HINDU PERSPECTIVES ON GENETIC ENHANCEMENT IN HUMANS

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The current discussion of the issue of genetic enhancement in humans is rooted mainly, on the religious side, in the Judeo/Christian tradition, and on the secular side, in the Hippocratic medical tradition, along with other philosophic systems of the Anglo-American West. Yet there are other religious and philosophical alternatives, some with advanced systems; and the present impasse in the debate suggests that we bring these non-western sources into the conversation, especially in view of the general acknowledgment that our ideas of key concepts, such as 'nature', are all culturally constructed.1

More specifically, in this article we propose to demonstrate that in this difficult task of wrestling with issues pertaining to altering nature, the Hindu tradition can make a contribution. (1) In *philosophical* terms, its diverse schools of thought, such as Samkhya*, Yoga, Nyaya, Vaisesika*, and *Vedanta*, are admirably suited to the demands of our pluralistic age. (2) In *ethical* terms, the contextual structure of the Hindu approach gives it flexibility and adaptability, and invests it with the type of dilemmatic thinking that is required by contemporary bioethics in a world of rapid technological change.(3) In *medical* terms, while Hinduism shares with all other faith traditions positive attitudes toward medicine and the healing arts, Hinduism is distinctive because it has evolved its own indigenous system of medicine called *Ayurveda*, or the science of living to a ripe age, that is based on medical manuals which comment directly on health issues.

Hindu bioethics flows from three basic principles of Hindu philosophy and religion: (1) the transcendent character of human life, expressed through the principles of the sanctity of life and quality of life; (2) the duty to preserve and guard individual and communal health; (3) the duty to rectify imbalances in the processes of nature that jeopardize the life and well-being of humans and all sentient beings.

Equipped with these and additional principles, we shall attempt to apply them consistently, comprehensively and systematically to issues confronting genetic enhancement in humans. Before we get down to the practical level of moral actions, we must first give a sketch of the Hindu understanding of persons and the world from which the ethical principles are derived.

THE PERSON.

The Hindu philosophy of human nature is basically dualistic. It precisely demarcates (1) the essential self from (2) the empirical self.

The Empirical Self

Our immediate, daily experience is of the empirical self. It constitutes our world of sense experience, but is unreal to the extent that it is the product of original ignorance (*avidya*). Hindu psychology probes into the nature of the empirical self which the noumenal self takes on during its bondage in the phenomenal world. It makes a rigorous analysis of the body-mind complex and describes the person's role in the world in terms of three bodies—physical, subtle, and causal.

First there is the *physical body*, born of parents. It is fabricated of the five elements of earth, water, fire, wind, ether. It is sustained by food in the form of environmental matter. It is the locus of all the experiences that arise from our contact with the external world, and serves as the basis of consciousness in wakeful states. Death is only of the physical body, which then returns to its elemental source.

Second there is the *subtle body*, so called because it is composed of seventeen elements that are finer than those of the physical body. The subtle body is a composite of the vital, psychic, and intellectual functions. It serves as the basis of dream consciousness. The presence of the noumenal self is inferred from it. Most importantly, the subtle body acts as the instrument for the operation of the law of karma whereby moral consequences are passed on in the process of transmigration. Death is only the termination of the physical body; not of individuality. The just desserts of an individual's life proceed from one birth to the next through the continuity of the subtle body. It is the bearer of direct and indirect consequences; the first determining the body-type, family, and hereditary conditions one will have in rebirth, and the other productive of innate tendencies that influence behaviour in the next life.

The third body of the empirical self is known as the *causal body*. Its reality is deduced in the state of deep sleep during which time both the physical and subtle bodies are in suspension. Actions of the empirical self are by agency of the body, mind, and speech. Actions issue in moral consequences. Actions are classified in terms of inertia, passion, and goodness, representing three basic properties of the empirical self. Actions characterized by inertia are biological, and therefore uncontrollable and unfree. Actions of the mode of passion are propelled by strong

emotions of love or hate and are therefore also unfree, even though the person knows these actions to be his own. Only actions having the property of goodness are voluntaristic, and are characterized by detachment. Depending on the degree of detachment, actions of goodness can be expressed in the form of socio-moral behaviour, or, at a higher level, as spiritual activity. The above remarks introduce the notion of karma. It stands for the universal law of causation as applied to the rational and moral aspects of human existence. It states that good and bad actions bear within themselves their own consequences. By linking present with past, the law of karma attempts to explicate the mysteries behind individual inequalities, and the problem of suffering. Traditionally, two types of karma have been distinguished (*anarabdha-karma*, and *prarabdha-karma*). The first type refers to karma that has not begun to bear fruit; and the second type refers to karma that has already come to fruition. The latent karma of the first type (*anarabdha*) could either refer to our accumulated karma from past lives (*sancita*), or the karma generated in the present (*vartamana-karma*). The tradition also states that only interested action arising from selfish motives produces karma. Disinterested actions performed in the present (*vartamana-karma) n*ot only are free of binding consequences but can help to dissipate the karma of our past and present life which has not yet begun to bear fruit. Only the results of the karma (*prarabdha)* that has begun to exfoliate cannot be avoided, and must be endured until fully depleted.
The medical manuals of Ayurveda dismiss any vestige of fatalism that might be attached to the notion of karma. According to Caraka, a first century physician, only the consequences of extreme evil cannot be arrested by good deeds. Philosopher Dasgupta explains:
The fruits of all ordinary actions can be arrested by normal physical ways of well-balanced conduct, the administration of proper medicines and the like. This implies that our ordinary non-moral actions in the proper care of health, taking proper tonics, medicines and the like, can modify or arrest the ordinary course of the fruition of our karma. Thus, according to the effects of my ordinary karma I may have fallen ill; but, if I take due care I may avoid such effects and may still be in good health. According to other theories the law of karma is immutable. Only the fruits of unripe karma can be destroyed by true knowledge. The fruit of ripe karma have to be experienced in any case, even if true knowledge is attained. The peculiar features of Caraka's theory consist in this that he does not introduce this immutability of ripe karmas. The effects of all karmas, excepting those which are extremely strong, can be modified by an apparently non-moral course of conduct, involving the observance of the ordinary daily duties of life.2

Next, the theory of rebirth. It is deduced from the law of karma. Since the universe is morally structured insofar as good and evil acts are not without appropriate consequences, it must be assumed that an action without consequence is still in the process of maturation, and that eventually in some future life what has been sown shall be reaped. Whereas other religions teach "it is appointed unto man once to die and after that the judgment," Hinduism believes that the immortal spirit of humans reincarnates itself in a better or worse life form, according to the claims of one's psychological aspirations, and the necessity of moral rewards and punishments for one's actions. This reconciles for Hindus the demands for justice in the face of disparities and differences into which persons are born. The fact is that something cannot come out of nothing, and something cannot become nothing; hence a person must be said to maintain his individual identity before he is born and after he dies. The individual moves from one life to the next until the psychological forces which perpetuate his quest for private existence are dissolved, and he gains enlightenment (*moksha*), and is thence freed from the cycle of suffering and rebirths.

The Essential Self

Enlightenment is basically the act of becoming aware of one's real self (*atman*) as being radically different from the empirical self, ignorance of which keeps individuals in bondage. Salvation is not the acquisition of something new, but becoming wise to what is already there. The characteristics of the essential self are clearly stated. It transcends the body-mind complex and is thereby free from all the limitations, changes, and experiences to which the body and mind are subjected. It is eternal and immutable existence *(sat)*; pure consciousness (*chit)*; and pure bliss (*ananda*). As such, the essential self in the person (*atman*) is none other than Cosmic Reality (*Brahman*). Humans are one of the many forms in which the Supreme Reality (existence-consciousness-bliss) manifests itself in the universe. The Upanishads state: "The essential self or the vital essence in man is the same as that in an ant, the same as that in a gnat, the same as that in an elephant, the same as that in these three worlds, indeed the same as that in the whole universe." Thus the Hindu outlook on the cosmos leaves no room for anthropocentrism. Humans do not stand apart from the universe, nor are they allotted any place of privilege in it. This brings us to our next topic, Hindu views of the world.

THE WORLD

Hindu speculative wisdom has entertained diverse theories about the nature of the world, its origin, maintenance and destruction. The world system is called *Brahmananda* or 'the egg of Brahma.' Brahma is a personification of divine creative energy from which the universe evolves, comprising seven regions, including the earth and solar system. Beyond the world humans occupy, there are infinite world systems which rise and fall across endless tracts of time, but all evolve in the same way. Through picturesque analogies, the scriptures describe the evolution, sustenance, and dissolution of the world. "Just as the spider weaves its web from within itself and draws it in, the herbs spring from the earth, and hair grows out of a man's body, so does the world come out of the immutable God." More philosophically, God is conceived as the origin and end of the universe. His lower nature is differentiated into eight forms: earth, water, fire, etc., and his higher nature is manifested as the world of individual selves.

In *Samkhya* theory, during the course of evolution there emerges from inert matter certain subtle materials (*tanmatras*), which, although imperceptible, have definite characteristics. They are the generic essences of physical energy represented by sound, touch, colour, taste, and smell. When these subtle essences begin to compound, gross matter manifests itself in variegated forms. The production of the five gross physical elements takes place in the following manner. First, the sound energy produces the Space element (*akasa*), which has sound quality perceived by the ear. Second, the energy of Touch, combined with the movement of Space, produces Air (*vayu*), which has the qualities of sound and touch. Third, the energy of Colour, combining with the energies of Sound and Touch, produce Fire (*agni*), which has the qualities of sound, touch, and colour. Fourth, the energy of Taste, in combination with the essences of sound, touch, and colour, produces Water (*jala*), which has the qualities of sound, touch, colour, and taste. Fifth, the energy of Smell, combining with all of the above essences, produces Earth *(prithvi)*, which incorporates the qualities of sound, touch, colour, taste, and smell. The subsequent evolution of the world, including the human constitution, is from these five elementary principles of Space, Air, Fire, Water, and Earth. Needless to say, one should not attribute commonplace meanings to these elemental substances.

The five elements enter the body through food and become reconstituted in the physiology and anatomy of the individual. As with the rest of nature, the human body is in a continuous state of transformation. Death is the final act by which the organism is returned to its original state.

The ethical significance of the *Samkhya* theory is that the universe and the human body form a river of life that has its source in creation. We are not strangers in a universe that is alien, or, at best, neutral to human projects; rather nature is the very womb from whence we have come. This understanding of the place of humans in nature has important implications for how we relate to our bodies; to proper foods and drugs; to animal life; and to sun and soil. The bottom line is: the universe, and all of us in it, is of five basic elements (pancamahabhutika).

It follows from the above that Hindus believe there is a moral structure to the universe, because of divine immanence. The world is not the evolution of some unconscious material force, but one that is permeated by moral values that flow from the *sakti* or power of God. In its ancient form this notion is expressed in the concept of *Ritam*, which refers to order in the universe, to which the gods themselves are subject. However, as in the later idea of *Dharma*, divine law, truth, etc. are dynamically understood and are seen as subject to changes.

The philosophical assumptions pertaining to the person and the world underlie Hindu conceptions of medicine and morals and serve to create a symbiosis between the two. Structurally, there are no conceptual conflicts between medicine and morals. We shall now give a summary of some salient features of the Indian medical system of Ayurveda. Its concepts of health are especially important for our discussion, because it is in the definition of health that we get to know what it means to go beyond health to enhancement.

1. Ayurveda is rational in its approach to medicine. In place of the supernatural therapy (*daiva-vyapasraya*) of the Vedic phase, it introduced rational therapy (*yukti-vyapasraya)* to make the system logical and scientific.

2. Ayurveda is holistic. It views the person as an integrated whole and not just an aggregate of several body parts that are the domain of specialists.

3. Ayurveda sees the person as grounded in nature: a microcosm within the macrocosm. Diet, climate, soil, season, time and place are all factors with which to reckon.

4. 4. Health and healing are regarded as acts of nature. In medico-ethical terms: the natural is the good.

5. Health is identified as a positive state, and not just the absence of disease.

6. Health is multi-dimensional: physical, mental, social and spiritual.

7. Ayurveda apprehends the person as an individual, having a unique constitutional type, and as the bearer of an unmatched set of life experiences.

8. Ayurveda gives prominence to the notion of balance. It promotes an ethics of moderation in matters of sex and abstinence, food and drink, work and play, sleeping and waking, faith and common sense.

9. Medicine is essentially preventive and promotive, elevating caring above curing.

10. Longevity is measured not in numbers of days, but quality of time.

11. Death is an inevitable part of the natural process, and is therefore not an evil or the object of divine punishment. Death is the opposite of birth; not of life.

12. Health and disease, happiness and suffering, life and death are the consequences of an individual's karma, hence the emphasis on human responsibility.

13. Health is more than what the doctor does; it is a total life-style that carries one from cradle to the grave.

14. Health is not the ultimate good but the penultimate good. Enlightenment is the *summum bonum,* because spirituality exceeds vitality on the scale of being human.

APPLICATION OF PHILOSOPHICAL AND MEDICAL THEORY TO ISSUES OF GENETIC ENHANCEMENT

Hindu bioethics distinguishes between (1) somatic cell gene therapy and (2) enhancement genetic engineering.

In terms of somatic cell gene therapy, many diseases, such as ADA deficiency, and also sickle cell anemia, hemophilia, and Gaucher disease, are caused by a defect in a single gene. In all such cases, Hindu bioethics supports treatment on the grounds of its principle of beneficence (*daya*). The patients are desperately ill, or they are facing the attack of a monstrous illness, so everything must be done to relieve suffering. Gene therapy is their only hope. To be sure, there are risks involved. Cutting-edge medical research is always risky; but relative to the severe privations and certain death, the risks and uncertainties of gene therapy are at acceptable levels.

The Hindu values that are salient in support of this therapy relate to the familial principle of obligation (*rina)* to ensure survival of present and future generations. Hindu bioethics has no special problem with death, but with premature death. Therefore victims of cancer, viral diseases such as AIDS, and some forms of cardiovascular diseases, are all considered appropriate candidates for treatment.

Somatic cell gene therapy also has the potential for enhancement genetic engineering—for supplying a specific characteristic that individuals might want for themselves (somatic cell engineering) or for their children (germline engineering) which would not involve the treatment of a disease. The slide from correction to perfection is already underway. The human-growth hormone was devised for children with prospects of growing up the size of dwarfs; but it was soon used by children who only *thought* they were "dwarfs" for their age, and were blessed with wealthy parents who could pay $30,000 for a year's treatment of growth hormones.

Hindu bioethics believes there is a medical and moral divide between somatic cell gene therapy and enhancement genetic engineering, which must not be crossed, and which serves as a marker for how far genetic engineering should go *at this stage* of development.

Discussion of the pros and cons of this stance was recently precipitated by a report in the journal *Nature* of a study which sheds light on how memory works, and raises questions pertaining to the morality of using genetics to make people brainier. Summarily stated, the scientists established a theory about how brain synapses make connections and store knowledge; but the research also anticipated the day when genetic adjustment of memory and intelligence will be possible for humans.

That day may not be so far fetched. Today doctors can screen fetuses for genetic diseases; tomorrow they will be able to correct the problem in utero. But a boundary is crossed when doctors move from treatment to enhancement.

So far as therapeutic possibilities are concerned, the evolutionary orientation of Hindu bioethics puts it on the side of scientific progress. We should hope that this research may lead to practical medical results for humans, targeting learning and memory disorders among older people, including Alzheimer's disease. However, there is a difference between using such treatment to reverse an elderly person's Alzheimer's disease and helping a college student get an 'A' in an examination. It is one thing for a lad to want to be on par with his classmates to compete ink high school basketball, it is another thing for a boy to receive human-growth hormones because the latest teen-age fad is" "I want to be like Mike"! The difference is between values and vanity. This divide between correcting and perfecting gives rise to many ethical quandaries, which Hindu bioethics confronts.

First, a fact that must be reckoned with is that *self-improvement* is as much of an American religion as being Baptist. Hindu bioethics has no problem with that, as long as one has a clear

notion of the nature of the self that is to be improved. Arguing from one view of the self, a person can legitimately say, "There is absolutely no difference between getting one's child the best school (dream of all normal parents, and nightmare of the Japanese), and getting one's child *a perfect gene*. What is the big fuss?"

Erik Parens of the Hastings Center thinks that there is a difference, and it has to do with the difference "between cultivating and purchasing capacities." Buying a Harvard education could very well enhance a child's natural gifts, but it is different to buying the capacities. The *Bhagavadgita* said the same a long time ago: "let a man lift himself by himself; let him not degrade himself; for the Self alone is the friend of the self [person] and the Self is the enemy of the self."3

The meaning of the *Gita* for us is that divinity in all its riches resides within the ordinary self, and that it can work for us (friend) or against us (enemy), depending on how much it is part of our consciousness. There is no stasis in nature. Personal transformation is a function of the inner life—seeing with the "third eye" is not an acquisition of reconstructive laser surgery. To uplift oneself an individual must therefore engage creative forces that are within, and not simply rely on appendages that can be purchased at a price. In brief: *self-improvement is improvement of the self.*

Second, on medical grounds, Hindu ethics proceeds on the principle: "Do no harm" (*ahimsa*). Somatic cell enhancement engineering threatens human values because our limited knowledge makes it risky business at this juncture. Pioneer geneticist French Anderson cautions that though we have rough ideas of how simple genes work, and that there are thousands of housekeeping genes that do the job of running cells; yet our understanding is limited when it comes to how an organ develops into its particular size and shape. Similarly, we know how the nervous system works, in terms of electric circuits, memory storage, and transmission of signals; yet we are far removed from understanding thought and consciousness, to say nothing of the "spiritual side of our existence."4

Though we have few clues as to how a thinking, loving, interacting organism can be derived from its molecules, the day is coming when we can change some of those molecules. This prospect leaves Anderson worried. There are probably genes that influence the brain's organization, structure, metabolism and circuitry, making possible a human's capacity to think abstractly, morally and existentially. Mathematics, ideas of good and evil, anticipation of death

and visions of 'God' are all involved. But "what if in jour innocent attempts to improve our genetic make-up we alter one or more of those genes? Could we test for the alteration? Certainly not at present. If we caused a problem that would affect the individual or his or her offspring, could we repair the damage? Certainly not a present. Every parent who has several children knows that some babies accept and give more affection than others, in the same environment. Do genes control this? What if these genes were accidentally altered? How would we even know if such a gene were altered?"5

Third, Hindu bioethics responds to enhancement engineering with reference to its principle of consequentialism. It is axiomatic to the Indian mind that everything has its own store of karma which eventually plays itself out. Enhancement research, as just mentioned, is not at that point that we know all outcomes—Frankenstein movies always warn the jittery audience—"These experiments may not go as originally planned." It would not be a scare tactic to say that parents would be making decisions on behalf of their children over which they had no control and whose long-term effects would be uncertain or even dangerous. Who can predict all side effects? Can we be certain that a child engineered to become intellectually sharp could actually turn out morally mean? What happens when the 'Supermice' get old? Scientists already fear that altered mice might be more prone to strokes, chronic pain and premature death. There are other possible complications which indicate that we must reckon with the karmic function of nature.

Fourth, Hindu bioethics appeals to the principle of justice, based on our common spiritual heritage and the connectivity of existence. All life comes from one source called *Parameswara.* The *Bhagavadgita* says: "When one sees Me everywhere and everything in Me, I am never lost to him and he is never lost to Me" (V1.30). This thought invests each individual with equality, and raises questions of social fairness. Do we wish to usher in a society where the rich get smarter? Who will have a right to access the technology once it becomes financially out of reach for the common person? Every parent would want his or her child to be intellectually enhanced, but only a minority would be able to afford it. Would this not create a new 'caste system' in which the wealthy Brahmins of society constitute a new intellectual aristocracy that looks down upon children who are not enhanced, because they have lowers IQs?

Fifth, even if the fairness question were resolved, is enhancing our abilities medically sound? The Ayurvedic view that health must be understood in terms of the principle of balance, suggests that changes brought about by genetic engineering in one area could adversely affect balance in

other areas. UCLA neurobiologist Alcino Silva argues, "everything comes at a price. Very often when there's a genetic change where we improve something, something else gets hit by it, so it's never a clean thing."6 With more alarm, Jeremy Rifkin asks: "How do you know you're not going to create a mental monster? We may be on the road to programming our own extinction."7

Sixth, the pluralistic approach of Hindu ethics values diversity, and finds richness in individuality, devised by the evolutionary wisdom of Mother Nature who does not put all of her eggs in one basket. Therefore the prospects of a homogenized society, shaped by certain dominant traits and values, is a little frightening.

Seventh, Hindu bioethics adopts an inclusive approach toward humans and other forms of beings; unlike the Western approach which limits genetic engineering to human considerations, and human concerns. Harold Coward makes our point:

> Proponents of genetic engineering often look at the process of animal engineering and its results strictly from the human perspective—from the benefits that will accrue to humans. For example, genetically engineered "super pigs and chickens" may increase the amount of food for human consumption. But what about the effect upon the animals themselves. Or consider medical research. Animals are genetically engineered to model some of the most devastating diseases that afflict humans. To accomplish this goal, however, requires that large numbers of animals live lives of intense pain and suffering. The ethics of inflicting such suffering upon animals so as to potentially benefit humans has received little attention.8

Hindu bioethics addresses the genetic engineering of animals from the perspectives of three principles: unity; interconnectedness; and interdependence.

The principle of unity is formed on the basis of the notion that the Supreme Being cosmically manifests itself in evolutionary terms. All levels of existence are manifestations of a single Reality. It is the same evolving Spirit that ascends from the level of consciousness in the animal kingdom, to the level of intelligence in the kingdom of humans. Therefore, while there is a distinction between humans and animals, there is no separation. Humans are intrinsically related to animals, as parts of nature, and hence there can be no basis for pretensions of dominance. Philosophically the unitive worldview of Hindu ethics avoids the dichotomy present in Western religious, philosophic and scientific thinking between humans and animals, and the exploitation that justifies.

The philosophic principle of oneness sets the stage for viewing animal and human processes in terms of the principle of interconnectedness. Animals and humans belong to one web of life. Being connected, all forms of life impact one another, hence the importance of acknowledging the consequences of human actions on animal life forms.

Thirdly, since life is one, and all of its myriad parts are interconnected, it follows that the model of our relationships with animals must rest on the principles of interdependence and reciprocity. For example, pharmacists have used the venom of the Brazilian pit viper to develop Capoten for high blood pressure, among hundreds of other remedies. Caraka lists animals and birds as important as important medical resources. The place given to the cow in Indian culture is the best-known example of interdependence. Gandhi held to the view that "Cow protection is the gift of Hinduism to the world. It is a distinctive contribution to the world's religious ideas."9 Gandhi scholar, Seshagiri Rao, explains that for Gandhi, 'cow' meant the entire sub-human world, and stands for the protection of the weak and helpless. The principle of "cow protection" says to humans: Because you are smarter and stronger, you are doubly obligated to do good by creatures that are less endowed. Thus, for Hindu bioethics, privilege entails responsibility. Moral stakes are all the more enhanced when responsibility is reinforced by reciprocity.

In conclusion, the evolutionary orientation of Hindu bioethics does not permit it to make a blanket condemnation of genetic enhancement as *intrinsically evil*, on the grounds that it 'meddles with nature' or 'plays God', and therefore must be banned forever. Instead, it counsels that we start with the person, holistically understood, which then necessitates an evaluation of all means of genetic enhancement by the moral yardstick of whether they do indeed contribute to the betterment of ourselves and our children, or whether they have karmic consequences that are hidden from our present view. Given the present limitations of our knowledge in the field, Hindu ethics goes beyond current debates about what is 'normal' and 'abnormal', or the fine distinctions between 'therapy' and 'enhancement' and gets to the bottom-line dictated by the universal principle of *ahimsa*—do no harm. In a situation where life is threatened by some disease, the risk of harm may justify the treatment, but in a scenario where the end of gene therapy is not the treatment of a serious disease, but solely for the purpose of enhancement that is nonessential, the therapy is not supported by *ahimsa*, because risks loom larger than benefits. Further, given the Hindu understanding of health as the condition for spiritual wellbeing, all

efforts at genetic enhancement of human beings must ultimately help, and not hinder, the process whereby the human spirit may flourish. The *betterment of humanity is not in question*; *only the means which must be consistent with the end of human wholeness.* How we ought to proceed to address this general goal is not revealed to us by some God who has written out in great detail what we are supposed to do. Therefore the Hindu does not depend on a sort of mental or emotional security that does not exist. Instead, we must use our own intelligence to apply spiritual wisdom to the special circumstances in which we and those whom we serve find ourselves.

Footnotes

1. See Robert M. Veatch, <u>Cross Cultural Perspectives in Medical Ethics</u> (Boston: Jones Bartlett Publishers, 1989), Preface.

2. Surendranath Dasgupta, <u>A History of Indian Philosophy</u>, 2 Vols (Cambridge: Cambridge University Press, 1968), p.273.

3. <u>The Bhagavadgita</u>, V1.5

4. W. French Anderson, "*Genetics and Human Malleability,*" <u>Moral Issues and Christian Response, Pa</u>ul T. Jersild and Dale A. Johnson, eds. (Fortworth: Harcourt Brace College Publishers, 1993), p.308.

5. Anderson, Ibid.

6. In Nancy Gibbs, "*If We Have It, Do We Use It*? Time, September 13, 1999.

7. Ibid.

8. Harold Coward, "*Ethics and Genetic Engineering in Indian Philoso*phy," unpublished paper presented at the Eighth East-West Philosophers' Conference, University of Hawaii, Jan. 19, 2000.

9. Seshagiri Rao, "*Mahatama Gandhi and Reformation in Hinduism*," <u>In Search of Hinduism,</u> Cromwell Crawford, ed. (New York: Unification Theological Seminary, 1986). P. 156.