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HUMAN CLONING: EXAMINING RELIGIOUS AND ETHICAL ISSUES

THOMAS A. SHANNON*

I. INTRODUCTION

Undoubtedly, the eventual mapping of the human genome will be a boon to science, medicine, and anthropology, among other disciplines. This map will provide a clearer lens with which to examine the question of what "being human" means, will direct us where to look for anomalies that cause disease, and will greatly assist in correcting those errors. We are genuinely on the edge of a new revolution in medicine, one that will provide access to the very structure of our nature. We can literally reach inside ourselves, remove genes, and either correct or replace them. Such power, though truly awe-inspiring, is also truly frightening.

Yet these achievements bring risk as well. Some fear that the new genetics will inspire a new eugenics and that the Human Genome Project will set a genetic standard by which all humans are measured and evaluated. Again, the individual seems to be in danger of being subordinated to the "type." Additionally, new developments in behavioral genetics are building up suggestive evidence for the role genes play in all manners of human behavior, from sexual preference to choices of political perspectives and marriage partners. In learning more of what it means to be "human," will we become less human in the process?

The embryo division experiment by Dr. Jerry N. Hall and Dr. Robert Stillman¹ of Washington University and the brief, but lively, discussion that followed it once again focused on many of the thematic issues raised by ethical, scientific, religious, and cultural debates over genetic engineering: human power over nature, intellectual arrogance, the technological imperative, action before thought, the degradation of human beings, and the violation of their unique genetic structure. Yet, the experiment also offered the promise of

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1. Hall and Stillman technically did not engage in cloning but rather embryo division in which they used an electrical current to cause undifferentiated cells in an embryo to divide and make more embryos for use in assisted reproduction. The method is commonly used with cattle but had not been done with humans.

benefits: advanced knowledge of the developmental process of pre-implantation embryos and the further development of new responses to infertility. Even though the university research ethics committee cleared this experiment, Hall and Stillman have retired from the embryo division business, at least for the present. Public and professional reaction seemed to be quite strong against such embryo division.

The most recent chapter of the genetics debate was written by Dr. Ian Wilmut of Scotland when, on February 22, 1997, he announced that he had successfully cloned a lamb which he named "Dolly." This was the first successful application of cloning, or nuclear transfer technology, in a mammal. More significantly, the nucleus of the cell that produced Dolly came from a six-year-old ewe, thus showing that scientists may "turn on" genetic instructions that were previously thought to be irreversibly "turned off."²

Every cell of one's body contains all the genetic information needed to make a whole other being. Very early in embryonic development, however, this information is selectively "turned off," and various cells become committed to becoming specific body parts through a process called restriction. The technological breakthrough of Dolly is that Dr. Wilmut succeeded, after 277 attempts, to have the DNA from a six year old cell "turn on" and be the source of the genetic information that eventually led to the development of Dolly. After the nuclear transfer was completed, an electrical charge was applied to the fused cell so that its contents would emerge from the nucleus and the process of cell division would begin. Two elements in this process are critical: (1) the DNA that had been "turned off" was "turned on" again, and (2) the cell was six years old which showed that the restriction process could be reversed even in adult cells.

This experiment has set off yet another massive international debate on bioethical issues. In this Article, I will review several religious and ethical perspectives in the cloning debate and conclude by arguing for an extremely narrowly drawn case favoring some forms of cloning, while rejecting others.

II. THE CULTURAL PRESENTATION OF CLONING

In this Section, I wish to present some elements of the cultural context in which cloning was presented. This Section will also introduce elements of the cloning debate that later Sections will develop.

2. Ian Wilmut et al., *Viable Offspring Derived from Fetal and Adult Mammalian Cells*, 385 NATURE 810-13 (1997).

A. Presentations in the Media

Because genetics, whether medical, agricultural, or animal, is big business, many stories on Dolly's unique origin were reported in the economics section of newspapers.³ That is not unusual now, for news of genetic developments have regularly been reported in that section of newspapers ever since gene companies went public over a decade ago. Some of this reporting vascilated between praise for the technology and concern about whether ethical criticisms might depress the growing biotechnical market. While on the one hand biotech leaders affirmed the immorality of cloning a full human, they were also concerned that such ethical tut-tuting not go too far lest this rapidly growing industry be harmed, particularly in its agricultural and animal applications where cloning techniques are routinely used. Thus, Dolly has raised the science/business-ethics debate again, but this time major financial interests of the biotechnical-industrial complex, new players in such debates, are mediating the debate.

Another interesting dimension appearing in the science section of newspapers was the reported comments of some senior American scientists who dismissed the significance of the research by suggesting that one could not write a grant proposal to clone a sheep because the scientific question was unclear. Another suggested that the project was mundane and merely technological.⁴ Is this professional jealousy? Remember that the UK is now two up on American science: Patrick Steptoe and Robert Edwards had the first *in vitro* fertilization (IVF) baby, and now Wilmut has the first cloned mammal. While it is true that scientists are motivated by the quest for knowledge, they are also motivated by the quests for patents and the financial rewards that come from them. So perhaps it was no accident that a few days after the announcement of Dolly's creation, American scientists announced that they had cloned two rhesus monkeys, though they used embryonic cells, not the more difficult older adult cells that were Dolly's progenitor. The cloning sweepstakes are wide open.

A final note about cloning appeared in the entertainment section which discussed various cloning movies.⁵ Of note was the split between comedy and science fiction terror stories. While *Multiplicity* did not do well at the box

3. See, e.g., Lawrence M. Fisher, *Success in Cloning Hardly Insures Profit*, N.Y. TIMES, Feb. 25, 1997, at D1.

4. Gina Kolata reported these comments and others like them. See Gina Kolata, *Workaday World of Stock Breeding Clones Blockbuster*, N.Y. TIMES, Feb. 25, 1997, at C1 and C8. Part of the tension is between the uses of genetic technologies to solve practical problems versus basic research, as well as the tension between those who work with animal genes and those who work with human genes.

5. See, e.g., Caryn James, *A Warning as Science Catches up on Cloning*, N.Y. TIMES, Feb. 26, 1997, at C9.

office, it did show some practical applications of the technology to help resolve domestic complications. It also observed, though, that sometimes when one makes a copy, the second one is not quite as sharp as the first. *Twins* showed the comic possibilities by presenting identical twins who were not quite identical. This was blamed on making one twin from leftover DNA, what is technically referred to as “junk DNA,” the sections of DNA whose function we do not know. *Jurassic Park* told the familiar morality tale of the evils of commercialization of technology. The movie ended with everyone but the “mad” scientist living happily ever after, but much material remained to clone a sequel which of course is now available. The more recent offering, *Gattaca*, explores difficulties of an individual who does not meet the genetic standards of the “perfect society.” This movie was preceded by an advertisement campaign which resembled advertisements for genetic clinics which would provide a baby with the characteristics chosen by the parents. Only when one looked at the very fine print at the bottom of the full page advertisements, did one realize that this was science-fiction, not science.

B. Presentations of the Cloning Debate

What I term “ethics hysteria” has dominated much media coverage. This “ethics hysteria” takes the worst possible ethical and most technically improbable scenario and builds the case for rejecting cloning on that basis. Probably the best single example of such an hysterical presentation of cloning was the February 10, 1997, cover of *Der Spiegel*, the German equivalent of *Time*. Marching down the cover were multiple copies of Adolf Hitler, Albert Einstein, and Claudia Schiffer. While not all of the figures may represent everyone’s worst case scenarios, the technology of cloning is presented as replicating an infinite series of beings who are not only genetically identical, but more importantly are multiple copies of the very same person.

This scenario raises another dimension of the cultural presentation of the cloning debate: genetic reductionism. This position argues what the cover of *Der Spiegel* presented graphically: by simply replicating my genetic code, I am thereby replicated. However, cloning does create an offspring that is genetically identical to the donor of the DNA. But what follows from that? What follows is genetic identity: the clone is genetically identical to its source. It may even look identical. The hidden premise of genetic reductionism is that all that I need to make me “me” is my genetic profile. Such an argument ignores the fact that the clones are two distinct individuals and have their own distinct environment in which they are raised, to say nothing of ignoring any transcendent or personal dimension of the human. Thus, the clone and the donor quickly begin to part ways.

To understand this better, consider human identical twins, who are in fact clones of nature. The fertilized egg divides, resulting in two distinct individuals with identical genetic profiles. We know that many studies on identical twins have shown that they share many interests and similarities, even when raised apart in radically different environments. Perhaps these studies are what drive the fantasy that creating clones of Michael Jackson or Michael Jordan would create beings with exactly the same abilities and interests present, perhaps even at the virginal conception.⁶

Although our genetic heritage strongly influences us, environment shapes our lives too. Suppose Michael Jordan's clone were raised in an environment or culture in which the main and perhaps preferred career option for African Americans was not professional sports. Would a genetic determinism be at work that would impel him to play basketball no matter what? This seems to be the great flaw in the cloning debate: genetics will win out no matter what. This is simply not true. Nonetheless, genetic determinism is paradoxically both the assumption of the outcome of cloning, as well as the major argument against human cloning.

What this brief survey reveals is that various agendas are at work in the cloning debate: economic, cultural, scientific, and political. We have no canonical presentation or analysis of cloning nor can its discussion be cleanly extracted from a variety of cultural perspectives. But this overview directs us to look at and attend to certain issues as we seek to evaluate this stunning development in genetics.

III. RELIGIOUS PERSPECTIVES

I begin with a consideration of some religious perspectives because often religion is perceived as the great "Nay Sayer," the enemy of science, and the protector of the status quo, preferably the one of several centuries ago. While I disagree with such stereotypes, some religious themes do tend to be less supportive of interventions into creation or human life. In this Section, I wish to discuss two religious themes—"humans playing God" and "humans created in the image of God"—and to show traditional usages of these terms, as well as other ways to interpret these themes that allow some leeway in their interpretation.

6. One of the other interesting things about cloning, of course, is that no males are needed. The nucleus of the egg is removed, and the nucleus of another cell—from a female—is inserted. If the scientists and technicians involved are female, reproduction occurs without the need of a male.

A. *Two Traditional Religious Themes*

1. *Humans Playing God*

We often use the term "playing God" as a way of arguing that humans have overstepped their boundaries. This term suggests that a clear demarcation exists between the roles of God and humans and that there are areas of life where God rules, where God is in charge, and where humans ought not enter. The term evokes an omnipotent God who is the Creator of all and who commands all. The term also evokes the image of God as "God of the Gaps," that is, the God who is invoked when all else fails, or when we have exceed our limits, our knowledge is at an end, and our powers frustrated. Thus, it is most clearly in the gaps that God rules, and it is in the gaps that God's power is most clearly evoked. Here, God reigns supreme, and, here, we cannot play God.

Of course, as knowledge increases, the gaps grow smaller and smaller, and as a result, God's reign shrinks; God's power becomes lessened; and God becomes less necessary. Then humans step into the recently vacated gaps and play God by exercising the powers in the gaps previously thought only God's. Cloning surely symbolizes such a disappearance of a gap and an exercise of new powers.

Such a vision of human intervention into nature is hardly Christian. It is certainly much more Greek, much more resonant with the myth of Prometheus, who in stealing fire from the Gods and giving it to humans became like the Gods and thus played God. However, he suffered the fate of one who usurped the power of the Gods.⁷ Were this God, who is suggested by this version of playing God, actually this fearful of sharing creation, assumedly God would never have created in the first place. Why spoil the way things are!

Perhaps a better rendering of playing God is to learn as much about God as one can and then to play God by acting as God acts.⁸ Minimally this might mean that we are to be creative as well as generous in our creativity and to keep covenant with our God and our creations. To affirm this is to surrender full control because we are not God. But it is also to assert a profound relation between ourselves and the rest of created reality. We play God by imitating God—no small task.

7. For his deed, Prometheus was chained by Zeus to Mt. Caucasus. Each day an eagle came and tore at his liver, and each night the liver regenerated. This lasted for many thousands of years until he was released from this torment by Hercules.

8. In this section, I follow several ideas suggested by Allen D. Verhey. See Allen D. Verhey, *'Playing God' and Invoking a Perspective*, 20 J. MED. PHIL. 347-64 (1995).

Two immediate consequences follow from this. First, this image of playing God does not set up a kind of competition between God and humans. The theme is stripped of its traditional mythological overtones and given a chance to return to a version much more faithful to the Judeo-Christian tradition. Second, in principle, such an understanding of playing God does not prohibit interventions in created reality. The moral element here would focus on that kind of intervention. A more helpful hermeneutic for understanding the term "playing God" might in fact be genuine play—and the nuance here is that play cannot be purely instrumental, for then it is no longer play, but work. And although the book of Genesis describes creation as a labor from which God rested⁹ and the book of Job presents creation as a kind of civil engineering project,¹⁰ the book of Wisdom describes creation as a form of play.¹¹

2. Humans Created in the Image of God

A second religious theme is that of the human created in the image of God. A traditional understanding of this theme is that of humans as stewards who conserve and protect what God has created. Typically one does this by respecting both the design of creation and the limits which God has placed on both the orders of biological nature and human society. Because this God designed the universe according to a plan and indeed embedded this plan into nature, the responsibility of a steward is to remain faithful to this plan and conserve it.

Such an interpretation of the image of God in human beings is a conservative one which, while not totally opposed to all interventions, is focused more on recognizing limits and maintaining boundaries. This is not done because of a lack of Promethian hubris, but rather out of a sense of genuine humility, a recognition of one's place before God and a sense of how one is to live out one's vocation in the world.

But another understanding of the image of God in man is one suggested by Philip Hefner: the created co-creator.¹² This phrase is important on two levels. First, it identifies humans as created. That is, because we are created, we are dependent on God for our present and continued existence, and we are not God's equals as creators. But, second, we are co-creators. We become participants with God in the continuous evolving of both nature and history. We have a responsibility both for the development of each and for our neighbors as

9. *Genesis* 1:1-2:3.

10. *Job* 38:1-38.

11. *Proverbs* 8:30-31.

12. See Philip Hefner, *The Evolution of the Created Co-Creator*, in *COSMOS AS CREATION* 211-34 (Ted Peters ed., 1988).

we seek to further the divine work of creation. Such a view clearly allows a much expanded view of human intervention into the world. As evolving, the world is a work in progress, and its fulfillment is partially dependent on our interacting with it through the creative use of our freedom.

B. Variations on These Two Themes

I would argue that a better reading of both the terms “playing God” and “humans created in the image of God” is that of created co-creators who, enjoined with the task of playing God, do so by helping to bring creation to its final fulfillment. Such a vision of God and one’s relation to God suggests, however, some cautionary notes. This vision of creation is not one of instrumentality or control, two values highly prized in technology and our culture. Should the context of discussions about cloning reveal a tendency to such values, I think one could mount a strong religious critique against cloning because of the problematic nature of such values in human life. Let me illustrate this through an analogous case.

Several years ago a man underwent a reversal of his vasectomy so he and his wife could conceive a child in the hope that she might serve as a source of blood marrow for their older daughter who was dying of cancer. The reversal was successful, and he and his wife conceived a child. The infant’s blood marrow was compatible, and at age eighteen months, blood marrow was transferred from her to her sister. The therapy was successful, and both are living very happy lives. Although the parents most strongly argued that they did not see their newborn as a source of parts and although this case clearly does not involve cloning, I cannot help but think that it is an example of creating one human being to serve another’s needs, clearly one of the more prominent cloning scenarios. What bothers me about this case and my extrapolation of it to cloning is that the majority of citizens either agreed with the family’s decisions or argued that it was the family’s right to do as it pleased. This says to me that our society already has a mindset or cultural disposition to accept one of the most frequently mentioned scenarios in cloning: replacement parts.

Another dimension of this same problem was recently reported in the *New York Times*. The story reports that doctors at Columbia-Presbyterian Medical Center in Manhattan mixed sperm and eggs to make various embryos with different backgrounds: “The idea was to allow prospective parents to select embryos whose parents resemble them physically or have the same ethnic background and are well educated—the best possible sperm and egg donors for

those who cannot have babies of their own.”¹³ The cost is \$2750. Many of these embryos are made with left over eggs from IVF or eggs obtained from donors when the planned recipient changes her mind. The eggs are fertilized with sperm from commercial banks selected for particular characteristics. Such a practice is certainly another direction in the mechanization of reproduction and the commodification of human body parts and human embryos. And selection of embryos is based on desired characteristics, which brings us another step closer to the objectification of humans through their being valued for their function or for their value in a market. Again, such a mind-set helps create a cloning mentality.

Many current arguments for human cloning all revolve around some sort of use of human clones for the benefit of the cloner (for want of a better term). Thus, the scenarios we hear of are clones as sources for spare parts, specialized social or work functions—usually the menial ones we do not wish to do—and vanity reasons—one of a good thing is never enough. Common to all of these arguments is the reduction of humans to means only, a rejection of the dignity of both cloner and the clone, and essentially a commodification of the human clones. Thus, in these discussions, a certain instrumental mentality is at work. While perhaps born of desperation or extreme need, the mindset is, nonetheless, instrumental. The concepts of playing God and acting as a created co-creator do not, in my judgment, sit well with this mentality. Here, we have control and use, not freedom and appreciation.

IV. THE ETHICAL DEBATE OVER CLONING

In the debate over human cloning, a distinction must be made between full human cloning—research directed to produce an adult clone—and research on cloning up to, but not including, implantation in a uterus. The distinction is important because of two elements. First, research on the human pre-implantation embryo could be important for learning about embryonic development or about the reproductive process. Second, different moral claims can be made about the pre-implantation embryo and the individuated human embryo.

A. *Cloning and the Pre-implantation Embryo*

One of the claims about cloning is that it violates individuality or the individual's right to a unique genetic identity. First, it is important to distinguish between genetic uniqueness and individuality. A pre-implantation

13. Gina Kolata, *Clinics Selling Embryos Made for 'Adoption,'* N.Y. TIMES, Nov. 23, 1997, at A1.

embryo is genetically unique in that it is a new combination of the genes from the mother and father. But it is more precise to say that this pre-implantation embryo represents the next genetic generation precisely because it has not yet reached the developmental stage of reduction in which the cells become irreversibly committed to forming specific body parts in a particular body. Or, to say this more technically, there is as yet no differential gene expression. I argue that the pre-implantation embryo presents itself as the biological equivalent of what the Medieval philosopher Duns Scotus called, in philosophical terms, the common nature. Because the cells of the pre-implantation embryo have the capacity of totipotency—the ability to become any part of the body—they are most properly designated as representing what is common to humanity.¹⁴ The genetic structure they possess is generic to the species but is not yet identified with a particular individual, thus the term common nature. Though the cells of the pre-implantation embryo possess a biological and teleological unity that will eventuate into a single human being, until these cells lose the capacity for totipotency through the process of restriction and become differentially expressed, we do not have what Norman Ford has called an “ontological individual.”¹⁵ Such individuality is biological in that the whole organism can no longer be divided into parts, each of which could become another organism as was the case before restriction. Such individuality is also philosophical in that this being is a single being with the potential to become a moral agent, an individual responsible for his or her own acts.

Given what we know about embryogenesis, a more precise way to describe this being at this stage is either the establishment of the next genetic generation or the establishment of the common nature. That is, while it is correct that the pre-implantation embryo contains the appropriate genetic information for that organism's development, that genetic information is not necessarily associated with a specific individual and cannot, therefore, claim moral privilege through such an association. The genetic uniqueness is associated with what is common to all—human nature—not a particular individual because such an entity does not yet exist. The claim of the moral relevance of individuality is appropriately made of the pre-implantation embryo only after the process of restriction has occurred, that is, after we have the only individual who in fact will emerge from the constriction of the common nature to this particular individual. This is the individual, all things being equal, who will become the agent of acts. Thus, while the fact that the pre-implantation embryo manifests the human genome is morally relevant, it does not have the same moral relevance as individuality because the genetic status is associated with what is common to all, not what is

14. For a more thorough development of this, see Thomas A. Shannon, *Cloning, Uniqueness, and Individuality*, 19 LOUVAIN STUD. 283-306 (1994).

15. See generally NORMAN M. FORD, *WHEN DID I BEGIN? CONCEPTION OF THE HUMAN INDIVIDUAL IN HISTORY, PHILOSOPHY, AND SCIENCE* (1988).

unique to a person. The fact that the individual who emerges from this process may factually be the only one with this genotype also is of less moral relevance because we know, through Dolly, that such a genotype is in principle replicable. The focus of moral attention must be, in my judgment, on the individual manifested through this genotype, not the genotype itself.

What then are we to think of research on the pre-implantation embryo either by dividing its cells or by nuclear transplantation? First, let us examine the dividing of the cells of the pre-implantation embryo into separate entities. What one has with the pre-implantation embryo is a teleologically united cluster of cells that has the capacity to become a distinct or ontological individual. The pre-implantation embryo is neither all of humanity nor a particular human, but is the common nature out of which a particular, individual human can develop.

Therefore, to divide the 4, 8, or 16 cells of the pre-implantation embryo into separate cells is not, in the memorably inaccurate phrasing of Germain Grisez, "splitting themselves in half."¹⁶ Rather, it is to divide the whole organism into parts that themselves can become wholes. To do so is not to divide an ontological individual nor to violate that entity's distinct individuality. Although the pre-implantation embryo is alive, carries the human genetic code, is genetically and physically distinct from its mother and father, and represents the next genetic generation, nonetheless such physical features of the pre-implantation embryo do not constitute the philosophical basis for a claim of absolute value for this entity because there is as yet no subject or person on whose behalf to make the claim. In other words, no individual exists.

Second, let us consider cloning, that is, nuclear transplantation. Whole organism cloning, as distinct from gene and cell cloning, takes the nucleus of an adult cell and puts it in the enucleated cell of another organism. The purpose is to genetically replicate the adult organism from which the nucleus came. The key to cloning is that, while each adult cell contains all the DNA necessary for the development of an entire organism, not all of that DNA is expressed. Such differential gene expression makes possible the development of the individual body parts and organs. The technical key to the success of cloning is to discover whether these unexpressed genes in the adult cell can be "turned on" and produce a genetically identical organism.

The common argument against cloning is that it violates the genetic uniqueness of the pre-implantation embryo. This claim of moral standing based on genetic uniqueness in the pre-implantation embryo cannot be sustained, for

16. Philip Elmer-Dewitt, *Cloning: Where Do We Draw the Line?*, TIME, Nov. 8, 1993, at 64, 69.

there is no subject of whom the claim can be made, as previously argued. Additionally, even if the cloning of humans were to succeed, what is replicated is the genetic structure, not the individual. No one claims that genetically identical twins violate each other's right to genetic individuality by virtue of bearing the same genetic structure. This is because, I argue, the more critical moral claim is that of individuality which is biologically secured only after restriction. Genetic uniqueness and its relation to identity is important for questions of lineage, but it is not the totality or even the basis of individuality.

How might one evaluate the morality of acts performed upon the pre-implantation embryo whether obtained by division of the pre-implantation embryo or cloning? I suggest an examination of the object, the intention, and the circumstances of the act (particularly the circumstances of the end, the way the act is performed, the likely success of the act, and the circumstance of place).¹⁷

With respect to the object, i.e., the pre-implantation embryos, these entities have a pre-moral value in that they are living, bear the human genome, and have a teleology directed to the moral category of personhood. However, because no individual subject exists of whom a claim can be made, no violation of individuality or personhood occurs. This pre-moral value must be judged in the light of other pre-moral and moral goods such as the benefits to come from research on these entities and the good of assisting in reproduction. I conclude that such goods—for example, experiments to discover the mechanisms to turn unexpressed genes on, and to study early embryonic development, or other studies to help enhance fertilization—could outweigh the claims of protection of the pre-implantation embryo and that research, whether by division of the cells of the pre-implantation embryo or cloning, could be done on the human pre-implantation embryo prior to the process of restriction.

Considerations of the likely success of the act of cloning are difficult to calculate, for one genuinely does not know the full outcome or range of consequences that may follow the first experiment. This suggests that one very carefully consider the intentions as well as the purpose at which one aims. If the purpose of the cloning is to learn more of early cell development to aid in IVF, one could accept a lower level of success because the purpose is narrow and focused on internal development of the cells. Experiments attempting to "turn on" unexpressed genes could also be justified even though the lack of success may be low. The end of the experiment is focused on internal mechanisms of the gene. Further experiments that seek to apply such

17. Here I am explicitly using the ethics method of John Duns Scotus. For a fuller account, see Thomas A. Shannon, *Method in Ethics: A Scotistic Contribution*, 53 THEOLOGICAL STUD. 272-93 (1993).

knowledge, however, would have to be very carefully examined in light of the end and intention.

I would interpret the circumstance of place to address the question of the priority of such research in relation to other needs in health care. Because such research is so expensive and applicable to only a narrow range of cases, a strong argument can be made against such research. If one broadens the argument to understanding the mechanisms of gene expression, then the range of application may be much broader—e.g., a better understanding of the immune system—and a different moral argument can be made. What is important is that the criterion of the circumstance of place makes us look to the setting of the research and its location in the full range of health care services as an appropriate source for moral evaluation of the research we wish to undertake. Such a criterion would, I think, assign a lower priority to cloning.

Thus, given an extremely careful consideration of both the moral status of the pre-implantation embryo and the significance of the research involved, an argument can be made to justify such research up to the time when the process of restriction would occur, approximately two weeks after fertilization. Up to this time, the pre-implantation embryo does not have the claim of true individuality and thus would lack the full moral protection associated with personhood which cannot occur at least until such individuality is established. The moral argument justifying such research is, in my judgment, a very narrow one and one that must be examined on a case by case basis and surrounded by appropriate safeguards to prevent unwarranted extensions.

Individuality takes moral precedence over genetic uniqueness and is the key to the ethical analysis of research on the pre-implantation embryo. Though I am factually the only one who bears my genetic profile, my genetic profile is not in principle unique to me. Genetic identity can be replicated either *in vivo*, through a natural cleavage of the pre-implantation embryo into genetically identical twins, or *in vitro*, either through division of the cells of the pre-implantation embryo or through organismic cloning (now done in a sheep and two rhesus monkeys). My genome is significant because it constitutes the establishment of my bodyliness, my human nature, and gives the basis for tracing my lineage. But more significant is my individuality both in the sense of indivisbleness and in the sense of the subject of moral acts. For it is only that "I" who cannot be divided into parts, who can personalize that genetic structure, and who can transcend that genetic structure through personal acts. The absence of such individuality in the pre-implantation embryo is a key element in the justification of the lack of its absolute protection as well as the possibility of some research just as the presence of such individuality is a significant feature of its moral evaluation and is the basis of the prohibition of other types of research.

B. Cloning Scenarios

1. Replacements

One scenario commonly discussed is replacing a child who died or generating replacement parts through cloning one's identical twin. While this cannot technically be done at this stage, such discussions raise profound religious and philosophical issues of human dignity. What do such discussions say of the status of the clone? Has not this being simply been reduced to a means to an end? Has not this being's essential humanity been dismissed by reduction to the status of "replacement"? Such replacement talk avoids the fact that such entities are living beings with the human genotype while simultaneously reducing such beings to objects or commodities. The problem is that such talk assumes that "we" are not "they," though both are genetically identical. But such an assumption is wrong precisely because it is the "we-ness" of our genes in the "they-ness" of their genes that we desire. How else could "they" be replacements for "us" if "they" are not genetically identical to "us"? To reduce such beings to commodities is to do the same to ourselves. Communality of genetic identity suggests communality of dignity as well as communality of fate. Or to quote John Donne: "Never send to know for whom the bell tolls; it tolls for thee."¹⁸

This practice of cloning either does not stop to consider or simply rejects the humanity, individuality, and personhood of the clone. A clone of a human is a human and will be a person as I am—not the same person, but his or her own person. I do not know what others would call such an entity, but I would have to call it a person—at least after it has passed through some developmental markers such as the ones suggested in the preceding Section. And the clone would certainly have to pass through many major developmental markers either to be a full replacement or to be an organ source. But why would my clone not be me, a me with whom I can do what I want, assuming that, because it is my body, I can do with it as I please?

Personhood is not identical with the genome of either the fertilized egg or the clone. I would call this position genetic reductionism: the reduction of the person to his or her genetic structure only. That is, to identify the person with the genetic structure is to say that we are our genes only. Were this position correct, the clone would in fact be me, that is the identical person I am.

18. John Donne, *Meditation XVII*, in *DEVOTIONS UPON EMERGENT OCCASIONS* 107, 109 (1624).

Let me use the case of human identical twins—clones of nature—as a way into this discussion. The fertilized egg divides, and the result is two individuals with an identical genetic profile. Two things are important. First, each will be a distinct individual: Jane will not be Julie, nor Julie Jane. Second, there is no claim that sharing a genetic identity diminishes in some way the dignity of either. Each is seen as a person in her own right. And even though many studies on identical twins have shown that they share many interests and similarities, even when raised in radically different environments, no one concludes from this that Jane and Julie are one single person. The fact that the twins share a genetic identity says nothing about their personal identity, value, or dignity.

Why should it be different with clones? Or on what basis would it be different? Without going too deeply into philosophical theories of individuation, it seems relatively self-evident that though the genetic profile is identical in both biological twins and clones, they are two different individuals. Minimally, one is here, and the other is there. Each has a different position from which to see the world. Each has her relation with the world. Each is a unique individual.

The ethical conclusion I would draw from this is that such individuality is privileged because it is the manifestation of a personal presence in the world. The clone, though genetically identical to its progenitor, is nonetheless an “other” being, a new being, a new presence in the world. To reduce this being to a means is to violate the clone’s personal dignity—and to violate ours as well. As a thought experiment, suppose that the clone who was bred for replacement organs objected to having her heart removed. Would such objections be disregarded? If they are respected, what does this say of the replacement scenario as a whole? Many discussions of the uses of clones proceed without any such elemental moral considerations.

2. Reproductive Dimensions

For so many centuries, human reproduction has occurred within a biological, personal, and familial context, and we have difficulty thinking of it otherwise. Of course, IVF, in all of its manifestations, has certainly caused us to rethink that position. But while most are comfortable with the basic concept of IVF, concerns still remain about aspects of the technical context in which it is practiced. Some fear that such a context can distance the couple from each other and from the reproductive process itself. The fear is that reproduction will become production. While that fear can be alleviated to a large degree by changes in the context of the practice of IVF, with cloning the correct metaphor may indeed be production. That is, some fear that, with cloning as the means of establishing human life, the entire process will become mechanized and commercialized. One can hardly escape the memory of the “Bokanovsky

Principle" from *Brave New World* which allowed the production of "nearly eleven thousand brothers and sisters in a hundred and fifty batches of identical twins, all within two years of the same age."¹⁹ I would argue that humans produced via cloning are humans as we are, but given the modality of their production, for how long will we consider them as such? Will this final sundering of gestation from humans and human bodies ease a transition to thinking of ourselves as objects, albeit rather sophisticated ones, but objects of production nonetheless? My argument is not an argument supporting natural reproduction. Rather, my concern is that the very means by which we produce ourselves may in fact transform our thinking about ourselves, and the transformation will be in a mechanistic direction.

Additionally, in such a context, with the laboratory as the locus of production, we will have the ultimate separation of the child from the family. To be sure, eggs and sperm will have to be obtained from humans sometime, but we know from both IVF and surrogate motherhood that eggs, sperm, and zygotes are indifferent to their origin and destiny. While being sensitive to correct feminist claims about the patriarchal nature of the family, my question is this, will we gain or lose by shifting from the family, with all its difficulties, to a laboratory? Through our genetic identity, we are linked to a family, to a lineage, to a history, and it is through these concrete biological realities that we establish at least part of our identity which has an inescapable biological dimension. If reproduction becomes mechanized through cloning, will we be put at too great a distance from a community, from a family, and from a basis for our identity? Such a problem was recognized by the engineers in the movie *Bladerunner* who gave their genetically engineered beings a history so they would not know they were engineered. But of course, that history became the basis for an identity and an evolution to human status.

3. Individuality

Having raised the issues of identity, let me conclude with some observations about genetic uniqueness and individuality. I have previously noted that some claim that cloning violates individuality or the individual's right to a unique genetic identity. I argue that it is important to distinguish between genetic uniqueness and individuality and that the moral priority should be placed on individuality. While a pre-implantation embryo is genetically unique in that it is a new combination of the genes from the mother and father, it has not yet become individualized because restriction has not occurred. Thus, while it contains the appropriate genetic information for that organism's development, that genetic information is not morally privileged even though it is genetically

19. ALDOUS HUXLEY, *BRAVE NEW WORLD* 109 (1946).

unique. This genetic profile is more correctly described as what is common to all—what I previously described as our common nature.

Additionally, the developing embryo resulting from this process of biological individuation is also most appropriately what can philosophically be called a nature or human nature: the principle of activity by which a being seeks and actualizes its own fulfillment, or essentially the reason a being acts as it does. To act according to one's nature is to seek the good of one's nature or, in our case, to act according to the genetic instructions given the individual during biological development. At this stage, this is done when the organism follows the plan given it by its genes and continues its biological development. One's developmental course is set by one's nature, and this nature is set by one's genes. And ultimately, as the organism matures, its nature will lead it to seek a variety of goods for itself; food, shelter, and a desire to protect oneself are standard examples. To seek these goods is automatic on our part, an instinctual part of our nature given to us by our genetic program.

But to act on the basis of one's genetic instructions does not mean to act on the basis of one's genetic instructions only. We also seem to have a capacity to transcend our nature through acts in which we seek, for example, the good of another, or in which we love someone for his or her own sake. This capacity is the source of true liberty and is a "freedom from nature and a freedom for values."²⁰ We move from an act of nature to an act of the person or an act of the individual through which one freely commits one's self to a good beyond, but not contrary to, one's own nature. It is the commitment of the self to a good for the good's own sake. It is the act of love which is so taken by the good that is loved that the individual wishes this good to be shared by others. This represents, in my judgment, the supreme moment of the coincidence of personhood and individualization, for in this act of transcendence of my nature, I achieve myself in the fullest sense.

This is the act that can be actualized only by myself, and I bear the responsibility for it. Neither the motivation nor the consequences of a true act of freedom can be attributed to nor communicated to another. This act describes the core of personhood. For in so acting, we transcend our own nature and reach goods that can be experienced with others and that can become the basis of a community. We do not lose our own moral identity or responsibility; rather, we find our selves and the grounds of community.

20. Allan B. Wolter, *Native Freedom of the Will as a Key to the Ethics of Scotus*, in *THE PHILOSOPHICAL THEOLOGY OF DUNS SCOTUS* 148, 152 (Marilyn McCord Adams ed., 1990).

This perspective is helpful in thinking about the relation between genetic uniqueness and individuality. A genotype, even though unique, may be multiplied through cloning or may be shared by another through twinning. Frequently much of the phenotype may be shared as well, but what is not identical and cannot be shared is individuality. Thus, while twins or clones may be, for all practical purposes, genetically interchangeable, they are not individually interchangeable. For in each of these individuals, there has been a contraction of their common nature to form an individual who can never be replicated and whose moral acts constitute a unique moral agent. The priority again is on individuality, not genetic uniqueness.

The poet Gerard Manley Hopkins describes more eloquently this process of individuation as finding one's pitch, those personal acts of self-transcendence through which we express our deepest selves. As Hopkins phrases it in the poem *As Kingfishers Catch Fire*:

Each mortal thing does one thing and the same:
Deals out that being indoors each one dwells;
Selves—goes its self; myself it speaks and spells,
Crying What I do is me: for that I came.²¹

And in doing this, we establish our true individuality. This, I would argue, is what can never be captured through cloning, for cloning replicates only the genetic program. It replicates our human nature, but it cannot replicate the ultimate act of the individual in which he or she both expresses and becomes one's self.

V. CONCLUSIONS

Having examined different issues about cloning, what might be said, by way of concluding comments, regarding public policy? It is clear that not all would find my arguments persuasive or, even if persuasive, would think they should not ground public policy on them because of the religious overtones of many of my arguments. Nonetheless, I think public policy should be proposed, and I would like to suggest some components. Such considerations are more critical than ever because of a change in climate so soon after the first successful cloning. One recent article, *On Cloning Humans, 'Never' Turns Swiftly into 'Why Not'*,²² has highlight this climate change. The onus of the argument seems to have shifted from justifying any uses to justifying any prohibitions.

21. Gerard Manley Hopkins, *As Kingfishers Catch Fire*, in *POEMS AND PROSE OF GERARD MANLEY HOPKINS* 51, 51 (W.H. Gardner ed., 1963).

22. Gina Kolata, *On Cloning Humans, 'Never' Turns Swiftly into 'Why Not'*, N.Y. TIMES, Dec. 2, 1997, at A1.

My policy recommendations would, however, focus on justifying uses of cloning.

First, public policy needs to recognize, and this would be part of its educational component, that there are three distinct forms of cloning: gene cloning, cell cloning, and whole organism cloning. The first two types of cloning are routine in plant and animal genetics and are not the subject of these public policy proposals. They may be subject to other policies with respect to safety or environmental impact, but they are not the focus of my comments. This policy discussion is directed at whole organism human cloning.

Second, public policy must recognize that a critical line has been crossed with respect to the cloning of a mammal. The significance is that the DNA from an adult ewe which was previously thought to have been "turned off" has been reactivated and become the source for a new ewe. This is a dramatic breakthrough, and while this has been done only once and successfully only after 277 attempts, nonetheless this is a most dramatic breakthrough. There is no guarantee this procedure will work on other mammals, much less on human mammals. Nonetheless, that which was previously thought to be impossible has now been done. The information is public, and the knowledge cannot be retracted. Therefore, because of its profound consequences, we need to think carefully about how to use it.

Third, the research must distinguish between attempts to clone humans and research on human pre-implantation embryos. I have argued in this Article that some types of cloning research could theoretically be justified on the human pre-implantation embryo up to about two weeks after fertilization. The main justification for this is my argument that until that time, the time of the biological process of restriction, the human pre-implantation embryo is not yet individualized. That is, until the process of individuation is completed on a biological level, we cannot argue that we have a single individual, and being a single individual is a necessary, though not sufficient, precondition for being a person. Such research would be conducted on an organism which has a biological and teleological unity, but is not individualized. Thus, one could argue that the research is done on human nature, not on a person. Thus, I would suggest, following my argument above, that some forms of cloning research could be permitted by this policy.

On the other hand, I would argue that public policy should prohibit attempts to go beyond this two week period to attempt to clone human individuals. I have argued that good and valid reasons exist for not permitting the cloning of humans, the majority of which have already been discussed as reasons why we might want to clone: having replacement organs or persons, having a specialized work force, ensuring an endless supply of performers in various

areas of popular culture, and the interesting possibility of liking oneself so much that only one of oneself would simply not be enough.

In addition to these arguments, we need to remember that this technology has had only one success thus far. Therefore, an enormous amount of research needs to be done on animals to ensure both the efficacy and safety of the technique. An unanswered question with Dolly, for example, is whether the fact that the cell from which she was cloned was six years old will make her life span shorter. Thus, before any serious thought can be given to human application, the basic cloning technology needs to be established. Prior to the debate about cloning humans, we need to validate the replicability and safety of the technology.

Such policy recommendations are general, but they would permit two critical activities to occur: (1) basic research on gene and cell cloning would not be interfered with so that research on cloning technologies in animals could continue; and (2) there would be a moratorium on applications to whole organism human cloning while the basic technology is being established, giving us time to engage in a public debate over the wisdom of whole organism human cloning. While some might find even this minimal policy recommendation a violation of academic freedom, we should also remember that, as a practical matter, it would be scientifically and ethically irresponsible to attempt whole organism human cloning on the basis of one experiment that required 277 attempts before success was attained. Thus, my policy recommendation is what any good scientist should say about cloning: we need to do much more basic research before we even think about human applications.

As we move forward in this debate, I would urge all to recall that common to many of the reasons supporting cloning are arguments that are crassly utilitarian and utterly self-serving. These should make us very nervous because they very clearly reveal—and would perhaps magnify—significant class, economic, and power differences in our society. Such divisions already cause enough havoc in our society. Why multiply these through cloning? But when all is said and done, when all the philosophizing and theologizing is done, perhaps the best reason against whole organism human cloning comes from the former Governor of New York, Mario Cuomo, who revealed an extraordinary amount of wisdom in commenting: "Living with the accumulated knowledge of all your imperfections, it would be hard to want to reproduce yourself and then have the arrogance to face the God who will judge you."²³

23. Jane Gross, *Thinking Twice About Cloning: Jokes Come Easily: Worries About Consequences Soon Follow*, N.Y. TIMES, Feb. 27, 1997, at B3.