Such scenes recruited many millions to animal liberation. But the animal lib following is only a lobbying force, not an ethical force. Few draw the vegetarian conclusion as a rule for their own lives, and they are highly selective in the animals they wish to protect. They endorse the reduction of carp, locust, and hare populations, but balk at kangaroo culling.

My objective is to explore the Web to see how the ethics of genetic engineering looks when uploaded. We open Netscape, select a search engine, and type in the Human Genome Project. The engine serves up about 73,000 thousand hits. We spot the home page for the Ethical, Legal, and Social Issues of the Project. On opening ELSI we are shown a two box matrix spelling out the orientation and objectives. We learn that ELSI is meant to facilitate the uptake of project outcomes while safeguarding against unwanted effects.

A major concern is the potential erosion of privacy by genetic profiles that predict the individual's probable health future. Profiles are expected to become a standard diagnostic tool. But who may access medical records? Law enforcement agencies, insurers, pharmaceuticals, and employers already do so. The Medical Information Bureau, funded by private health organisations, have electronic files on 15 million patients. All users of the data base are keen to access genetic profiles. ELSI research on this challenging question was used to draft the *Genetic Confidentiality and Nondiscrimination Act* presently before Congress. The gist of the Act is to make the release of genetic information conditional on consent of the patient. But there are exemptions for some medical research, court ordered release, and law enforcement. And it leaves insurers free to demand full disclosure of medical information.

ELSI is also charged with devising strategies to deal with probabilistic knowledge of health futures. The problem is familiar to genetic counsellors. But the rather small group presently using this service will expand to include most patients. Consider the impact on the person who is advised that she is at high risk for breast cancer, that her husband is likely to experience a stroke before his fiftieth birthday, and that her son is certain to develop Huntington's chorea. She might find herself somewhat stressed. Multiply that predicament by about 40 million or so clients and you begin to appreciate the scale on which anxiety will multiply. ELSI psychologists are searching for the answers.

Educating the public in the ABC's of genetics and genetic medicine is a priority item. It is appreciated from experience with heritable diseases and disabilities that this is a sensitive area. In addition to media attention to discoveries of genes for medical conditions, the press has sensationalised genes for behavioral traits, such as impulsive violence and homosexuality. There is some public resistance to research into the genetic causes of violence. Activists regularly disrupt conferences devoted to this subject and research funding has been blocked several times. Activists say that genetics disregards or trivialises the social causes of violence. Apprehensive that the genetic revolution could turn sour if the public misunderstand behavior genetics, ELSI is developing low cost instructional packages that explain the clinical and behavioral spectrum of genetics.

One of the values promoted in the educational packages is 'genetic diversity'. 'Diversity' has a biological meaning but it is also a basic concept in affirmative action policy. Its attributes enable persons to qualify for jobs from which they would be excluded if uncorrected standards were applied. Affirmative action is meant to correct racial and gender prejudice, which is based on stereotypes of supposed innate traits. In the controversies touched off by sociobiology, genetic determinism emerged as the so-called ideology of racism, sexism, and class dominance. The debate exploded into a national scandal last year when Charles Murray and Richard Herrnstein published *The Bell Curve: Intelligence and Class Structure in American Life*. They argued that socio-economic status strongly correlates with IQ; IQ in turn

is about 60 percent heritable. Impulsivity, high rates of crime, indigence, ex-nuptial birthing, parental neglect—the slum syndrome—go together with low IQ, Murray and Herrnstein argue. If the wretched of the earth are victims of the police, it is because they were born for crime. The wealthy and powerful, on the other hand, have been dealt a winning hand by parental inheritance, while the numerous middle class express expected distribution around the mean. Class structure, then, is not due to unfair social advantage, but expresses the normal distribution of traits resulting from reproductive recombination.

Most of you will be aware that the substance and the methods of IQ interpretation were developed by Francis Galton long ago and have been refined by psychologists ever since. Why then did their reinsertion in the cultural mainstream touch off so great an outcry? It seems that the increasing public prominence of genetics has increased the anxieties associated it. IQ testing has been discredited and phased out over the past decades because its application produces outcomes incompatible with equity goals.<sup>1</sup> The IQ gate strongly discriminates against blacks and some other ethnic groups but favors Asians and Ashkanazi Jews. The reintroduction of gatekeeping by IQ would demolish affirmative action for ethnic groups (but not for women). However, as genetic research pushes relentlessly forward, direct evidence for the validity of the IQ concept could well emerge, as IQ psychologists confidently predict. The mere possibility of this happening sharpens realisation that basic social commitments, such as affirmative action, are contingent on the unpredictable course of research.

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<sup>1</sup>IQ tests were replaced by the Scholastic Aptitude Test (SAT). SAT scores are the principal university admissions criteria because high school results lack comparability owing to variation in curriculum quality. However, SAT scores closely shadow IQ. Groups that do well on SAT also do well on IQ tests. Notably, when test populations are compared by gender, no differences significant for admissions appear. But when scores are compared by race, blacks are most disadvantaged, Hispanics are somewhat disadvantaged, Caucasians define the mean, and Asians are advantaged. The outcome of applying affirmative action criteria to university admissions is thus neutral toward gender, but disadvantages Asians and Caucasians. This configuration is not predicted by environmental assumptions, but it is predicted by the IQ model of intelligence.

ELSI has a special project on *The Bell Curve*. Somehow it must reconcile its message about the pervasive influence of genes on physical traits, body build, physical and mental health while repudiating the socially disruptive conclusions of *The Bell Curve*. The project is likely to adopt the finding of a blue ribbon panel on IQ established by the American Psychological Association. The panel concluded that IQ is about 50 percent heritable, but that the measured racial differences in IQ derive from the 50 percent environmental component of intelligence. Leaving aside the odd logic of attributing racial difference to environment only, it does not resolve the central issue because test scores reveal that the tertiary environment does not improve IQ scores. But we must wait to see what solution ELSI may come up with.

To summarise. Medical research is routinely promoted on the ground that it saves lives and ameliorates suffering. That claim is made for the expected medical benefits of the Human Genome Project, but in addition U. S. legislators expect clinical services to be completely transformed by molecular medicine. The downside is potential privacy loss, discrimination, and discrediting basic social policy. It will be interesting to see how well the solutions devised by ELSI will deal with these threats.

We now surf to UNESCO's International Bioethics Committee draft declaration on the human genome and human rights. Like other UN declarations, it is meant to set the international standard. The declaration does not raise the questions that three decades ago were thought to be fundamental—whether the modification of plants, animals, and microorganisms is wise or prudent; whether somatic cell therapy was a desirable addition to the medical armamentarium; whether germ line modification is therapeutically and socially sound. Ethical thinking at that time revolved around the polarisation, 'we dare not' and 'why not?' The 'dare not' school of thought warned that the consequences of modifying genomes cannot be foreseen, bearing in mind that modification would occur on an industrial scale.

The declaration doesn't raise these questions because they have been answered by the marketplace. The biotechnology is a multibillion dollar

industry, and 1996 happens to be historic. The first generation of crops engineered for insect resistance (corn and cotton), herbicide tolerance (canola, corn, and cotton), and virus resistance (yellow squash) are commercially available. Public unease about such food products has resulted in requirements that they be labeled. The declaration makes no mention of this background, although it seems to be implicit in its confidence that molecular medicine promises 'vast prospects for progress in improving the health and well-being of individuals and of humankind as a whole'. What exactly is meant? Progress is made when therapeutics for treating or eliminating heritable defects and diseases are developed. Progress for mankind as a whole would be eliminating heritable diseases from the human genome. From the medical and social perspectives, that would undoubtedly be an improvement. But such improvements are also known as 'eugenics' and eugenics is a specter that arouses fierce opposition. The declaration addresses this concern by affirming that the human genome is a 'common heritage of humanity' and that the 'integrity of the human species' must be safeguarded 'as a value in its own right'. But are deleterious genes valuable in themselves? Doctors don't think so. If diabetes can be cured once for all by modifying gene expression, then it should be done. But is that not eugenics? Of course it is. Accordingly, the declaration rules out only 'eugenic practice that runs counter to human dignity and human rights'. The door is left ajar for gene therapies that don't challenge human dignity.

To summarise: the declaration's promo for genetic medicine is comprised of three step routine. The first step is a full-on endorsement of sweeping health benefits. The second is a shuffle in which human dignity is associated with prohibiting intervention in the germ line. But since this is where the real improvements lie, the declaration compromises by allowing that such interventions as do not compromise dignity may be allowed.

A link from the UNESCO home page takes us to the Nuffield Council on Bioethics report, *Animal-to-Human transplants: the ethics of xenotransplantation*. The UK leads in xenographing because a biotechnology firm has created transgenic pigs that may supply hearts, lungs, kidneys and other tissue for transplantation. The Council deliberated submissions from groups that object to xenotransplants, among them the



Farmer's Forum, the Church of Scotland, the Jains, and animal liberation groups. The report approved xenotransplants; the British Medical Council promptly endorsed this recommendation. Surgeons are now free to transplant.

Animal rights concerns dominated the Report. Utilitarian concern was dealt with easily. The Council found that these pigs live in luxury. Their germ line modification does not alter their appearance or their quantum of happiness. Death will come painlessly. Although their death deprives the world of an increment of happiness, that death increases the happiness of the organ recipient, loved ones, the surgery team, and organ suppliers. When weighed on utilitarian scales, Babe's loss of happiness was outweighed by the gain in human happiness.

Rights-based concerns were more troublesome. Animal righters are ethical fundamentalists who reject species chauvinism root and branch. Animals belong to the moral community, they say. The use of pigs for human purposes, even to extend life, is impermissible. But rights fundamentalism was at loggerheads with the medical fundamentalism that it is wrong not to save lives that can be saved. More Britons agree with medical fundamentalism than with animals rights fundamentalism. So the Council report disposed of animal righters by noting that theirs was a minority opinion in a pluralist society; therefore they could not, consistent with democratic commitments, claim to bind the majority. This is a curious argument. The ostensible object of the Council's investigation was to find what is ethical, not to speculate on how Britons, if they had a vote on the matter, would cast their ballot.

Oddly, the Council did not weigh the costs of xenotransplantation against benefits. The very high costs of transplantation are presently capped by the limited supply of organs. But transgenic animals can be supplied in large numbers, and cardiovascular disease patients are a large cohort. The availability of organs is likely to instigate a stampede on transplantation services. How would such pressure impact on the health services environment? The likelihood is increased taxation to provide for a dramatic increase in expenditure, while at the same time services already rationed

would be reduced even further. It seems to me possible that the British voter might reject the new service, if these facts were laid out.

British voters would rest easy if only they knew that cyberculture has the solution. It is called nanotechnology, the art of manufacture on the atomic scale.

There are several links between the Human Genome Project and nanotechnology. One is the Center for Mechanistic Biology and Biotechnology at the University of Chicago and the Argonne National Laboratory. The Argonne's particle physics facility suits it to radiation studies of molecular structure. The Centre also develops bionics and the biochip, an implanted transponder enabling stockmen to keep track of their cattle and cops to keep track of suspects. But this is not yet nanotechnology. The idea of constructing machines on the nano scale—that's one billionth of a metre—was first proposed by Richard Feynman in 1959. Three decades later IBM scientists used a scanning electron microscope to position 35 xenon atoms on a nickel substrate. The prophet of nanotechnology, Eric Drexler, landed the definitive blow to pessimism in his book, *Engines of Creation*. Nanomachines as Drexler imagines them are immortal because they can build replicas of themselves. Taking refuse and discarded goods as input, nanomachines will reposition atoms so that new products come from the old. This in effect reverses entropy. But entropy is the great burden of mechanical civilization. Because of it, industrial machines of wealth wear out and become trash. Because of entropy, our bodies wear out. If nanomachines reverse entropy, they will confer wealth without limit and perhaps life without death.

Entropy reversal is commonly called 'neg entropy'. But it could be called 'extropy', and is so called by Extropians. This group headquarters in Palo Alto and its membership, about 350, includes many who work in the computing industry. They are among the cybercultists promoting the most rapid possible development of technology to recreate the physical, psychology, and social world with superior materials and on a better model. They keenly promote space colonisation, nanotechnology, genetic engineering, bionics, mind uploading, and in general anything that supports

boundless expansion, self-transcendence, and dynamic optimism. They are into cryonics. Nineteen past members had caused their heads or bodies to be quick frozen for revival when resurrection technology needed for resuscitation becomes available.

The 'transhumanism' and 'posthumanism' labels that Extropians attach to their position signifies their polemical stance against humanism. By humanism they mean the kind of forward-looking philosophy promoted by the International Humanist and Ethical Union and the Australian Humanist Association. Humanists have long supported genetic engineering to improve the human species. Thus Linus Pauling, American Humanist of the Year in 1961, wrote for the *American Humanist* at the time of his honor an essay commending the humane uses of eugenics. Humanists also support controlled birthing, world population control, abortion, euthanasia, and world peace. They oppose traditional religion because it humbles reason to authority, and they do battle against creationism, fundamentalism, and Catholic teaching on family and marriage.

Extropians have no quarrel with all this. What they deplore is a failure of nerve—failure to acknowledge that the human species is a transitional stage in the evolutionary pathway to higher beings. Typical of this timidity is UNESCO's apologetics about preserving the integrity of the human genome. Why pretend to preserve what you plainly mean to change, Extropians ask? The fusion of man with machine (called 'defleshing') is already advanced. Pacemakers, artificial joints, artificial lens, bionic ears, the biochip, the artificial retina lie in the bionic spectrum that creates ever more organic, smarter machines and ever more mechanical humans. It is on the cards to develop a brain-implanted nanocomputer interfaced with external supercomputers, thereby endowing individual minds with superintelligence. Let us then put a stop to this snivelling piety toward the now obsolete human genome and dance merrily into the future. The moment of the self-made man is at hand.

This agenda prompts Extropians to discard the hallmark of humanist ethics—the moral community of the human species. On that basis humanists promote a human rights universalism against all claims of ethical particularity.

But universalism is incompatible with natural evolutionary selection of the fittest and with the artificial selection that is about to commence. Not every living specimen of *H. sapiens* is apt material for 'defleshing' and 'uploading'. Most of the earth's six billion population will be left behind. This is not fair, but evolution ruthlessly disposes of stragglers.

To obtain the scenario for the extinction of the unimproved human species, we follow the hypertext that takes us to the home pages touting permanent space settlement. We find the philosophy of space settlement set forth in Marshall Savage's *The Millennial Project* home page; the muscle of the project is NASA.

Savage believes that human intelligence is alone in the universe. He also thinks that the earth's ecology is on a rapid decline that will soon make it incapable of supporting advanced civilization. And in the long run earth is under a solar death sentence. Humans must therefore abandon the earth for an alternative habitation. But this practical reason for space settlement pales before the ethical reason, which is our sacred duty, as the sole intelligent life in the universe, to spread intelligence into a sterile, dead universe. Savage writes: 'It is up to us to see that this ultimate destiny is fulfilled. This is the moment that all creation has been waiting for; when Life at long last emerges from the seed planet and runs riot through the star clouds'. This echoes the posthumanist affirmation: 'We are citizens of the universe and are excited by discoveries still to be made in the cosmos'.

NASA's rationale for permanent space settlement mirrors Marshall Savage's view. Indeed NASA's home page provides a hypertext link to Savage's Millennial Foundation. But as the big player in the limelight, NASA's role is to launch the rockets and to drum up public support. It has diligently shaped its public image as an agency serving telecommunications and scientific discovery, but its funding rationale was its crucial role in the Cold War. The termination of the Cold War also terminated NASA's most spectacular project, the Strategic Defence Initiative (so called 'star wars'). This was a calamity for employment in the space industry and a blow to NASA's large ambitions, including the space settlement project. What to do? The promotions department came up with a doom scenario even more dramatic

than total nuclear war: an asteroid impact. NASA has touted this thriller since star wars was scuttled. The plunge of the Shoemaker comet into Jupiter gave NASA prime time to billboard the titanic forces lurking in the shadows, threatening Earth, even now. 'It could happen at any time' says the NASA promo, because Earth 'orbits the sun in a sort of cosmic shooting gallery'. Promos warn that there is a real chance that an asteroid might 'do to us what it did to the dinosaurs'. These scary tales are brought graphically to life by computer generated images of asteroid strikes. These promos create the need to save the Earth from rogue cosmic invaders. NASA bravely nominates itself as the Savior. In Congressional testimony, it claimed that asteroid disasters are 'the only known natural disaster that could be avoided entirely by the appropriate application of space technology'.

The combination of star wars laser and nuclear missiles seems to be meant. The technology would be impotent against asteroids, but it could put a laser explosion on the boot of Saddam Hussein. So permanent space settlement has as a happy side-effect the capability of enforcing the new world order

NASA demonstrated its impressive promotional skill in selling life on Mars. The idea had little scientific credibility because exhaustive study of data since 1975 had turned up no positive evidence. NASA outflanked peer criticism by blitzing the media with the story two weeks before the scientific evidence was published. This is called 'science by press conference'. Critics find themselves marching uphill against a consensus that includes a laudatory endorsement by the President. In his message Clinton stated that the discovery marks a 'change in human consciousness'. Those dependent on government grants might interpret these words to mean that they are expected to fall in line. NASA also picked an opportune moment to launch its promo. All eyes had been turned to the heavens by the \$78 million promotion for the film *Independence Day*, which is about an attack on earth by extra-terrestrials. After the life on Mars excitement abated, NASA once again blitzed the media, this time with the announcement of its Pathfinder mission to Mars, scheduled for December. The promotional material stated that the public would eagerly expect the mission to provide new evidence of life on Mars, although the mission's experiments were not designed to this end. May I remind you again of the Hollywood aphorism that 'you can fool all

the people all the time if the advertising is right and the budget is large enough'. Once the public are accustomed to thinking of earthlings as citizens of a dangerous universe, the proposal to subdue it by colonisation will seem natural.

## Conclusion

Our tour of cyberethics has taken us from HUGO to Krypton, the planet of Superman. Our hypertext links yielded what I'm sure you will agree is a stellar performance. Let me briefly highlight two lessons that the journey suggests.

The wise teams commissioned to ponder the multifaceted consequences of the Human Genome Project are constrained by terms of reference stipulating that saying No is not an option. This is widely understood but it bears repeating that bioethics is an honorific passenger, not the helmsman, on the R & D vessel. That is why bioethics so readily uploads into cyberculture.

If ethics is not steering Starship Genes, who is? This is like asking who steers the stock market. The stock market is the continuous summed result of millions of transactions by players large and small. It has no central directive agency. Similarly, the big players on Starship Genes plot first this and then that course, but the actual course is the summed result of unforeseen discoveries plus the social environment of their uptake. The progress of science, like the fluctuations of the stock market, is nonlinear. One might say that Starship Genes drifts in space. Genetic drift is something less than control of human evolution, and it doesn't make good promotional material, but for me that about sums it up.