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WHAT OF THE BRAVE NEW WORLD?

*Dean John A. Maher**

We are very much into a brave new world. Hopefully, some of us can be forgiven for worrying, now and then, about whether or not our society is too brave as it sometimes rushes toward presumed goods without sufficient reflection concerning consequences.

What is imported by “genetic engineering” is not all that new. Humankind has been tinkering with vegetation and various animals for a long time. Look to the various corn and other vegetation hybridizations of the last century. Look to dairy herds. Look to breeding of horses by reference to characteristics deemed desirable by one set of humans or another. Of course, we must recognize that much of what was done in much of the history of cross-fertilizations was essentially hit-or-miss whereas, at this juncture of our intellectual development and applications permitted by it, we are well along toward not only understanding genetic and chromosomic structures but being able to *re-engineer* them with an eye to eliminating undesirable traits and maximizing potential for desirable traits.

To this bystander, it should be obvious that use of “desirable” and “undesirable” poses very real questions: who among us is or will become qualified to make ultimate judgments concerning what is or is not desirable in species with particular but not exclusive emphasis on humankind?

Humankind is a fairly recent phenomenon. In terms of the age of this planet upon which we have evolved and what is known of the histories of other species, our arrival is so recent as to induce amazement concerning how far we have come. This amazement should not translate into a false pride to the effect that we are at the end point of human evolution. The European Holocaust of the 1940s, the excesses of the Soviet Union, Iranian and Iraqi adventures, Bosnia, Somalia, Ruanda-Brundi, etc., etc. tell us too much. No one can be blind to the fact that we are far from perfect. Assuming intellectual, physical, and psychological imperfection of our kind, and subsuming that our kind’s drive toward greater mastery of the intellectual faculties afforded us has not been plottable on a nice neat Newtonian line, one wonders as to not only what will be the capacities of the good folk of two or three or five thousand years hence – if left to evolve without interference by undue genetic engineering – but also how they will regard us. I submit that they will regard us as primitive - striving, sometimes admirably so, but nonetheless primitive. Look at our short history. It is not all that long ago that Europe was populated by folk fairly described – by their competitors (and latterly, sometimes, by us) but surely not by themselves – as barbarians. Within recent decades we have discovered tribal groups that somehow or other were bypassed by the main thrusts of industrialized colonization, and we have marveled at their simplicity. We know fully well that, in this day and age, members of given cultures may regard usages of other cultures as barbarous or primitive to some degree or other. How long ago is it that we learned to preserve our thoughts in writing, thereby relieving succeeding generations from the burdens of either reinventing wheels or passing along

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memorized histories? Not all that long ago. Indeed, a prominent feature of recent decades has been an effort to improve our ability to preserve data in order to pass it to succeeding generations.

Is humankind as it exists today an ideal by which to judge the desirable and undesirable? Do not succeeding generations of humans seem susceptible to an error of believing that they are the ultimate stage of their kind's evolution? If we dare to make judgments about desirable and undesirable characteristics of humankind *as we know it*, do we invite imperfect creatures to make judgments about perfection? Are they capable of such judgments? Is it conceivable that imperfect beings, given power to make effective judgments concerning what is and is not a desirable trait in humans, would tend to a new Ludism? Are not Luddites and the Nazi eugenicists but two manifestations of applications flowing from the same error? Is elimination of a tendency toward one physical ill or another, one mental ill or another, always certainly to be without unanticipated side-lobing effects? Does the "Thalidomide Baby" scenario of just two decades ago have a message pertinent to the Human Genome Project?

I have no easy answers. Protest my ignorance of the state of the art of genetic engineering, I also can protest my equal ignorance of aeronautics, automotives, space exploration, manufacture and uses of beta propiolactone, design and construction of chronographs and violins, culturing of guar, etc., etc., etc. Does the fact that latter-day Leonardos are scarce indeed suggest that we non-techs have nothing to offer in terms of the *uses* to which an evolving society puts new technologies? The fact that I do not have a clue as to how to manufacture mustard gas does not, I submit, preclude me from a responsible address to whether or not mustard gas should be manufactured and stockpiled for military uses. Neither, I assert, does it excuse me from recognizing that the chemical constituents of mustard gas, or mustard gas itself, may have perfectly benign uses.

I think it fair of technologists to demand that I, and others similarly situated, directly or through delegates, spend considerable time in an endeavor to understand used to which the various rapidly evolving technologies can be put before we dare to make judgments as to whether or not such uses are not only attractive in terms of service to humankind and the world it inhabits but also entirely tolerable in terms of the societal costs to be exacted. Implicit in this is a collective duty to mark out misuses as well as virtues of uses. It is equally fair of non-technologists to demand that proprietary technologists be constantly aware that there are ethical parameters of as much if not more concern to non-technologists and non-proprietary technologists as to proprietary technologists. The latter group too easily may fall prey to another common human failing: focus on trees to the prejudice of forests.

Not too long ago, a television network report of a very interesting development in connection with cloning of mammals included an interview with a technically successful technologist who, asked about ethical implications of his work, responded to the effect that ethical questions were the responsibility of another department in the institution that employs him! I submit that the gentleman is to be forgiven for the simple reason that one of the common errors of our kind is to think that any one of us can pursue some specialty or another without regard for its ethical implications as research matures into development. Saying this, I disclose a personal bias to the effect that none of us is excused from ethical

obligations to make judgments concerning the societal impact of the work we do within what inevitably is a commonwealth.

I am pleased and proud that the Pennsylvania Medical Society and The Dickinson Journal of Environmental Law & Policy saw fit to join forces to promote this symposium concerning *Genetic Engineering. . . Prescription for Perfection or Roadmap for Disaster*. I am very grateful to my good friend and sometime mentor Bruce Cooper of the Pennsylvania Bar, constant instigator of interdisciplinary studies concerning medical and health-related issues, for his imaginative leadership in planning and executing the overall program. Bruce well recognizes the need to set contexts in which individuals can make ethical judgments, and societies can make policy judgments, with minimum opportunity for demagogues to take advantage of ignorance. It is in the spirit of so fostering understanding that inspired The Dickinson School of Law to assist in making this forum available and, I understand, inspires the Journal to publish the proceedings.

Those who are not well versed should pay careful heed to the *Primer* and other basics about Genetic Engineering offered by Doctors Mary Kay Howett, Cheryl Bardales and Michael Roberts. Proceeding from the primer, all of us should draw nourishment from the observations of Professors Hanson and Thomson as they address ethical, legal and social implications of the Human Genome Project as well as the impact on public policy of generic advances in genetic technologies. Attorneys Herbert Jervis and Michael Landau, the latter also an esteemed law professor, will make us aware of various legal implications of the rapidly developing world of applied genetics. Chief Counsel Robert Gellman of the U.S. House Subcommittee on Information, Justice, Transportation and Agriculture is particularly to be heeded as he updates us concerning the news from Capitol Hill concerning genetic engineering applications *and* the all-important right of privacy.

To all of these discussants, I express my thanks – and the thanks of all of those in attendance at the Symposium or hereafter perusing the Journal's "Symposium Issue" – for their efforts to provide a context. Thanking them, I dare to urge them to continue ever alert to improving popular understanding of all that is implicit in genetic engineering in order that our society can make the best judgments it can (with a recognition that no given policy judgment can be perfect or is necessarily sustainable through all of the ages to come). It is imperative that we do not set the stage for policy judgments by default being made by the sorts of folks who experimented in Nazi prison camps or who are so titillated by *Jurassic Park* that they consider it to be a bible of some sort.

