

Article

The Ethics of the ANT Proposal to Obtain Embryo-Type Stem Cells

The Ethics of the ANT Proposal to Obtain Embryo-Type Stem Cells

James C. Peterson



James C. Peterson

A proposed new technique, Altered Nuclear Transfer (ANT), would alter a cell nucleus to remove its ability to guide implantation in the womb.

Protocols are investigating whether human stem cells can be coaxed into replacing tissue lost to disease or injury. What has been ethically controversial is if those stem cells are obtained by destroying human embryos. One recent proposal has been to alter a nucleus before transfer to a human oocyte (ANT) so that any resulting entity would not be able to develop into a fetus. The intent is that lacking a full complement of genes and potential, the resulting entity would not warrant protection as a fellow human being and so could be taken apart as a ready supply of embryo-type stem cells. The success of the proposal depends on the specific reasoning followed to establish the moral status of human embryos. This article describes how the Christian tradition thought about developing human life in the past and then traces more recent responses to the new challenge of technologies such as ANT that intervene in the earliest days of human development. Which arguments are persuasive for embryo status will largely determine whether ANT is morally acceptable.

In December 2004, William Hurlbut, a member of the USA President's Bioethics Counsel, made a proposal to obtain embryo-type stem cells by developing a new technique of Altered Nuclear Transfer (ANT).¹ A cell nucleus would be altered to remove its ability to guide implantation in the womb. The otherwise complete nucleus would then be transferred to an egg. The resulting entity would function as an embryo except it would not be able to grow into a normal fetus. It is argued that the entity could be used as a source of embryo-type stem cells since in lacking the potential to develop further, it would not actually be an embryo and since not an embryo, it would not be a human being. The success of this proposal hinges on how one reasons about the moral status of a human embryo.²

Research skills and funding are finite. Why direct already over stretched resources to developing such a technique? Stem cells are in demand as a way to replace lost tissue. If stem cells could be obtained from an adult patient, we could have a perfect tissue match for the person being treated with no risk of rejection. Such stem cells would be immediately helpful for research and eventually might save countless lives from Alzheimer's, Parkinson's, and other painful and chronic diseases such as arthritis and spinal cord injury paralysis. To find a way to do so would be a kind and fruitful expression of love for neighbors in need. Such healing and relief is well worth pursuing. It may some day be possible, but it is not yet, and it will not be easy to achieve.

While most nucleated cells have all the instructions for a complete human body, an adult cell has formed into the most effective structure for its role. A tiny fraction of its DNA is guiding the cell's work. The information is there to make everything in the body, but the DNA and the rest of the cell have been configured for a particular task. To reform DNA in a cell already shaped to one task over to a different task is physically wrenching. Some labs have held out hope

James C. Peterson is an ASA Fellow (1995) who holds degrees from Northwestern University, Gordon-Conwell Theological Seminary, the University of Iowa, and the University of Virginia (Ph.D.). As the R. A. Hope Professor of Theology, Ethics, and Worldview at McMaster University he teaches for the Divinity College and the School of Medicine. His writings in bioethics include *Genetic Turning Points* (Eerdmans 2001) and serving as coeditor with Roman Miller and Beryl Brubaker for *Viewing New Creations* (Cascadia/Herald Press, 2005). He has given invited lectures from Wheaton College to Oxford University and at professional societies from the American Society of Human Genetics to the American Academy of Religion. His email address is peterso@mcmaster.ca.

that someday we will be able to change such a cell to function normally in a new way, but in the meantime, and it may be a very long time, millions of people are struggling and many are dying who might be helped sooner by embryo-type stem cells which have the information but have not yet committed to a particular form. Should we obtain potentially life-giving stem cells from the death of embryos?

There is no problem with sacrificing human tissue to save human beings, but is the embryo more than just human tissue? If the embryo is a fellow human being, we should not kill one person to save another. Human beings are simply not available to cut into parts, no matter how useful. But is an embryo the smallest of human beings, a person, a soul? ANT and other developing technologies offer intervention at almost every stage of embryonic development. To know whether to use them requires precision in recognizing when a fellow human being is present to be welcomed and protected. It matters whether dissecting a human embryo is parsing human tissue or killing a human being. The ANT proposal seeks to create an entity which functions as an embryo, but is not one in the eyes of those who see embryos as human beings. Whether ANT can achieve its goal depends on why those who perceive the embryo as a fellow human being, do so. We need to describe carefully that reasoning.

Context

Until relatively recently, the first sign of pregnancy for most women was missing a period. If abortion was considered, it was after the first month when the woman knew a pregnancy had begun. The church leaders who wrote against abortion were addressing the ending of pregnancy that was at least that far along. Prohibition of abortion was not addressing the status of embryos.

When church leaders did write about early pregnancy, the common understanding was that a fellow soul was not present until there was enough of a body to ensoul. Through the early and medieval church, the longstanding consensus among theologians was that either God created a soul at the point when a body had formed in the womb, or in the perspective of traducianism, a soul inherited from one's parents develops with the body and is at last completely present when a body has fully formed. Both soul creation and traducianism reasoned that one needed a body to have a soul, whether the soul is assigned or emergent. In short, there is not a fully ensouled body until there is enough of a body to ensoul.

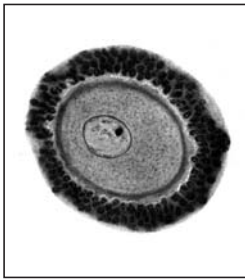
Before a body was present, the life developing in the womb was described as "unformed." This distinction between unformed and formed was used specifically, for example, by Tertullian, Lactantius, Jerome, Augustine (in the *Enchiridion*), Cyril of Alexandria, Theodoret, and the most influential shaper of Roman Catholic doctrine —

Thomas Aquinas.³ That tradition continues to the present with Roman Catholics and others, such as Margaret Farley who cites herself, Lisa Cahill, Thomas Shannon, and James J. Walter as examples of widely read Catholic theologians who, as they seek to thoughtfully carry on this church tradition, see the first presence of a person at a point later than conception.⁴

Both soul creation and traducianism reasoned that one needed a body to have a soul, whether the soul is assigned or emergent.

Church tradition saw allusions to the distinction between unformed and formed in three scriptural texts. One reference was clearest in the language chosen by the Septuagint. The Septuagint was the widely used Greek translation of the Hebrew Bible that was the primary Bible for the early Christian church. Its translation of Exod. 21:22–23 makes this distinction. There is a monetary penalty for ending *unformed* life, but if *formed* life is killed, the death penalty is required, life for life. Second, in the Hebrew language Scripture, human beings are often called "*nephesh*," an animated body. Can one be an animated body, without a body to animate? Granted one still has a body after a leg amputation or the removal of a cancerous kidney, but having a substantial body of some sort was basic to being a human being in this world. Third, in Job 10:10–11, Job prays, "Did you not pour me out like milk and curdle me like cheese, then clothe me with skin and flesh and knit me together with bones and sinews?" This was read as a description of life beginning with an unformed state and then later developing to a formed one. By this distinction between unformed and formed, not yet having a body and having a body, miscarriage or abortion before formation was seen as loss of what was becoming a body. Miscarriage or abortion after formation was the tragic loss of a present body and person.

The Christian tradition did not focus on other Scriptures often cited today as proof texts, because those texts do not actually address early status of life in the womb. In contrast, for Islam the Qur'an states directly that a person is not present until some time after the presence of bones covered with flesh.⁵ More precisely, the *Book of Destiny* from ninth century Islam sets the time of ensoulment at precisely 120 days after fertilization.⁶ Orthodox Jews, convinced of the full authority of the Torah, what Christians call the Old Testament, see a fellow



Article

The Ethics of the ANT Proposal to Obtain Embryo-Type Stem Cells

*Orthodox Jews,
listening to
[Exod. 21:22–23]
and other
Scripture with
deep respect,
have developed
a consensus
that human life
should be
protected
beginning
forty days after
conception.
Before that point
there is
human life,
as in any
human tissue,
but not yet
a fellow person.*

human being at forty days post fertilization. Before then, the developing life in the womb has a status “like water.”⁷ They read texts such as Ps. 139:13, “You knit me together in my mother’s womb,” as a description of God’s close involvement in the psalmist’s life from the beginning. However, the psalm does not say when that form in the womb became a human being. God is intimately involved in the formation of the body that will be the psalmist, but this verse does not tell us when the developing body is the psalmist. Trying indirectly to extrapolate the timing of human presence from this text is reading in affirmations that are not present. That God can “open or close a womb” for Rachel or Hannah is not a claim that every conception is God ordained,⁸ nor that even if each conception is God ordained, that God’s plan is always to bring that conception on through pregnancy. We know that two-thirds or more of all conceptions do not even successfully implant in the womb, let alone reach birth.

Jeremiah 1:5 is often quoted: “Before you were in the womb I knew you, before you were born I set you apart.” However, the text is not about human embryology or even about humanity at all. It is about the surety of what God plans. God has called Jeremiah to a particular vocation and has been planning this task even before Jeremiah was in the womb to call to it. There is nothing in the text that designates when Jeremiah became a living human being. If the point of the text was instruction about the start of Jeremiah’s existence, it would indicate that he was alive in some realm before being in the womb. Again the verse reads: “*Before* you were in the womb, I knew you.” Human pre-existence is not the point anymore than for Eph. 1:4 which states that “God chose us in him before the creation of the world.” The texts are marveling at God’s foreknowledge and choice, not human existence before time. God knows what is in even the secret place of the womb (Job 31:15). Embryos are in God’s presence as is all the rest of life. We are responsible for how we treat embryos, but when precisely they become persons is not taught in these texts.

A third text that is often cited is one already referenced above. Exodus 21:22–23 differs markedly from one translation to another. In the New International Version

(NIV), it reads: “If men who are fighting hit a pregnant woman and she gives birth prematurely but there is no serious injury, the offender must be fined whatever the woman’s husband demands and the court allows. But if there is serious injury, you are to take life for life.” After the phrase “gives birth prematurely” an asterisk refers one to the alternate reading “she has a miscarriage.” The NIV text translation is that the fight has caused labor, but the delivered baby is healthy, hence minimal penalty is appropriate for putting the baby at risk.⁹ The NIV alternative reading is that a miscarriage has been triggered, a serious offense, but not at the level of taking a human life. If a human life had been lost, the death penalty would have been required, eye for an eye, tooth for a tooth, not a fine. Translation uncertainty is at precisely the point where the passage might have shed some light on the question before us. As stated above, Orthodox Jews, listening to this text and other Scripture with deep respect, have developed a consensus that human life should be protected beginning forty days after conception. Before that point there is human life, as in any human tissue, but not yet a fellow person.

A fourth text sometimes cited has drawn vast attention over the years. Genesis 1:27 says that human beings, male and female, are created in God’s image.¹⁰ In context, “image” refers to certain human capabilities such as to be able to communicate with God, the mandate of representing God on God’s earth, and reflecting God’s character from living in close relationship with God.¹¹ This can be seen both in the mandate that immediately follows the creation of human beings in chapter one, and then in the more detailed story of Adam and Eve in the next chapter. What none of these three attributes of bearing God’s image do, is make a case for the image of God being present from conception. An embryo has the capability to know God, represent God, or to interact with God only in future possibility. The image of God is not present simply because God is aware of the embryo, as has sometimes been argued. God is aware of every tree, but that does not make them all bearers of the image of God. There is no claim from this text that the image of God is already present at conception. At most, one could hope for the status of bearing God’s image from the

potential to bear God's image in the future, but that is a conviction about the importance of potential brought to this text, not drawn from it.

In light of Scripture and basic Christian convictions of love and welcome, churches for centuries have called for a nurturing welcome of the ensouled fetus. This ruled out abortion as they knew it, but now we face a challenge that is new.

The only text sometimes cited from the New Testament is that when Elizabeth met with Mary she called the pregnant Mary "the mother of my Lord" (Luke 1:43). The argument is that Jesus must therefore have already been fully present at that time. The text does not tell how far along Mary was in her pregnancy, and even if the address was quite early, biblical people and texts often refer to God's promises for the future as being as assured as already present. For example, because of God's promise, Abram was called Abraham (father of the multitudes) years before he had even a second child (Gen. 17:5).

Harold O. J. Brown, who vigorously advocates the presence of each person beginning with conception, is scrupulously honest in his careful exegesis. He states that Scripture does not directly describe the human person as being present at the time of conception.¹² Pope John Paul II, who was a fierce opponent of abortion, writes: "The texts of Sacred Scripture never address the question of deliberate abortion and so do not directly and specifically condemn it."¹³ Gilbert Meilaender, the Lutheran theologian most often quoted by pro-life groups, unfailingly advocates nurture for the unborn but also states: "We cannot, I think, claim that the Bible itself establishes the point at which an individual life begins, although it surely directs our attention to the value of fetal life."¹⁴

What Christian Scripture does say is that God is aware of everything and cares about human beings long before they are adults. While Jesus' disciples were anxious to send away children who wanted to meet Jesus, Jesus welcomed them. Luke uses the same word to describe the children brought to Jesus for blessing, the newborn Jesus, and a child in the womb that could noticeably kick.¹⁵ There is concern for all, including the most vulnerable. Followers

of Jesus Christ should love their neighbors. Jesus describes this in Luke 10 as a concern and action for others that reaches out to whomever one can help. Responsibility, nurture, service, are at the fore, yet the question before us remains. Granted we should love our neighbor and that we know our neighbors who are dying from disease, but when is there a neighbor in the womb to love?

George Annas appeals to a common moral intuition of love and help with the following illustration:

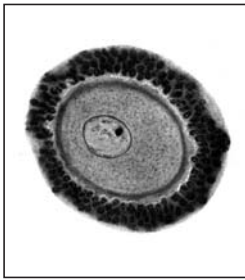
If a fire broke out in a fertility lab and there was only time to save a two-month-old baby there in a basinet or a rack with seven embryos, most people would save the baby without hesitation. Yet carrying out the petri dish rack instead, could have saved seven people, if indeed each embryo was a person.¹⁶

Thankfully that is not the usual choice that we face. But if Annas is correct about what we would do, what is guiding our choice? Could it be that we perceive a clear distinction between an embryo as potentially a person and, at a later point in development, as a person actually present? The response in the above story expresses love for our neighbors, but that attitude of seeking the best for the other does not of itself resolve the question of whether the embryo in the petri dish is yet a neighbor. Scripture directs us to extend our love to all our neighbors, but does not specifically tell us when in the womb there is a neighbor present to love. We should exercise hospitality, but does that extend to every sperm or egg? To every conceptus? To every embryo?

In light of Scripture and basic Christian convictions of love and welcome, churches for centuries have called for a nurturing welcome of the ensouled fetus. This ruled out abortion as they knew it, but now we face a challenge that is new.

The New Challenge

Applying the traditional definition of formation as the presence of a basic human body might lead one to about twenty-eight days post fertilization. By about that point, the fetus has a heartbeat; brain activity will soon follow. All of the major organ systems exist with future growth coming in size and refinement. There are now technical interventions from PGD to IUDs that can stop development at almost any point during the first month before formation. Is there a point before the formation of a basic human body when what is developing warrants full human protection as a fellow human being? Proposed transitions from human tissue to human person, before formation, have included possibility, conception, implantation, and individuation. How these are reasoned determines whether ANT is morally helpful. I will describe first the current arguments for personhood from conception on the basis of continuity, genes, and potential.



Article

The Ethics of the ANT Proposal to Obtain Embryo-Type Stem Cells

If developing human life becomes a particular human being some time after fertilization, when might that be? [Some of the thresholds argued for] recognizing a person [are] at implantation (beginning 6–9 days), individuation (by 14 days), or formation (arguably 28 days) ...

It is often claimed that human development is such a continuum that no point along it can be marked as to when a human being has begun, hence a human being must be present from conception. There are two problems with this argument. One is that the argument against having a transition point from nonperson to person is being used to support a transition point, conception. If human beings and nonhuman beings are indeed distinct, there will be describable differences. A living entity that has the characteristics of a human being would be a human being; an entity that did not have those distinctives would not be a human being. In the course of development, there will be a threshold crossed from nonhuman being to human being. One can declare that transition as quite early in development, say conception, but it is still a transition point at which a person first becomes present. Second, if one persists that life is such a continuum that there cannot be a specific threshold from nonperson to person, the argument does not of itself lead to conception as a threshold. It could be claimed by a gradualist perspective that as life in the womb develops, so does its standing. This has been argued, for example, by Robert Boomsma in the pages of this journal.¹⁷

For those who argue that conception is the key threshold from nonperson to person, this is usually tied to the gathering of a complete set of genes in one place. For the first time, at conception, there is now an organism that has all the needed genetic instructions for a human body. The genes were already present in the living human egg and sperm, even just millimeters apart, but then merge into a single microscopic fertilized cell. That cell is alive, human (since from humans), and genetically individual, hence a human being. However, it can be noted that these three attributes apply to countless cells such as skin cells that we regularly slough off in daily life without regret.

Usually the argument shifts here to one of independence. There is a threshold point where a person is present. It is when a unique organism has all the genes present and the self-organizing ability to develop into an adult human being. The fertilized egg can grow on its own. Of course, that is not completely true. Whether it is in a fallo-

pian tube or a petri dish, a fertilized egg needs a woman to welcome and physically nurture it in her womb or it will not survive. It can develop only with extensive support. If some day all nucleated cells could be implanted in a dish or womb and develop into individual human beings, would each of them also warrant treatment as a person because of their potential? Every human being has roughly three billion of such nucleated cells.

Another variation on this argument says that the embryo is a human being because we have all been that size early in our development. A microscopic ball of identical cells is what all human beings look like at that age. Note that standing alone this statement is not so much an argument as a conclusion. All acknowledge that in the development of human life there is such a stage. The question forced by embryonic intervention such as ANT is when in human development is a fellow human being-person-soul present? There are billions of cells that bear one's unique and complete genetic code, are human, and alive, yet we do not consider them to be persons. The implicit appeal is that potential to develop into someone we would all recognize as a human being is the same as being a human being. But potential means not yet, if ever, not that what has potential has already become or is guaranteed to become what it has the potential to be. An acorn has the potential to become an oak tree, but may or may not actually become an oak tree.

Now there is an involved metaphysical argument that a human being is fully present as an embryo and only unfolds that presence over time, but this ignores the required and formative role of the environment in the womb and beyond. Genes do not determine all the physical characteristics of an individual, let alone who the person will be as a person. A set of genes does not make a person. Think of identical twins with identical genes who yet become and remain unique persons. Further, even if a genetic start guaranteed a later outcome, which it does not, that does not mean what is present should be treated as what it will be. All readers of this article are likely someday to be corpses, but that does not mean that we should be treated as corpses now.

If developing human life becomes a particular human being some time after fertilization, when might that be? Some writers and governments have seen the threshold at implantation which begins about 6–9 days after fertilization. The main reason for turning to this point is the establishment of a direct relationship with a fellow human being, the mother. If human beings are defined by relationship, this is where such relationship begins. Others argue for this threshold because the embryo's chance of birth increases from not likely (roughly 1 in 3) to likely. The exact proportion of embryo loss is contested, but it is clear that more than half of what is conceived never implants. It can be said that infant mortality has been that high in times and places of human history, and that infants are no less persons as a result. But if a person is present from conception, God's design for human beings is that a majority will never experience life on earth. Of course, God could choose to do this, but it seems contrary to what has been revealed as God's plan for human beings, to first meet God here.

There are now technical interventions from PGD to IUDs that can stop development at almost any point during the first month before formation.

Ronald Green raises the further note that if we are convinced that half of humanity is being lost in the days before implantation (a loss of human life beyond the scale of the medieval black plague), should not the greatest share of federal research money and all other available resources be devoted to saving them?¹⁸ If half of all the people who have ever been, are lost in those first days, that is a far greater loss of life than to cancer, AIDS, or other diseases that currently attract our greatest efforts.

Others have argued that fourteen days after fertilization is the transition to the presence of a fellow human being because that is when it finally becomes clear whether the embryo actually is an individual or several people. Identical twins or triplets can spring from one embryo up to that point. Also two embryos can merge to develop into one person. For those who think a soul is assigned at conception, the biological reality of twinning would mean that either some embryos that will not survive are soulless from the beginning or some embryos carry two souls until they split. There could not be a simple one-soul-to-one-embryo correspondence from fertilization. What is highlighted in this concern is not whether

there is life present. The number of lives beginning in one embryo would make no difference in that regard. It is rather taking seriously the argument that a person begins when one particular human continuum has begun. That is often associated with conception, but is actually not settled until fourteen days after fertilization. Norman Ford puts it this way:

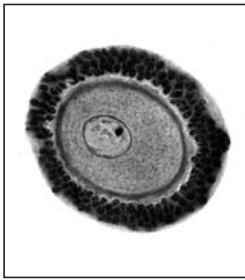
Instead of viewing development in the first two weeks after fertilization as development of the human individual ... the process ought to be seen as one of development into a human individual.¹⁹

It should be noted that recognizing a person at implantation (beginning 6–9 days), individuation (by 14 days), or formation (arguably 28 days) is not suggesting that human beings can be more or less human according to their mastery of certain capabilities, as if being a human being was a degreed property. That would leave people with various disabilities vulnerable to being declared non-human. The lines described above are each proposed as thresholds. Once the threshold is crossed, a human being is present whether attaining an ideal or not. It has also been suggested in a related concern that one should not even think in terms of transition from human life to human being, because such a focus excludes people who should be included. However, to point out that a description of a human being sees some instances of human life as not being human beings, is not an objection to such a description. It is characteristic of all definitions of human being. I am not aware of anyone who argues that a fully nucleated cell from a mouth swab that is alive and human, is a human being. To reject a description of what is needed to be a human being, one would need to show that someone who is a human being has been excluded, not simply that the description of a human being does not include everything that comes from humans and is alive.

Burden of Proof

The justification that everyone seems to claim is burden of proof. One side argues that we should not take a chance on ending a human embryo's life because a person *might* be present.²⁰ If there is any chance that a person may be present, that possibility should receive every protection.²¹

Proponents of using embryos appeal to the burden of proof as well. They say that we know there are undeniably people dying of diabetes, Parkinson's, Alzheimer's, congestive heart failure, and other diseases who could be helped by replacing lost tissue. Painful and chronic diseases such as arthritis and spinal cord injury paralysis might be helped by replacement therapy as well. While stem cell therapy is not proven at the time of this article's printing, lives may one day be saved by embryonic stem cells. How can we let a patient who is unmistakably a person, die to protect an embryo that even if implanted may or may not turn out someday to become a person?



Article

The Ethics of the ANT Proposal to Obtain Embryo-Type Stem Cells

Each side sees the burden of proof argument as favoring its conclusion. ... One advocates possible help for identified persons. The other calls for identified help for possible persons. ... For both perspectives, lives are at stake. Which burden seems greater depends on one's perception of the status of the embryo and the likelihood of embryo-type stem cells being uniquely helpful.

We should not kill people to benefit others, but we should also not let people die to protect human tissue such as sperm or ova, even though such gametes do have great potential. Has the connection of one sperm and one egg together now made present a human being, who as a human being should of course not be sacrificed?

Notice each side sees the burden of proof argument as favoring its conclusion. Both are concerned about loving our neighbors, particularly those in great need. One advocates possible help for identified persons. The other calls for identified help for possible persons. One sees a culture of death in ending the lives of embryos. The other sees a culture of death in letting people die who could have lived with the help of embryonic stem cells. For both perspectives, lives are at stake. Which burden seems greater depends on one's perception of the status of the embryo and the likelihood of embryo-type stem cells being uniquely helpful.

How to weigh likelihood, doubt, risk, and burden of proof is not unique to this question. When a parent drives a child to school that parent is risking the child's life. Thankfully it is a small risk, but an accident along the way is a real possibility. If one had an obligation never to risk harm, one would have to stay home. However home is where most accidents happen. There are no risk-free choices. A standard of do nothing, unless one has complete surety that no one will be harmed, is unlivable. We do not claim it anywhere else. Why insist on it in this case?

For millennia the definition of death has been the cessation of heartbeat. With the not infrequent success of technical interventions that can sustain a heartbeat long after the person has permanently left, the definition of death has shifted to brain death. This is not to excuse killing people. Brain death is a responsible refinement of our understanding of death in a context changed because of our active technical intervention. Recognizing brain death as death has also made possible the donation of organs that save countless lives each year. We could use the burden of proof argument as absolute as cited above to say that if there is even the slightest chance that human beings might not really be dead when their brain is dead

(how can we know for sure, say in some sense the soul might live on in the body?), then we should never transplant organs until the heart is utterly still and it would be safer if we wait for the body to be cold and rigid, indeed safest if we wait for the body to begin to decompose. Such a conclusion would preclude many organ donations, sacrificing tens of thousands of lives every year. Pushing for an unqualified maximum protection in one area of concern can cause travesty in others.

For that matter, the maximum burden of proof protection is not at conception; it is at the possibility of conception. This is the key to the argument of the current Roman Catholic magisterium to forbid contraceptives. Intentionally hampering the procreation natural to conjugal intimacy is anti-life interference. Contraception blocks the existence of human beings who would have otherwise lived. If the argument is correct that maximum support for possible human life is always required, forbidding any interference in procreation is more consistent than allowing contraception to interrupt a God designed continuum of marital intimacy to birth. As a sole standard, maximum protection leads to complete openness to procreation, not starting to protect only at the point of conception.

A variation of the burden of proof argument is that if any developing human life is not nurtured, we will slide down a slippery slope into the horrific slaughter perpetrated by the Nazis. This concern refers both to a conceptual slippery slope that once it is acceptable to kill one human life there is no longer a clear prohibition to refrain from killing many, and a social slippery slope that even if there is a good reason to allow the end of embryos, the societal momentum of that acceptance will be such that we will not stop even late term abortion. Abortion is now allowed in North America up to the time of birth and there are prominent ethicists who currently argue for infanticide. The slippery slope argument concludes that human beings need protection from conception or they will eventually not be protected at all. On the contrary side, the experience in the USA and Canada to date has been that political insistence on all protection or none has largely resulted in none.

Slippery slope concerns are well worth considering. They are compelling to the degree that there is a slippery slope and the end to which it leads is abhorred. In response, middle positions have been proposed where the clear line to be drawn does not have to be at fertilization and even if the embryo is not a person yet, the embryo could still warrant more respect and care as a human embryo than mere tissue. Such status might still offer good reason to protect embryos, just not at the near absolute level that they would warrant as people.

So Does the ANT Proposal Help?

The ANT proposal is trying to build a workable coalition. It will not be possible to satisfy everyone, but can it accommodate the discussed ethical concerns? Each of the above arguments for the status of the human embryo as a human person can now be addressed, asking if ANT would be acceptable to that perspective. ANT probably does not address the maximum protection perspective that calls for all procreative acts to be open to new lives. That view rejects contraception and any other intervention “unnaturally” limiting human procreation. ANT could argue that what it is proposing would not be procreation if the entity is created in glass with no potential from the start, but gametes would still be obtained and modified outside their intended place within marital intimacy.

For those who find the genes-in-one-place argument compelling, ANT forces a question of refinement for that reasoning. Are all the genes except the ones needed for implantation, enough genes to trigger this definition of a human being? It is the old problem of defining, for example, a car. Is it still a car if it is missing one wheel? Is it a car if it lacks brakes? An engine? As parts are subtracted at what point is it not a car? ANT forces those who advocate the genes-in-one-place argument, to refine how complete the set of genes must be to constitute a fellow human being. For this view, it may be difficult to have an entity genetically complete enough to produce viable embryo-type stem cells but not complete enough genetically to be considered an embryo-person.

For those who see the key transition to human being status in potential, ANT offers a way to obtain embryo-type stem cells from an entity which is like an embryo in every respect except that it is unable to implant, hence it does not immediately have the potential to develop into a baby with womb support. Note, unlike earlier proposals to restrict an embryo’s potential,²² it is important to Hurlbut that he is suggesting altering an egg, not an embryo. The intervention is before conception. The restriction of potential is achieved before the genes come together to form an embryo-like entity which would have been an embryo if not for the intervention. Because the entity lacks one crucial capability to develop, Hurlbut proposes that it is not a human being since the reason

an embryo is a human being is because of its potential to develop with adequate support.

This argument depends on carefully qualifying the idea of potential. The altered nuclear embryo would still have the capacity to develop if the alteration were reversed. Does lacking a potential that could be provided, qualify as lacking potential? It would not be convincing to say a person lacks the capacity to see, if we have the ability to surgically remove her opaque lens and transplant a healthy one in so she can see. With help her sight could be restored. Is the potential actually absent if with intervention the potential could be achieved? Would an ANT entity be a human being by the definition of having potential, if the deletion could be reversed? If not, why not? An embryo needs constant and pervasive support to survive and develop. Why would needing a correction not be part of warranted support?

For those who see the first presence of a person at implantation, individuation, or formation, ANT could be acceptable, but a distraction of research effort from what would probably be more helpful.

For those who see the first presence of a person at implantation, individuation, or formation, ANT could be acceptable, but a distraction of research effort from what would probably be more helpful. Granted there could still be sufficient motivation to pursue ANT, if it created a source of embryo-type stem cells that would relieve both the moral distress of substantial portions of the population and people feeling obligated to opt-out of derived treatments. Whether it could achieve these goals would depend on how many who affirm that an embryo is a fellow human being would think that an entity which is like an embryo except that it cannot implant, is therefore not an embryo, hence not a human being.

Alternatives

Rudolf Jaenisch offers a parallel source of stem cells that may be more directly effective. He has argued that because somatic cell nuclear transfer (SCNT) bypasses the normal processes of gametogenesis and fertilization, the clone’s genome is not programmed to effectively develop a new organism. It appears that “serious biologic barriers (rather than mere technical problems) hinder faithful reprogramming after nuclear transfer and thus preclude the use of

nuclear programming as a safe reproductive procedure."²³ If this is the case, somatic cell nuclear transfer to grow tissue matching the one in need of it would not sacrifice an embryo with potential for independent life.

Paul McHugh suggests that an embryo-like entity that can form tissue but not organize a fetus warrants a different name. He proposes "clonote" rather than zygote or embryo.²⁴ A clonote would have the same range of potential as an altered nuclear transfer, but without investing the extensive research necessary to found a new technique. To those who find ANT a possible resolution, SCNT may meet the same moral concerns with fewer technical challenges. However, the stresses which render the clonote unable to develop a functioning body, may also compromise the quality of derived stem cell lines. This route, too, would require careful testing and development.

One anonymous reviewer of this manuscript suggested that another alternative would be to remove one cell from an embryo in such a way that the embryo was not harmed, and then use that removed cell to start stem cell lines. For those who are convinced that the presence of all the necessary genes in an entity that is alive and human is, in fact, already a fellow human being, the removed cell is an identical twin, not a disposable cell. ANT is trying to address that group in a way that the reviewer's proposal would not.

What has brought this discussion to the forefront is the apparent advantage of using embryo-type stem cells for research and eventually for possible therapy. However, even if adult cells can someday be transformed into stem cells to bypass embryos as a source of stem cells, the status of human embryos will still make a difference for the ethics of cancer research, somatic cell nuclear transfer, pre-implantation genetic diagnosis, and a myriad of other present and coming techniques. For instance, embryos are now created and destroyed regularly as couples pursue IVF. If we forego research and potential treatment in order to protect embryos, why allow their destruction for the sake of infertile couples? Working through the status of the first month of developing human life in ever greater precision has ramifications far beyond ANT and so will continue to demand our attention. ✱

Notes

- ¹William B. Hurlbut, "Altered Nuclear Transfer as a Morally Acceptable Means for the Procurement of Human Embryo-Type Stem Cells," President's Council on Bioethics, December 2004.
- ²*God and the Embryo* (Georgetown University Press, 2003), ed. Brent Waters and Ronald Cole-Turner, is a thoughtful collection of essays on the moral status of embryos. My own chapter in the book includes a number of arguments also addressed in this article.
- ³John Connery, *Abortion: The Development of the Roman Catholic Perspective* (Chicago, IL: Loyola University Press, 1977), 40, 50–2, 56.
- ⁴Margaret A. Farley, "Roman Catholic Views on hES Cell Research," in *The Human Embryo-type Stem Cell Debate*, ed. Suzanne Holland, Karen Lebacqz, and Laurie Zoloth (Cambridge, MA: The MIT Press, 2001), 115–7.

⁵Qur'an 24:12–14.

⁶Abdulaziz Sachedina, "Islamic Perspectives on Research with Human Embryo-Type Stem Cells," *Ethical Issues in Human Stem Cell Research, Volume III: Religious Perspectives* (Rockville, MD: National Bioethics Advisory Commission, 2000): G-4.

⁷Laurie Zoloth, "The Ethics of the Eighth Day: Jewish Bioethics and Genetic Medicine," *Ethical Issues in Human Stem Cell Research, Volume III*, J-13, 15.

⁸Gen. 30:2, 1 Sam. 1:5. Cahleen and Paul Shrier propose extrapolating these and other texts to this end in "Human Embryo-Type Stem Cell Research and Christian Community Ethics: An Old Testament Investigation," *Perspectives on Science and Christian Faith* 58, no. 1 (March 2006): 37–46.

⁹John Jefferson Davis succinctly lays out and evaluates three possible readings in *Abortion and the Christian: What Every Believer Should Know* (Phillipsburg, NJ: Presbyterian & Reformed, 1984), 49–52.

¹⁰Roman J. Miller, "Viewing Bioethics Through Anabaptist Eyes," *Viewing New Creations with Anabaptist Eyes: The Ethics of Biotechnology* (Telford, PA: Cascadia/Herald Press, 2005), 89 is an example of a recent application of this text to status at conception.

¹¹For a more complete discussion, see James C. Peterson, *Genetic Turning Points: The Ethics of Human Genetic Intervention* (Grand Rapids, MI: Eerdmans, 2001), 68–9, 127–30, 345–6.

¹²Harold O. J. Brown as quoted by John Jefferson Davis, *Evangelical Ethics: Issues Facing the Church Today* (Phillipsburg, NJ: Presbyterian and Reformed, 1985), 148.

¹³Pope John Paul II, *Evangelium Vitae (The Gospel of Life)* (New York: Random House, 1995), 108.

¹⁴Gilbert Meilaender, *Bioethics: A Primer for the Christians* (Carlisle, UK: Paternoster, 1996), 29.

¹⁵Luke 18:15, 1:41, 44, 2:12, 16.

¹⁶As quoted by Bonnie Steinbock in *Life Before Birth: The Moral and Legal Status of Embryos and Fetuses* (New York: Oxford University Press, 1992), 215.

¹⁷Robert A. Boomsma, "Embryo-type Stem Cells and a Reformed Christian World View," *Perspectives on Science and Christian Faith* 56, no. 1 (March 2004): 43.

¹⁸Ronald M. Green, "Determining Moral Status," *The American Journal of Bioethics* 2, no. 1 (Winter 2002): 26.

¹⁹Norman M. Ford, *When Did I Begin?* (Cambridge: Cambridge University Press, 1988), 181. D. Gareth Jones notes that while Ford does not see an individual present from fertilization, Ford still calls for protection beginning with the zygote. Jones, "Responses to the Human Embryo and Embryo-type stem Cells: Scientific and Theological Assessments," *Science and Christian Belief* 17, no. 2 (October 2005): 213.

²⁰Kristyn A. Mannoia, "An Evaluation of Three Religious Perspectives on Stem Cell Research," *Perspectives on Science and Christian Faith* 56, no. 3 (September 2004): 222.

²¹Robert Song, "To Be Willing to Kill What for All One Knows Is a Person Is to Be Willing to Kill a Person," in *God and the Embryo*, ed. Brent Waters and Ronald Cole-Turner (Washington, DC: Georgetown University Press, 2003), 98–107.

²²Stephen S. Hall, "Stem Cells: A Status Report," *Hastings Center Report* (January–February 2006): 20.

²³Rudolf Jaenisch, "Human Cloning: The Science and Ethics of Nuclear Transplantation," *New England Journal of Medicine* 351, no. 27 (December 30, 2004): 2787.

²⁴Paul R. McHugh, "Zygote and 'Clonote': The Ethical Use of Embryo-Type Stem Cells," *New England Journal of Medicine* 351, no. 3 (July 15, 2004): 209–11.

keynote speaker

Alister McGrath

CiS/ASA Conference
University of Edinburgh
August 2–5, 2007

