
Conclusion

CONCLUSION

Having discussed some of the vital ethical issues arising out of genetic engineering, in the conclusion I would like to address three frequently discussed issues: first one is the view that this technology goes against human dignity; second, is it some form of determinism and third, body can be seen from some other perspectives also.

Human dignity

It is frequently alleged that biotechnology violates human dignity. But if we want to point out what sort of dignity does it violate, we need to understand dignity first. The precise meaning of the term is unclear and controversial. It may be said that the core idea of human dignity has to do with the worth of human beings.

The importance of preserving human dignity has been affirmed in many national and international documents. The term has been incorporated in Indian constitution. The German constitution clearly writes: 'the dignity of human being is inviolable'. Even in countries where the term has not been incorporated, it has come to play an important role. In these documents when we talk about human dignity we usually talk about various human rights that the law must respect.

International documents relating to bioethics also give paramount importance to protecting the dignity of all human beings. The United Nations' Universal Declaration of Human Rights says (in article 1) that human beings are born equal in dignity. These documents reflect the primary sense in which human dignity is invoked today as an attribute of all human beings that establishes their great significance or worth.

The term 'dignity' was derived from the Latin word 'dignitas' which means 'worth' and 'dignus' meaning worthy. This suggests that dignity points to a standard by which people should be viewed and treated. At one time it was thought that dignity is variable, the contemporary concept of dignity is beyond the perceptions or actions of particular individuals and is rooted in what all human beings have in common. By and large human dignity has been viewed in two ways. Some see it as grounded in particular characteristics of human beings; others view it as attached to being human *per se*. The later view was espoused by Kant. Without entering into the controversy in what sense dignity should be taken let us see how does biotechnology violates dignity.

It is usually agreed upon that human beings should not be used because their dignity requires that they be treated as having intrinsic, not merely instrumental worth. They should not usually be forced because their dignity requires that their wishes be respected. They should not normally be injured because their dignity entails that their well-being is preserved.

On any human experimentation it is commonly insisted on obtaining the informed consent of participants so that participants dignity is not violated by doing something against their wishes. No amount of benefit to society warrants such a violation.

In regard to resource allocation the concept of human dignity is invoked. It is argued that the allocation producing the greatest overall benefit is not the right one if the burden that certain individual must bear to bring it about is too heavy. Not only may some people be harmed or injured, the very process by which anything can be done to them if it results in greater benefit to society is demeaning.

Human dignity is also invoked to protest the injury involved in human cloning for reproduction purposes. It is maintained that as long as animal studies show that attempts to clone human almost certainly would result in the birth of children who eventually would develop serious deformities till then reproductive cloning goes against human dignity.

Other bioethical debates are even more complicated for the reason that two elements of human dignity — preventing people from being injured and preventing people from being used — are in conflict with a third element: preventing people from being forced. For instance, in the debate over germline intervention to enhance future generations of human beings those who see the only threat to human dignity as the limitation of people's choice tend to favour giving parents and society freedom to pursue such avenues. Others, more concerned to protect people against injury, identify a threat to human dignity in subjecting young human beings to such procedures when the potential negative effects of genetic alterations for enhancement purposes are not well understood. That opposition is strengthened for many by seeing not just the potential injury involved but also the fact that the people doing the enhancement unacceptably use other human beings by altering them to exhibit traits that parents or society may like but that the ones who are altered may not.

Determinism

In the history of philosophy one recurrent theme has been free will and its battle with determinism. Freedom of the will is the ability to govern one's own actions. Determinism is the view that everything or our every action has a cause. Some philosophers say that determinism is incompatible with freedom. And without freedom people could not be morally held to be responsible for their actions.

At one time determinism has been a dominant view in physical science. Now it is a much-discussed issue in biological science. As there is a tendency to reduce human being and other living beings to their DNA, the most threatening question posed is: Are we about to lose our freedom? Will new discoveries in genetic science so completely explain human behaviour that the freedom we previously thought we had will turn out to be a delusion? Do DNA or genes determine everything about us? Can somebody legitimately say the following to the judge of a court: "Your honour, I am innocent. My genes made me do it." If it is said that everything is determined by our genes, then should we surrender to fatalism, or should we seek some strength of will to apply genetic knowledge to make the human lot a better one?

Let us see how determinism creeps into the arena of genetic engineering. Bioscientists assert that genes are the key factors for our phenotype. Genes make us tall or short. It determines our eye colour. Defective genes are responsible for many diseases such as cancer, Alzheimer's and so on. It is further said that it is gene that predispose us to sexual orientation, alcoholism, violence and so on. In a nutshell DNA answers the question: Who am I? With this thesis we may say that the days of clean slate or the view that we are born with a *tabula rasa* have gone. Now we are said to be born with much already written on the slate. We have started gradually seeing ourselves as determined by internal biological predispositions. In other words we are genetically determined.

Genetic determinism has also assumed various forms. Ted Peters draws our attention to two such forms. One form he calls puppet determinism and borrowing a term from Greek mythology he calls another form promethean determinism --- one he calls fatalistic face

and another future face. As per the former interpretation, the DNA defines who we are, and the genes, like a puppeteer, pull the strings that make us dance. Genetic fatalism assumes that genetic influences are unchangeable, that we are immutably destined to act as our DNA programmes us to act. A direct philosophical consequence of such genetic determinism is that what we assume to be personal freedom is only an illusion. Hence we are not responsible for what we do rather our genes are. The later sort of determinism assigns our scientists the task of understanding just how the genes work. Then we need to take decision to develop appropriate technologies based upon this understanding. This will give the human race to control over what nature has handed down us. Writer Peter: "Because the history of genes constitutes the history of human evolution, once we have gained control we will be able to guide the future of evolution of the human race. We will have wrested from nature her secrets, and this will transform us from the determined into determiners." According to this determinism though the genes determine the human future, but the human race determines the genes.

It is the later sort of determinism that contemporary critics of genetic science claim to find the dismal side. They warn us against playing the role of God. This sort of warning has come from various sectors, foremost among them are theologians. Some theologians consider our genetic make-up a divine creation and hence complete and final. For them playing God means learning God's awesome secrets and thereby we acquire 'Godlike' powers. Thomas A. Shannon, a renowned bioethicist, says, "We are genuinely on the edge of a new revolution in medicine. We can literally reach inside ourselves, remove a gene or

genes, and either correct or replace them. Such power is truly awe-inspiring.”¹

For some playing God means exercising power over life and death. It may mean decision regarding life and death belong to God’s prerogative and not to human beings. When we human, e.g. a surgeon, make life-and-death decisions we exhibit our pride and transgress divinely imposed limits.

Another meaning of playing God means we, the scientists, are trying to alter life and influence human behaviour. We are substituting ourselves for God in determining what human nature will be. In 1980 in a letter to the then US President Jimmy Carter several leaders of religious groups expressed their concern of controlling life forms. For them any attempt to correct our mental and social structures by genetic means to fit a particular group’s vision of humanity is perilous.

All these cautions are not contextless. The invention of atom bomb and later uses make us aware that on many occasions the knowledge we do have did not match with the wisdom to decide how to use it. For lacking this wisdom many scientific knowledge yielded unforeseen destructive consequences.

Many religious thinkers, mainly of Christian and Jewish tradition, however, point to the difference between divine creation and natural creation. For them, divine creation is creation out of nothing whereas human beings are created cocreator. God creates differently from the way we human beings create. Whatever creativity human being manifest cannot rank on the same level as creation out of nothing, on the same level with our creator.

1. See Ted Peters: *Playing God?* Routledge, New York, 1991, p.7

When we say that our freedom is threatened by the rising sense of genetic determination it is our freedom of the will and also future freedom associated with creativity that are alleged to be at stake. What we experience as free will is traditionally assumed to be inherent in human nature. It is the ability to choose before we act. It is the freedom of the individual human being as an agent who acts. Beyond determination by external circumstances, each of us possesses an innate power to make value judgments, to make decisions, and to make actions that affect our external environment and our internal character. In brief, we use the word will to refer to the ability of the self or person to make choices.

It is freedom understood in the above sense that seems to be under attack by the genetic determinism. Now the molecular biologists consider DNA to function as an internal puppeteer pulling the strings that determine our decisions and actions. The restrictions on our ability do not come merely from outside, such as from physical environment; rather they come from inside, from our DNA as well. We now find ourselves as trapped between two forces –external environment and internal DNA. Thus we are the locus of the tug of war between genes and environment. Thus nature instead of giving us free will, it gives at least only the delusion of free will. The task of genetic science is to expose this delusion.

A deep insight into another facet of determinism shows us ray of hope. We, i.e., human beings, have inherited from nature memory, imaginations, free will and many other gifts. These gifts embolden us to envisage a future that will be different from the past and the present with which we are not happy. The deliberations, decisions and actions we take are frequently motivated by the desire to create something new, to alter our environment or personal character according to a

vision of a better reality. This sort of freedom will put us in drivers seat for determining our future. The human capacity for influencing what will be human in the future. These different facets of determinism has been termed 'gene myth', 'genetic essentialism', 'strong genetic principle' and so on.

Now if the doctrine of genetic determinism presupposed above could be corroborated scientifically, we shall then have to conclude that what we experience or call freedom is in fact a delusion. Our daily experience is structured around each of ourselves as a person, a person who is a self. Now the issue of genetic determinism direct our question thus arises is: Can we reduce what we experience as a freely choosing self to single-factor determinism (i.e., by gene alone) or two-factor determinism (environment and genetic) or three-factor determinism (genes, environment and the self). The sort of determinism that admits human creativity is in harmony with the conception of self. We can envision ends and use scientific research and technological development into the service of those ends. Thus it does not stand in opposition to human freedom.

A survey of literature gives us the impression that even many molecular biologists, evolutionary psychologists do not support single-factor genetic determinism. Rather they are in support of two-factor determinism. One such proponent is Richard Lewontin, a Harvard geneticist. He writes: "(Biological determinism holds) that human lives and actions are inevitable consequences of the biochemical properties of the cells that make up the individual ... that human nature is fixed by our genes."² Lewontin does not accept this view and in place of genetic determinism, he advocates two-factor determinism — gene and environment. A full understanding of human conditions, he says,

2. Richard C. Lewontin et al: *Not In Our Genes: Biology, Ideology, and Human Nature*. New York: Pantheon, 1984 p.6.

demands an integration of the biological and the social in which neither should be given primacy or ontological priority over the other.

While geneticists are getting more and more hold of knowledge of the genome the question that haunts our mind is that will this knowledge permit us to design and build a pair of technological scissors with which to cut the puppeteer's strings. If we can cut the strings, we, the human race, will become our own puppeteer.

However, a close scrutiny of writings of some molecular biologists, behavioural geneticists and evolutionary psychologists reveals that they are not in a position to accept genetic determinism without challenge. The belief that genetic determinism is human determinism is scientifically unsupportable, they say. They cite the following arguments in favour of their claim.

First, genetic determinism understood as human determinism depends on a category mistake. It is a mistake where parts are confused with whole. Freedom is found at the level of the self or the human person as a whole organism. A person as a whole is not reducible to the determinism of any or even all of his/her component part, in this case genes. Hence genetic determinism, to the extent that it exists, simply not in conflict with freedom experienced at the human level.

Moreover, they contend that at the molecular level genes are not determinative in any absolute or exhaustive sense. Genes interact with their environment. Mutations and other changes in the DNA are not predictable but rather it is a result of chance.

Finally, a strange view is held by some of them and say that as our knowledge of genetic influence on human nature rise it may be possible that we come to know that genes themselves determine that we are free. In other words, it just may be the case that human

freedom is itself the product of genetic determinism. Sometimes it is also held that the widespread belief in the genetic determinism of human life is primarily a cultural phenomenon.

The controversy over the gene myth takes on such a sense of seriousness because it is being driven by an underlying ethical question: what should we do about human suffering? If we pursue genetic research toward the end of developing new medical technologies that could relieve human suffering, then will we in the process create new injustices? When we play God with DNA, do we risk creating new stigmas and, hence, more social suffering?

Determinism is a conceptual frame that we use to picture what is happening in genetic research. It has been found by scientists that some genes cause disease. This presumes a framework of determinism in that what happens to our phenotype is thought to be dictated solely by our genotype. It also presumes a framework of another sort of determinism, because we have a sense of impending triumph, the sense that medical science will gain victory over diseases. Genetic engineering is the spear in the hand of the warrior who will slay the dragon of disease.

The logic of determinism has expanded the scope of popular thinking in the following way. If some genes dictate diseases, perhaps other genes dictate human behaviour and other phenotypical traits. What follows is the massive operation seeking out the genes that govern obesity, alcoholism, aggressiveness, violence, and sexual orientation. The molecular biologists working in the laboratory are not as deterministic as the popular image. Laboratory scientists dissect organisms into their component parts and look for the genetic determinants for specific biological traits. The reductionistic assumptions of research do not require them to advocate a universal

philosophical determinism that claims everything is biologically determined. Molecular and cell biologist R. David writes: "... biologist do not believe in determinism by genes in the absolute sense ... The danger is that the non-scientific interpreter will be confused by the deterministic talk of most scientists, especially genome researchers. The conversation of most scientists is in fact couched in terms of determinism even though the majority scientists probably do not believe that we are complete slaves to our genes and environmental history. The confusion arises from a failure to distinguish between philosophical determinism and the methodological or operational determinism of science."¹

Another reason why molecular biologists are reluctant to embrace a complete ontological determinism is that they observe a very important fact: genotype alone does not determine phenotype. Environment plays a significant role in gene expression. Environment for a geneticist includes the chemical life within the cell as well as the external world, which stimulates or fails to stimulate cell activity. Even though the genes establish potentials and set limitations, genes alone cannot determine the actual outcome. To make a human person, we need both genes and environment, nature and nurture. John Maddox, writes: "A genotype may be necessary, but not a sufficient, condition for the phenotype; the individual concerned inherits only a susceptibility for the phenotype ... it would be rash to deny that missing ingredients may be aspects of nature."²

This is the case at the individual level. At the species level, through natural selection, genomes adaptation shows that it is not all in the genes. To apprehend genetic change over time we need an interactive or ecological perspective. The persons we are today are the

1 R. David Cole, "Genetic Predestination?" *Dialog*, 33:1 (winter 1994) 20-21.

2 . John Maddox, "Has Nature Overwhelmed Nurture" *Nature*, 366 Nov 11, 1993, 107.

result of a long genetic and environmental history, a history that is still ongoing.

Such deliberation leads Cole to agree with Maddox and write against genetic predestination. He writes: "There is no reason for the non-scientists to be intimidated by the success of the deterministic approach in elucidating the biological role of genes in human nature, and certainly no reason to be intimidated by any scientist who might try to convince us that determinism is all that is. Although the case of free will cannot be rigorously proven, those of us who believe in it need feel no threat from the findings of the Human Genome Initiative."¹

One point is clear here. In disputing genetic determinism, molecular biologists do not actually advance a full-fledged theory of human freedom. They simply buffer genetic determinism with environmental determinism. Human freedom is simply not the subject matter they study. Freedom is a phenomenon that occurs at the level of the whole organism, at the level of the human self, not at the molecular level. To look only at the parts is to leave the whole out of the picture. Laboratory methods of genetic research are focused on DNA and human freedom does not typically appear on their mental plane.

Indeed there are some scientists, e.g. Francisco J. Ayala, who give commonsense arguments in favour of free will. Ayala says when we confront a given situation that requires action on our part, we are able mentally to explore alternative courses of action, thereby extending the field within which we can exercise our free will.² The observation of Ayala is important. What we human beings experience everyday is our freedom. We know when we have freedom, and we know when it is taken away. 'Freedom' is a word we use to identify a

1. Cole, "Genetic Predestination?" 21.

2. Rolston III, Boston and London: Jones and Bartlett Publishers, 1995, 122.

certain form of experience we have as individuals and perhaps as societies. Philosophers in the past and present have sought to explain freedom with greater or lesser degrees of adequacy; but what they have sought to explain is something that already exists indelibly in human experience. When molecular biologists seek to track the influence of gene expression on human phenotype and on human behaviour, they are contributing to an explanation of human freedom. However they explain it, they cannot destroy it. At best geneticists can offer a partial explanation of the factors that influence human behaviour and, hence, human freedom. The existence of this freedom is simply a given that *inter alia* science tries to explain.

The sort of determinism which considers us as puppet in the hand of genes confuses us because it risks committing the fallacy of misplaced concreteness. A. N. Whitehead¹ identified this fallacy as an accident in thought when we confuse what is concrete with what is abstract, when we confuse the fact in front of us with the theory to explain it. To deny this experienced reality on the basis of a reductionist method or on the basis of a hypothesis about genetic determinism is to grant the explanation priority over what we are trying to explain.

Behavioural geneticists seek to identify and label as many behaviours determined by our genes as they can. However, they also acknowledge that nature and nurture are factors in human development. Hence what cannot be accounted for genetically must be environmental.

Some behavioural geneticists think that we need to investigate the relationship of freedom to all aspects of our identity as humans, including the biological and cultural roots of variation.

1 A. N. Whitehead, *Science and the Modern World*, Cambridge University Press 1953, p. 64.

Behavioural geneticists do not limit themselves to single-factor determinism of genes alone. To say of genetic effects is not to say that environment does not matter, they come to this conclusion by studying behaviour of twins. Behavioural geneticists are two-factor determinists.

Philosopher Bruce R. Reichenbach and behavioural geneticist V. Elving Anderson opine that the prospect of human freedom transcends the above two factors. For them without choice there cannot be moral responsibility. But choice means that persons contribute something to the action over and above what derives from their genetic heritage and environmental input.

There are some who admit both maximum genetic determinism and human freedom. For them genes determine that we will be free, or at least determine that we humans at the level of personal self will set out on a quest for freedom. For every strand of DNA that might constrain or inhibit us, there is another that makes us cry "freedom". Thus they argue that evolution has given us our freedom, that natural selection has placed in us the capacity to stand up and transcend the limitations of the environment.

Evolutionary psychology sometimes known as sociobiology appeals simultaneously to determinism as well as thirst for liberal freedom. It is found in different names such as behavioural ecology, Darwinian anthropology, evolutionary psychology and evolutionary psychiatry. It draws upon science but builds a worldview that is totalistic in its explanation of what is meaningful to our lives.

Evolutionary psychology emphasizes human unity and continuity across cultures. Darwinian anthropologists, in scanning the world's peoples, focus less on surface differences among cultures than on deep unities. Beneath the global garb of rituals and customs, they see recurring patterns in the structure of family, friendship, politics and

morality. They believe the evolutionary design of human beings explains these patterns. The evolution of DNA has brought the entire human race to this point.

According to this theory, the evolutionary driver has been and continues to be the 'selfish' gene. Genes replicate themselves and go on replicating themselves forever. So, they drive the organism within which they reside to reproduction. The organism is only DNA's way of making more DNA.¹ Why our minds are preoccupied with sex? Why do clones and races and nations go to war and commit genocide to eliminate other people who differ genetically? Why do people among us feel altruistically about helping others? Evolutionary psychologists give answers to these questions in terms of genes.

Genes produce memes, says Dawkins. Memes are cultural products whereas genes biological. An idea-meme is a mental entity capable of being transmitted from one brain to another, one generation to another. The gene-meme combination echoes determinism. Yet, Dawkins living in a liberal society feels he must give voice to liberal views about human freedom. Hence he says once we, through science, understand how genes determine us, we will then gain the power to steer our human future. "We have the power to defy the selfish genes of our birth and, if necessary, the selfish memes of our indoctrination."² Wilson also says that human nature can embrace more encompassing forms of altruism and social justice. Genetic biases can be trespassed and ethics altered.

The excitement elicited by the sociobiological philosophy is due to its attempt to explain culture — which we experience as an expression of human freedom — by appeal to biological processes, which are

¹ Edward O. Wilson, *On Human Nature* (Cambridge: Harvard University Press, 1978) 71.

² Richard Dawkins, *The Selfish Gene* (New York: Oxford University Press, 1989) p. 200.

presumed to be deterministic. The genes hold culture on a leash, writes Wilson. He argues that human brain is a product of evolution. Human behaviour, including our deep capacities for emotion, is the circuitous technique by which our genetic material has been and will be kept intact. Although culture provides us with an apparent array of options from which we can make choices, our genes constrain and circumscribe and overrule our behaviour. The central tenet of sociobiology is that our behaviour are shaped by natural selection in our genetic history. This applies to all aspects of culture including ethics and religion. The sociobiologists does not find ethical norms already present in biological evolution, but he argues that genetic evolution predisposes us to accept certain moral norms — those consistent with the objectives of natural selection.

Let us look at the specific arguments raised by evolutionary psychologists that connect the selfish gene with morality at the cultural level. Wilson and Michael Ruse state the theory thus: Morality or our belief in morality is merely an adaptation put in place to further our reproductive ends. Hence, the basis of ethics does not lie in God's will or any other part of the framework of the universe. In an important sense, ethics is an illusion fobbed on us by our genes to get us to cooperate. That is ethics makes us fertile, and fertility is the means whereby genes and memes survive. We human beings may think we are in the driver's seat steering culture with a moral steering wheel, but in fact we are puppets, and the genes are pulling the strings.

Evolutionary psychologists do not just describe, they also prescribe. Evolutionary ethics is founded upon genetic determinism. For them, human morality is itself a product of evolutionary history and that ethics has developed to further the evolutionary process. People tend to pass the sorts of moral judgments that help more their genes

into next generation.¹ For Wright, altruism, compassion, empathy, love, conscience, the sense of justice — all of these things that hold society together, the things that allow our species to think so highly of itself, can now confidently be said to have a firm genetic basis. But he adds that although these things are in some way blessings for humanity as a whole, they did not evolve for the good of the species. The process of natural selection is blind to human values, even though evolution appears to be designing things for a purpose.

DNA of our ancestors adapted to the environment of evolutionary adaptation. Those genes that are conducive to the 'survival of the fittest.' It is this adaptation process that leads to the illusion that natural selection is consciously designing organisms. This is where the determinism-freedom axis comes into play. It invokes the assumption of our liberal culture that knowledge of what determines us gives the power to make us free.

To modern Enlightenment mind, determinism in nature — whether genetic or in other forms — poses no threat. As Wright says: "Understanding that — in many realms, not just in sex — we're all puppets, and our best hope for even partial liberation is to try to decipher the logic of the puppeteer."² Because we believe that through science, we can understand how determinism works; and through technology, we can steal that very determining power and press it into the service of distinctively human needs and desires. Understanding nature and making decisions regarding how we should employ nature's processes give us control over our destinies.

Wright argues for genes plus environment: nature plus nurture. But because all environmental influences are mediated by our biology,

¹ Robert Wright, *The Moral Animal* (New York: Pantheon, 1994) p. 146.

² R. Wright, *Moral Animal*, 37

Wright says that “even though the term *genetic determinism* is confused, the term *biological determinism* is not. This is a deterministic scheme, whether it is a one-factor or two-factor determinism. The reason we feel that we are free at the conscious level is that we are ignorant of all determining factors at our unconscious biological level.

Richard Lewontin and his colleagues criticize sociobiology or evolutionary psychology. Sociobiologists, they argue, commit the naturalistic fallacy, with the effect that abolishes *ought*. This means that social philosophy based on genetic determinism nullifies our sense of guilt and responsibility. If men dominate women, it is because they must. If employers exploit the workers, it is because evolution has built into us the genes for entrepreneurial activity. If we kill each other in war, it is the force of our genes for territoriality and aggression.

Body

Physicians have sought to understand the body's structures (anatomy), functions, cellular make-up, activity and regulatory mechanisms, the several organ systems and their connections and the variety of diseases. Now they are concentrating on genetic and congenital conditions that govern the body's development and underlie personal life. However, medical views about the body have varied over time. For example, the 'dogmatic' or 'rational' view understood the human body as fundamentally casual in nature — events inside the body were thought to cause outer symptoms (a pathological understanding of the body and disease). By contrast, according to the 'empiricist' and 'skeptical' traditions, the body and the embodied person form an experiential, temporarily developing 'whole' in continuous and multiple interactions with the surrounding world (a holistic view). Physicians in later historical times who were convinced by the dogmatic, rational view literally looked inside the body — by dissection

and vivisection — and understood its structures and functions. Those who held the empiricist view turned instead to history (the patient's history and the collective histories of other physicians) in treating diseases. These two basic, conflicting models have continued to have an important place in medical understanding.

Although these views continue to be present in medicine, the tradition (emphasizing the body as a material, casually determined organic system) has been clearly dominant in more recent times. The first major step in the historical development of a rationalist view of human body were taken in the early fourteenth century by Mondino de' Luzzi and his student Guido da Vigevano ¹ By far the most significant steps are found in the seminal work on anatomy by Andreas Vesalius (1514-1564) and later in the important discoveries in physiology by William Harvey (1578-1657), strongly endorsed by Rene Descartes and continued in the work of seventeenth and eighteenth century post-Cartesian physicians.

In modern times, the body was first proposed as a fundamentally casually determined organic system by Giovanni Battista Morgagni (1682-1771) and Xavier Bichat (1771-1802). Before this time, even though abundant autopsy reports had been published, such recorded data had not offered any correlation between clinical and anatomical findings. With Morgagni, however, this changed profoundly. The introduction of the clinicopathological correlation radically altered medical understanding. For the first time, what was found at autopsy was taken as explaining clinical symptoms observed while the patient was alive.

¹ Singer, Charles J. *Evolution of Anatomy: A Short History of Anatomical and Physiological Discovery to Harvey*, New York: Alfred Knopf (1925)

The wedding of clinical medicine to biological science, definitely began in the nineteenth century, was consummated through the work of neurologists such as John H. Jackson (1834-1911) and clinicians such as William Oster (1894-1919), and the educational reforms recommended by Abraham Flexner (1866-1959) in the early twentieth century. Medical thinking then incorporated the idea that the body is a complex system of physiologically interacting structures and mechanisms governed by multiply interrelated controls seated in the neurological system. Some physicians appreciating that this complex organism serves as the embodied person's means of expression and action, advocated a type of medical dualism — there must be a place for the 'person', whether thought of as a distinct entity or as a causal consequence of the body complex's functional stability across time.

While the history of philosophical and moral deliberations about human life is quite as sophisticated and colourful as medical history, the bulk of reflections have focused on mind (variously called person, self, subjectivity, and related notions). In large part of the literature it was assumed that body and soul are distinct realities and that what is essential in human life is to be found in the soul, not in the body. The soul (mind, reason) is the pure and unchanging essence of the human; the body, on the other hand, is a baser sort of affair, belonging to the changeable, the temporal, and the corrupt. The soul, imprisoned within the corporeal, is subject to the body's peculiar 'nature', its appetites and inclinations, but has its true destiny and nature elsewhere — a destiny it must pursue by becoming freed from its worldly, bodily prison.

There have been exceptions to this view of the human body. Descartes, for example, argued that mind and body are to be understood as 'substances': mutually exclusive, self-subsistent, and

ontologically distinct entities, neither of which requires the other to be or to be known. This familiar bifurcation of reality, often said to be at the basis of modern medicine and modern thought more generally, led Descartes to the view that mind and body interact in some manner, although specifying that the form of this interaction proved to be inordinately difficult and highly problematic. Later his reflections on the body showed a surprising turn. The mind, he thought, is not 'in' the body in the way a boatman is 'in' a boat — contingently or accidentally. Rather the mind is 'intimately' connected to the body, an 'intimate union' that led him to the view that the human body is intrinsically complex and not all the simple extended substance posited in his metaphysics. As Descartes remarked neither mathematics nor metaphysics is capable of apprehending this union. It can be known only in 'daily conversation' and in clinical encounters — one might say that union is essentially a matter of concrete experience.

Understanding the body continued to preoccupy physicians but did not become a focal issue for philosophers until the early writings of Henri Bergson (1859-1941). Bergson argued that the human body should be seen as the person's placement or locus in the world. What makes the body, a *sui generis* phenomenon, unlike any other worldly object is, he believed, that it is experienced as 'mine', as 'my centre' of action and experience. While it is physical, it is not simply that. It is the 'centre' of experience, and thus the field of physical objects is spatially organized around it. In addition, the human body and its perceptual capacities are in the service of action. The body is fundamentally an actional center. It is that by means of which the embodied person is able to engage in actions in and on the field of objects.

Max Scheler (1874-1928) devoted serious reflection to the 'lived body', in particular as regards the performance of deeds in moral

conduct Scheler's analysis suggests that both 'ego' and the ego's 'acts' are distinct from what he terms 'lived bodiliness'. At the same time, lived bodiliness must be sharply distinguished from the 'thing body'.

For Husserl, body's primary feature is the experiential relationship of consciousness to its own embodying organism. Granted that this organism is uniquely singled out, the problem of embodiment is to determine in what sense and in what ways it is actually experienced by person on his or hers, since it is solely by means of that experience that it is at all possible for the person to experience worldly things.

What had so impressed and troubled Descartes — the intimate union — Husserl calls the experiential relationship to the 'body-as-mine'. Descartes nevertheless obscured matters by trying to resolve the very different metaphysical question of the 'mind-body' relation.

It is the embodiment phenomenon that Gabriel Marcel's analysis of the fundamental capacity (the elemental 'feeling') at the heart of personal life — my body qua mine — is addressed (March 1940). It is here, too, that Maurice Merleau-Ponty locates the essential ambiguity intrinsic to the body itself. So 'intimate' is the 'union', both Marcel and Merleau-Ponty point out, that one is tempted to say, with Jean Paul Sartre, "I am my body". 'My body qua mine' is thus the paradigm of 'belonging' or 'having': the sense in which things belong to a person is ultimately derived from the ways in which the 'own' body is experienced as belonging to the person. The latter is the condition for the former (Marcel, 1935). This essential source of 'belonging' becomes apparent especially in instances where mental disturbances occur and the sense of 'mineness' becomes severely compromised or remains seriously undeveloped. A central issue then emerges: By virtue of what is this one animate organism uniquely singled out to exist in my experience

as that whereby everything else in the world is experienced? Which specific processes are there without which this organism would cease to be experienced by me as mine, or which give it its sense as mine.

The problem is exceedingly complex and subtle, and is by no means settled. It is one of those regions where philosophy and medicine can productively learn from one another. Within philosophy, however, there seems at least some agreement that the animate organism becomes and remains an embodying organism solely to the extent that (1) it is not just a physical body but a genuinely animate organism, the sole 'object' within which the person's own fields of sensation (that whereon sensations occur) belong; (2) it is not only object 'in' which the person immediately 'rules and governs', within and from each of its 'organs' and the total organism itself; (3) it is whereby the person's 'I can' (walk, perceive, move, grasp, and the like) is most immediately realized and enacted; (4) it is that 'by means of which' the person perceives and otherwise experiences the field of worldly objects (things, people, language etc.); and (5) it is only that whereby the person experiences other things, but it is itself experienced by the person — that is, the person's embodying organism is reflexively related to itself.

Thus the embodying organism is that whereby one experiences sensations, which most immediately embody wishes and movements, by means of which one perceives, and through which other things are experienced. Moreover, there are many other meanings the human body acquires —social, political, economic and others —that a more complete explication of embodiment must address —bodily abilities, stances, comportments, and movements that have their sense and place within the spheres of nature, culture, and history.

Embodiment is thus fundamentally connected with various levels and modalities of bodily actions, attitudes, stances, and movements, personal striving or willing, and perceptual awareness of things (including the body itself). Wishing, desiring, noticing, attending, and the like are or can be actualized (embodied, enacted) by means of corporeal movements that are functionally correlated with the several perceptual fields and what appears in them. Only to that extent can one sensibly say that this organism is 'uniquely singled out' from the field of worldly objects as 'mine'. Involved in embodiment are processes of sensory 'feeling' and elementary strivings (reaching, squinting, locomotion etc.). Together these contribute not only to the sensing of 'this' organism as 'belonging to me' but also to the forming of the surrounding field of objects as correlated to bodily feelings and movements, positions, and actions.

There is another dimension to embodiment. However, tempting it is to say 'I am my body', many situations in daily life suggest that matters are more complicated. The relation between self and its embodying organism seems as much a matter of 'otherness' as of 'mineness'. However, intimate and profound the relation between the person and the person's body, it is equally true that a person experiences his or her body as strange and alien.

I am my body, but not simply that the otherness is so profound that we inevitably feel forced to qualify the 'am': it is not identity, equality or inclusion. It is 'mine', but this means that the person is a way distanced from it, for otherwise there would be no sense to 'belonging'; it would not be characterizable in any sense as 'mine'. So close is the union that a person's experience of his or her 'own' body can be psychologically unnerving. So intimate is it that the person has moments of genuinely feeling 'at home' with it. Yet so other is it that

there are times when the person treats the body as a mere thing that is other, obsessively stuffing it with food or otherwise mistreating it.

The person finds himself or herself embodied by an animate organism whose peculiar connections to the person give embodiment its uniquely uncanny character. Nothing is so much 'me-myself', yet nothing seems so strange; so deeply familiar (who else could 'I' be?) yet so oddly alien (who, indeed, am 'I'?) This experience is not indicative of an ability to make up one's mind but, rather, suggests the peculiarity of embodiment. What seems distinctive is this 'mineness/otherness' (the most familiar yet the most alien) dialectic that is the core of human body-as-experienced.

In these terms, to speak of embodiment is to speak of something that 'I' am and not something that can be placed over against me as an object. As embodied, 'I' am in a clear sense a fundamental puzzle to myself –what is expressed by the problem of the body' is precisely the person's 'being as embodied', that is, the fundamental sense of being human in the first place. The 'self-body' (or mind-body') problem is, therefore, a matter of experience; it is enacted at every moment in the ongoing life of the person. These considerations make it easier to appreciate that the human body is essentially expressive. It is that by means of which the person enacts and expresses feelings, desires, strivings and so on. This expressiveness signifies that embodiment is valorized, that is, deeply textured with a sense of worth. After all, what happens to it happens to me: the person, as that which "rules and governs", is at the same time subject to its conditions. What happens to the person's body, in still different terms, matters to the person whose body it is: The embodying organism lies at the root of the moral sense of inviolability of personhood –of the 'privacy', 'integrity', 'consent', 'respect', and

'confidentiality' that play such profound roles in research ethics, bioethics and clinical ethics.

This value character of the embodying organism also helps elucidate more fully why the continuing discussions of many bioethical issues — pregnancy, prenatal diagnosis, abortion, withdrawal of life support, euthanasia — are so highly charged and deeply personal. On the other hand, the profound moral feelings evoked by certain biomedical practices and much biomedical experimentation (in particular the human Genome Project) are understandable, as they are in effect ways of intervening or intruding into the most intimate and integral spheres — the embodied person. The person is embodied, enacts himself/herself through that specific animate organism that is his or her own, and is thus expressive of that very person. Bodily schemata, attitudes, movements, actions and perceptual abilities are value modalities by which one enacts and expresses one's character, personality, habits, goals, moral beliefs — in short, by which the person is alive as such.

Cultural and Religious Perspective

Scholarly and popular thought alike have typically assumed that the human body is a fixed, material entity subject to the empirical rules of biological science. Such a body exists prior to the mutability and flux of cultural change and diversity. Beginning with the historical work of Michael Foucault, and the phenomeno-logical philosophers such as Maurice Merleau-Ponty, Max Scheler, and Gabriel Marcel has begun to challenge this notion. Late twentieth-century commentators argue that the body can no longer be considered as a fact of nature, but is instead 'an entirely problematic notion', that 'the body has a history' insofar as it behaves in new ways at particular historical moments; the body

should be understood not as a constant amidst flux but as an epitome of that flux.

This scholarly perspective — that the body has a cultural phenomenon — goes hand in hand with the increasing number and complexity of bioethical issues in contemporary society, many of which have strong religious overtones. Some decades ago such issue arose in cases where religious and biomedical priorities conflicted in the treatment of illness. Some members of small sects occasionally have created controversy by refusing medical treatment on the grounds that faith in medicine healing should occur only at the will and discretion of the deity, human medicine was presumptuous upon divine prerogative. In some native American communities it has been the practice for ill people to seek biomedical treatment only after having exhausted the resources of their spiritually based traditionally medical systems.

More recently, the number of bioethical issues with religious overtones has multiplied. Concerns have been expressed about the apparently godlike makeup of the human species. Some see this approaching godlike ability of biotechnology to determine the genetic engineering and the massive Human Genome Project, which will catalogue all possible human genetic characteristics. These issues has to do with religion, not only because religions often define them as within their moral purview, but also because at a more profound level, each taps a concern that is at the very core of religious thought and practice: the problem of what it means to have and be a body, of life and death, and of the spiritual destiny of humankind. In some recent thought there has been effort to explain the cultural and historical nature of the human body.

The body as a cultural phenomenon

It has been suggested that in contemporary civilization the human body can no longer be considered a bounded entity, in part because of the destabilizing impact of 'consumer culture' and its accompanying barrage of images. These images stimulate needs and desires, as well as the corresponding changes in the way the social space we inhabit is arranged with respect to physical objects and other people. In this process, fixed 'life-cycle' categories have become blurred into a more fluid 'life-course' in which one's look and feel may conflict with one's biological and chronological age; some people may even experience conflict between age-appropriate behaviour and subjective experience. In addition, the goals of bodily self-care have changed from spiritual salvation, to enhanced health, and finally to a marketable self. As Susan Bordo has observed, techniques of body boundaries to protect against the eruption of the 'bulge' and serve the purposes of social mobility more than the affirmation of social position.

This transformation in the body as a cultural phenomenon has been related by Emily Martin to a global change in social organization.¹ In her view the 'Fordist body' structured by principles of centralized control and factory-based production is on the decline. It is being replaced by a body characteristic of late capitalism, a socioeconomic regime characterized by technological innovation, specificity, and rapid, flexible change. She sees these changes particularly vividly in the domain of reproductive biology, immunology, and sexuality, all of which are increasingly intense loci of bioethical debate.

Thus if the body is a cultural phenomenon in a way that makes its understanding essential to questions of bioethics, religion is an important domain of culture to address in understanding the body.

1. Martin Emily : "The End of the Body?" *American Ethologist* 19 (1), 1992, pp. 121-140.

From the above it becomes clear that the view about body given by the experts of biomedicine does not take into account other views. In this respect their view is one-sided and hence bound to be inadequate. The issue of determinism also is not an easy one that can be resolved without much controversy. Hence we need to tread very carefully to the new path shown by the genetic engineers.
