



DNA Hero

Vaughn Thomassin

RESPONSIBILITY: EUGENICS, GENETICS AND AN ETHICS OF THE FUTURE

Jean G. Daou

And there will be considerable scope for this "right use" in marriage and procreation. ... We must, if we are to be consistent, and if we are to have a real pedigree herd, mate the best of our men with the best of our women as often as possible, and the inferior men with the inferior women as seldom as possible, and bring up only the offspring of the best. And no one but the Rulers must know what is happening, if we are to avoid dissension in our Guardian herd. ... And we shall devise an ingenious system of drawing lots so that our inferior Guardians can, at each mating festival, blame the lot and not the Rulers. ... And among the other honours and rewards our young men can win for distinguished service in war and in other activities, will be more frequent opportunities to sleep with women; this will give us a pretext for ensuring that most of our children are born of that kind of parent.¹

Societies have long attempted to use their knowledge of heredity, however flawed, to affect future generations. The excerpt above from *The Republic* clearly indicates Plato's intention of using dubious means in order to achieve his end: the creation of a 'real pedigree herd' of Guardsmen. This is merely one indication of humanity's historical propensity to make improvements to the species (eugenics), one which continues to express itself through genetic engineering. With advances in genetics, we may soon be able to select the sex, hair, eye or skin colour, sexual orientation, level of intelligence, musical or writing ability, sports, dance, or artistic aptitude of our children. The same technology will also allow us to eliminate undesirable characteristics, most notably disease and infirmity. If available, this technology may prove to be irresistible to parents, and understandably so: it is only natural for parents to want what's best for their children.

The following is a discussion of the practice of eugenics in our time, and the ethical issues it presents. I will begin by offering a short history of how the practice of eugenics developed and expressed itself over time, and the types of eugenics practiced in much of the western world, including Canada, well into the twentieth century. I will then look at the potential role of genetics in continuing this practice. Finally, I will be looking at Hans Jonas' *Imperative of Responsibility: In Search of an Ethics for the Technological Age* and some of the more salient aspects of his philosophy, including a critique of traditional anthropocentrism, the altered nature of human action, a critique of modern technology, and the precautionary principle of his heuristic of fear.

¹Plato, "*The Republic*," 2nd ed, trans. Desmond Lee. (London: Penguin, 1974), 459d-460b.

A brief history... Genetics

For millennia, societies have sought to understand the apparent evidence of biological inheritance. They became aware of the recurring patterns of reproduction in their world, in which every form of life apparently had the ability to regenerate itself. They also noticed the resemblance of offspring, plant, animal or human, to their parents and other members of their family. In short, they discovered that like produces like – each according to its own kind. This notion has profoundly impacted the way human societies organized themselves.

Long before the discovery of genes, societies attempted to encourage traits or attributes deemed desirable. Beauty, strength, and intelligence became the products of good breeding. The ugly, weak or feeble-minded were of diminished value and often cast aside or eliminated. Notions of heredity also contributed to the formation of human societies; accordingly, the Athenians and Spartans of Plato's time, developed systems – social structures - that privileged some members, while disadvantaging others. Communities as diverse as the ancient Hebrews, Greeks and Indians believed that power and prestige flowed directly from one's ancestors. One's lot in life, be it miserable servitude or privileged rule, was dependant on the worthiness of one's forebears. An individual's inherited position within the group was often seen as divinely ordained. Societies developed belief systems in which cultural and religious symbols incorporated notions of the mysterious forces behind heredity, thereby validating these values and profoundly affecting the lives of their members.

Notions of heredity have constituted a pow-

erful tool for social regulation. In the nineteenth century, modern science would shed new light on some very old ideas. In 1865, Gregor Mendel published a book that went largely unnoticed for decades, yet would later revolutionize modern science. In *Versuche über Pflanzen-Hybride* (Treatises on Plant Hybrids), Mendel reported his observations on the inheritance of various characteristics in cross-bred pea plants as expressed in subsequent generations. His famous principles of hereditary transmission, known as Mendel's Laws, would transform the way plants were cultivated, as well as the domestication and breeding of animals in the twentieth century. Biochemists and molecular biologists have since uncovered the molecular basis of Mendel's Laws as the expression of genes in cells and gene transmission in the germ-line: the inherited material that comes from the eggs or sperm and is passed on to offspring. Building on Mendel's work, it is now possible to systematically manipulate the genetic resources of living organisms. To the knowledge of heredity as developed throughout pre-modern human history, we can now add knowledge of genetics. What hitherto has been fodder for fantasy and science fiction writers is now within our grasp. Science has given us the tools needed to develop the ability to manipulate the genetic make-up of human beings and artificially create the society that Plato could only dream of.

Eugenics

Etymologically, the word 'eugenics' is derived from the Greek word *eu* (good or well) and the suffix *-gēnes* (born). The term was coined in 1883 by Sir Francis Galton, who defined it as "the science which deals with all influences that improve the inborn qualities of a

race; also with those that develop them to the utmost advantage.”² Galton wrote and campaigned extensively, advocating for the enhancement of the human stock. His ideas would eventually lead to the creation of groups and academic societies advocating eugenics, and government programs using forced sterilization as a means of weeding out undesirable characteristics.

During the first half of the twentieth century, informed by a belief that hereditary transmission of mental defects was scientifically substantiated and posed a threat to society, several jurisdictions in North America adopted legislation allowing for the involuntary sterilization of persons diagnosed as mentally deficient. The founding director of Canadian National Committee for Mental Hygiene (CNCMH)³, Dr. Clarence M. Hincks, was an influential supporter of the Alberta Sexual Sterilization Act of 1928. The CNCMH was commissioned by the Canadian Department of Health to study ‘feeble-mindedness’. In an article for *MacLean’s Magazine* (February 15, 1946, pp. 19-42), Dr. Hincks asserted that there was an ‘abundance of evidence’ that allowing the mentally-unfit to propagate freely would lead to racial deterioration. He stated, “It is my conviction that highly selective eugenical sterilization should be part of our expanding health programs in the Dominion.”

And, so it was. In Canada, between 1928 and 1972, citizens who were deemed to be “in danger of transmitting mental deficiency

to their children, or incapable of intelligent parenthood” were sterilized by order of the Alberta Eugenics Board. Sixty-four persons received the same treatment in British Columbia. By 1960, more than 60,000 persons said to be either mentally retarded or mentally ill were sterilized for eugenic purposes in thirty U.S. states.⁴ Britain, Germany and other European nations adopted similar policies. This is one chapter in a chronicle of human fallibility, of societies which would resort to extreme measures in support of extreme theories, with the conviction that they were justified. In the twenty-first century, the next chapter is being written as we realize the potential of new genetic technologies.

Pre-natal screening is routinely offered today, allowing parents to decide whether to terminate a pregnancy when a genetic abnormality is discovered. Pre-implantation genetic diagnosis (PGD), a process whereby an egg is fertilized using in-vitro fertilization (IVF), then tested in order to weed out genetically defective human pre-embryos – fertilized ovum up to 14 days old before implantation in the uterus – is being made available to prospective parents who are concerned about passing a serious genetically-based disease or disorder to their child. Ostensibly, the goal of PGD is humanitarian: allowing certain at-risk couples to conceive children without the trauma of having to decide whether to abort, or to have a child with a chronic hereditary ailment. With wide-spread use, this procedure has the potential to eliminate a variety of diseases that afflict our species. At the moment, however, access is restricted to a small segment of the

²Francis Galton, “Eugenics: Its Definition, Scope, and Aims.” *The American Journal of Sociology*, vol. X, no. 1 (July, 1904)

³The CNCMH is now known as the Canadian Mental Health Association (CMHA).

⁴Deborah C. Park and John P. Radford. “From the Case Files: Reconstructing a History of Involuntary Sterilization.” *Disability & Society* 13, no. 3 (June, 1998), 317-319.

population: couples who know they are carriers of an inherited disease whose genetic basis has been identified. A major biomedical advance, PGD is controversial in some circles; nevertheless, because of its still limited scope, it is one of the more benign procedures to emerge from the field of genetics.

Perhaps less benign is the current research that is being conducted in human behavioural genetics. We have already seen media reports about the 'gay' gene, the 'alcoholic' gene, and the 'overeating' gene. It is undeniable that DNA affects the construction and operation of the human brain. However, it is uncertain whether and how the manipulation of specific DNA sequences might control and determine human behaviour. The implications for human freedom here are ethically challenging. Somatic cell therapy, the genetic manipulation of cells that do not affect the germ-line, is ethically less problematic, given that it is more closely aligned with the medical imperative to heal. In the worse case scenario, any difficulties that arise would result in the death of the patient without genetically affecting future generations. Somatic cell therapy has the potential to alleviate suffering in individuals afflicted with conditions that range from Alzheimer's, AIDS and diabetes, to cancer, Parkinson's and Huntington's disease. However, if gene therapy is ever aimed at the human germ line, the genetic information that is transmitted from one generation to the next, the risks to humanity become unacceptably high.

Perhaps more ethically challenging is the prospect of human genetic engineering. As the possibilities expand, it is inevitable that we will be considering permanently 'fixing'

defective genes by re-engineering the germ-cell line. This would permanently eliminate the possibility of passing on genetic defects, with the added bonus of saving time and money in the long run. Although this may be an attractive notion, it is not unproblematic. Science has shown that deleterious genes may offer some hidden benefits. For example the Haemoglobin-S gene, which causes sickle-cell anaemia, has been shown to offer protection against malaria, and Tay-Sachs carriers may have profited from some protection against tuberculosis. By choosing to eliminate the genetic basis of disease and defects without fully understanding the possible ramifications of our actions, could lead to the worst of many case scenarios: signing the death warrant of humanity as we know it. Some of the questions we must now face are: How far do we go in providing for the needs of humans in the present, in light of the potential risk to future persons? What about the right of future generations to choose? Are we limiting the freedom of persons yet-to-be? While an argument can be made that somatic cell therapy may be a question of personal choice, germ line therapies cannot be characterized as such.

Genetic engineering, unlike any other science, threatens the very being of a not-yet-existent humanity. What we do matters, not just to 'us' now, but also to the 'us' of the future. As history demonstrates, humanity's drive to improve and strengthen its condition has led people to resort to extreme measures in order to achieve a perceived good. Fortunately, the consequences of our actions have been limited by certain natural restrictions, allowing for their effects to be remedied or reversed, and for the policies to be revised. With genetic engineering, we have in our reach powerful new

technologies with the potential of irrevocably altering the human condition. Humans, and their genetic make-up, are the product of a long and complex 800 million-year evolutionary process. Science may soon make it possible to shape the future course of human evolution in a matter of seconds. By contracting that process, we risk bringing it to an end. We need to seriously consider our responsibility here.

An Ethics of Responsibility

The technological advances of the twentieth century have fundamentally transformed the relationship between humankind and the natural world. Humanity is increasingly becoming the object of technology. Consideration of our ethical responsibility is demanded of us. Societies must endeavour to develop new ethical approaches which take into account the individual and societal needs of the present, while being attentive to the impact of our actions upon the future – a paradigm which allows for the complexities of differing world views as we deliberate our understanding of human nature and the human/nature relationship. What is needed is an ethics which privileges our responsibility to a yet-to-be future.

*“Now we shiver in the nakedness of a nihilism in which near-omnipotence is paired with near-emptiness, greatest capacity with knowing least for what ends to use it.”*⁵ Previous classical ethics are contained by the proximity of ends in time and space. As such, the good or evil was in the immediate or foreseeable reach of the act, thus the effective

scope of an act was narrow and nearsighted. We now realize more clearly that what we do may have repercussions far into the future. Nature is not inexhaustible, and in the absence of informed and responsible stewardship, even the most basic essentials of life are in danger. With modern technology, increased knowledge and power have so altered the nature of human action that the very premises shared by previous ethics are no longer sufficient. The human relationship with nature is forever changed by the command over nature that new technologies have put at our disposal. Thus a new ethic – one that considers the gap between the act and its unforeseeable reach is imperative. An examination of Hans Jonas’ ethics may be especially useful in responding to the unprecedented challenges with respect to new technologies and their impact on all life and the planet that supports it.

In Imperative of responsibility: In Search of an Ethics for the Technological Age, Jonas focuses on the social and ethical challenges presented by technology. This work proposes a radical new ethical imperative: “In your present choices, include the future wholeness of Man among the objects of your will.”⁶ This imperative places human beings at the apex of the ethical good, thus “never must the existence or the essence of man as a whole be made a stake in the hazards of actions.”⁷ Implied here is the obligation to preserve the very conditions that make organic life possible. In other words, due to our new-found power, the whole biosphere of the planet ought to be added to our scope of responsibility. In con-

⁵Hans Jonas, *The Imperative of Responsibility: “In Search of an Ethics for the Technological Age.”* (Chicago: The university of Chicago Press, 1984), 23.

⁶Jonas, 11.

⁷Jonas, 37.

trast to conventional thinking, this is by no means an anthropocentric confinement of ethics in the traditional sense, but rather a call to consider the vulnerability of nature in its entirety. Jonas does attach a particular importance to humanity given that humans are the only beings capable of responsible behaviour. However, it is important to note that he is critical of 'traditional' anthropocentrism, referring to it as the "ruthless anthropocentrism which characterizes traditional ethics, in particular the Hellenistic-Judaic-Christian ethics of the west."⁸ This ethical perspective not only ignores the interests of beings other than human, but those humans who are separated from us by time – the yet-to-be generations. In his words, "The apocalyptic possibilities inherent in modern technology have taught us that anthropocentric exclusiveness could be a prejudice and that it at least calls for re-examination."⁹

Jonas boldly states that, "The fact is that the concept of responsibility nowhere plays a conspicuous role in the moral systems of the past or in the philosophical theories of ethics."¹⁰ We might better understand this notion if we examine what he means by responsibility. "The first and most general condition of responsibility is causal power, that acting makes an impact on the world; the second, that such acting is under the agent's control; and the third, that he can foresee its consequences to some extent."¹¹ Given these conditions, Jo-

nas goes on to distinguish between two significantly different types of responsibility. The first, formal responsibility is characterized as being accountable for one's deeds. It is neutral in the sense that we attribute to the agent responsibility or accountability for whatever she does. To say someone is responsible in this way is neither to praise or blame her actions, but only to assert that the agent can be praise- or blame-worthy. Substantive responsibility, Jonas' primary concern, speaks of an agent having responsibility for, and being committed to, the care or preservation of an object. Here we say that an agent has "responsibility for particular objects that commits an agent to particular deeds concerning them."¹² We might refer to substantive responsibility as object responsibility: we are responsible for the caring or preservation of some object. Responsibility in the substantive sense is a function of our newfound knowledge and power and it is this brand of responsibility for the future that Jonas speaks of "as the mark of an ethics needed today."¹³

Jonas stresses elements in technological acts or advances which, geared to fulfill immediate goals, ignore the risk of irreversibly altering the natural course of evolution. Added to this is the concern that the developments set in motion by these acts would develop a momentum of their own and in time create a cumulative effect in which "the natural is swallowed up in the sphere of the artificial."¹⁴ The predictability of the outcome of technological acts, such as genetic engineering for ex-

⁸Jonas, 45.

⁹Jonas, 45-46.

¹⁰Jonas, 123.

¹¹Jonas, 90.

¹²Jonas, 90.

¹³Jonas, 93.

¹⁴Jonas, 32.

ample, is beyond our reach. Stirred by a sense of imminent peril, Jonas suggests a heuristic of fear, which holds that when the outcome of an action is in doubt, one is obligated to exercise extreme caution. Our technological interventions in nature must be kept to a minimum, and risks should be assessed by taking on a worst-case scenario attitude. This would entail the development of a predictive science of the long-range effects of technological action – a comparative futurology which would discern trends based on today's actions and extrapolate possible long-range outcomes. This process would be a function of imagination and reason, enabling the visualization of the possible ramifications of present-day actions for the future. Jonas considers the “anticipatory conjuring up of this imagination” to be the first duty of an ethics of the future.¹⁵

Applying Jonas's thought, if we cannot positively predict the long-range outcome of genetically altering the human germ-line, then we must act responsibly and exercise extreme caution. The gap between our power to act and our ability to predict must be recognized. The notion of responsibility is fundamental. The imperative to protect the future even outweighs any imperative to alleviate suffering today. Yet-to-be generations are completely powerless in face of the potential power of genetic technologies to affect their lives. For this reason, we must hold ourselves accountable to the well-being of that future. Again, the existence or the essence of humanity as a whole must never be put at stake.

Another potential difficulty with genetic engineering has to do with the ‘essence of man’

and the question of justice. Can Plato's goal of creating ‘a real pedigree herd’ ever be allowed to find a means in genetic engineering? As the technology moves forward and becomes more available, I fear that it may become commercially available for non-therapeutic use. We can already purchase genetically modified, hypoallergenic cats, and fish that glow in dark. Why not designer babies? For those who could afford it, children can be made to order. Beauty, strength and intelligence can be genetically manipulated. Skin colour and hair type may be picked out of a catalogue. With advances in behavioural genetics, we can rest assured that our child will be heterosexual and sober. We can engineer doctors and soldiers, philosophers and maids. These techniques could give the power to express our genetic preferences, promoting racial hygiene. We may soon be able to remove all uncertainty in procreation. The persons with the more sought-after characteristics may find favour within society, creating different classes of person, including a genetic underclass of sorts. More importantly, by eliminating uncertainty at the beginning of life, I fear we will be less apt or able to deal with uncertainty in the form of disease and disorder during and at the end of life. We would also risk diminishing genetic diversity, effectively weeding out individual uniqueness. The possible social ramifications are many and the stakes unacceptable.

The potential for eugenics, with genetics as its instrument, cannot be overstated. The notion that the human species can be manipulated and improved by selectively weeding out undesirable traits has enjoyed varying levels of support for millennia. During the twentieth century, we saw the sterilization of the so-

¹⁵Jonas, 27.

called feeble-minded as a solution for many social ills in much of the Western world. The appalling character of Nazi Germany's eugenics program, which attempted to encourage certain desirable traits of the so-called superior Aryan race, while undesirables, including gypsies, homosexuals and Jews were experimented upon and systematically eliminated, should serve as an ominous reminder of the extreme inhumanity of which our species is capable. Just as disconcerting is the similarity of the stated goals of the Nazi and Western advocates of eugenics: to stem 'racial deterioration'.

Although the call to bear responsibility for the distant future may seem radical, it is not new. Jonas contends that all previous ethics no longer hold while admitting that many religious traditions have long believed that some form of stewardship of the planet is a divine calling. He allows that "religious belief has answers here which philosophy must still seek."¹⁶ Jonas endeavours to ground his ethics on ontological and metaphysical foundations. He seeks to look "beyond the doctrine of action, that is, ethics, into the doctrine of being, that is metaphysics, in which all ethics must ultimately be grounded."¹⁷ According to Jonas, there is an 'ought to be' inherent in Being itself.

Traditional ethics fall short in that they are restricted to human action delimited by well-defined and familiar parameters of time and space. Jonas' ideas compel us to seek out new imperatives and principles that can help us

orient our choices and actions as we come to terms with new realities. Ethics is a dynamic process. Instead of doing away with traditional ethics, it would be more helpful to concede the limitations of traditional ethics in light of modern technology and to supplement them. A new ethic should be built upon the viable dimensions of previous thought while attending to radically new data, situations and imperatives. Jonas's notion of the primacy of the dignity of the human person requires that we refuse to sacrifice of future generations for the gain of the present. This does not mean we must reject wholesale all life-saving technologies that genetic engineering can deploy. It does, however, necessitate that ethical norms be extended to consider future generations, those who cannot in the present defend their future interests. This would require an acknowledgement that, like never before, humanity is the greatest threat to human flourishing.

Jonas offers an imperative, loosely modeled on Kant, which responds to the new type of human action: "Act so that the effects of your action are compatible with the permanence of genuine human life"; or, "In your present choices, include the future wholeness of Man among the objects of you will".¹⁸ Hitherto, our knowledge and power was so limited that there was little need to be concerned for the future. We did not need to question whether there should be a future for living creatures. We could assume that the conditions for human life would continue to exist. We now know this is false. An ethics of long-range responsibility, coextensive with the range of our power calls for a new measure of humil-

¹⁶Jonas, 45.

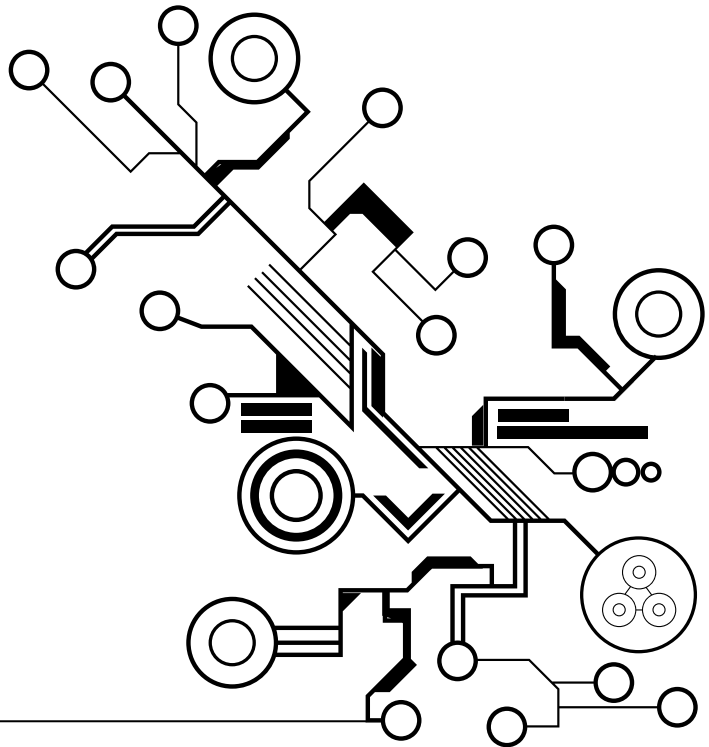
¹⁷Jonas, 8.

¹⁸Jonas, 11.

ity: one which recognises the magnitude of our power to act which far exceeds our power to foresee, to evaluate and to judge the consequences of our actions.

Jean G. Daou is an M.A. candidate in the Department of Theological Studies, Concordia University. His research interests include personhood and ethics at the end of life.

There is hope in the human capacity for conversion, redemption in our ability to expand our horizons. If humanity is to survive and flourish, we need to align ourselves with nature instead of trying to dominate it. In that spirit, and with the knowledge that the very conditions of human action have been transformed, we must also transform our ethics.



BIBLIOGRAPHY

Eisenhabe, Frank and Alexander Schleiffer. "Gregor Mendel: The Beginning of Biomathematics." IMP Bioinformatics Group. <http://mendel.imp.ac.at/mendeljsp/biography/biography.jsp> (accessed November 4, 2007).

Galton, Francis. "Eugenics: Its Definition, Scope, and Aims." *The American Journal Of Sociology*, Volume X, no. 1 (July, 1904). <http://galton.org/essays/1900-1911/galton-1904-am-journ-soc-eugenics-scope-aims.htm> (accessed November 7, 2007).

Hackett, Shannon, Kevin Feldheim and Mark Alvey. "Genes and Genius: The Inheritance of Gregor Mendel." *DNA & Cell Biology* 25, no. 12 (December 2006): 655-658. Academic Search Premier, EBSCOhost (accessed November 7, 2007).

Jonas, Hans. *Ethics of Responsibility: In Search of an Ethics for the Technological Age*. Chicago: University of Chicago Press, 1984.

Park, Deborah C., and John P. Radford. "From the Case Files: Reconstructing a history of involuntary sterilisation." *Disability & Society* 13, no. 3 (June 1998): 317-342. Academic Search Premier, EBSCOhost (accessed November 9, 2007).

Plato. *The Republic*. 2nd ed. Translated by Desmond Lee. London: Penguin, 1974.

Suzuki, David and Joseph Levine. *The Secret of Life: Redesigning the Living World*. Toronto: Stoddart Publishing Co., 1993.