

A QUESTION OF Humanity

Genetic engineering calls on all of us to review our basic assumptions about being human



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It was FitzGerald's particular interest in molecular genetics research and its ethical and social ramifications that prompted this *Company* magazine interview.

There's a plethora of terms out there: genetic engineering—gene therapy—cloning—stem cell research. Any advice from a genetic researcher on how a layperson can start grappling with these words and phrases?

Here's how: look at it all as human engineering, manipulation of our biological aspects. It's not accurate to call it biological engineering, because we can already put nonbiological things in ourselves: prosthetic devices, pacemakers, implanted hearing aids, and so on. It's really engineering of our physical selves by biological and nonbiological means.

Does this make us less human? No. When I ask my students, "Is someone with a pig's heart valve any less human?", they'll tell me of course not. So, considering the fact that we're trying to genetically engineer pigs for whole-organ transplant, I continue: "If a person has a pig heart, would you force him or her to walk around with a scarlet *P*?" No. How about pig lungs, liver, kidneys? No. So I ask them what is it that makes us human, the brain? If so, then what about the recent case of the quadriplegic who now has an implant in his brain that lets him use brain waves to get his computer to turn on lights, air conditioning, and such. Is he less human? No.

So then it comes down to how you define "human being."

Not only how you define human being, but who's doing the defining. Up until very recently, the conceptualizations we've used about life trace back to Aristotelian biology: this is one species, that's another—they're different and separate.

But what biology is beginning to indicate to us as we go deeper and extend our ability to manipulate it is that those differences don't necessarily have to be there. We can cross those boundaries and blur those distinctions on a biological level. We can mix and match, anywhere from tissues and organs and prosthetic devices all the way down to the very fundamental molecules of cellular activity and heredity.

So what happens to the criteria we've employed up to this point? Everyone agrees you can't kill an innocent human being. But what if you combine a human embryo and a chimpanzee embryo? Is that a human being? How about if it has 51 percent human cells and 49 percent chimpanzee cells, is it human? Or vice versa; is that not human?

Some people get upset that in some parts of the world chimps are hunted for food, but they're not accusing the hunters of murder. But what happens when these lines, through biological manipulation, get blurred? This starts to undermine or erode some of the bases we've been using to support these distinctions. You can argue for a set of distinctions by saying, "This is the way we've been doing it." That's a historical argument, an argument from tradition, and it's a different argument from one that says, "We're doing this because that's the way things are." That might *not* be the way things are. And it certainly isn't the way things must be.

It doesn't mean that we throw out old distinctions, but if we keep them, we have to know why we have them and why we keep them.

What role does the Church have in this?

An enormous one. In the current debate about stem cells, cloning, and so on, you'll find scientists and policy people saying, "Religion has no place in this; we have to get the religious people out." What's fascinating is that most of the religious people I know who are *against* human embryonic stem cell research and cloning primarily don't make religious arguments; in contrast, many of the religious people who are *for* it make fundamentally religious arguments.

But religion has much to offer: sooner or later, people will recognize the erosion in the foundations that underpin some of our moral, ethical, and legal distinctions about what is life and what is a human being. Then they'll ask what is going to fill that vacuum that's left when these old distinctions don't hold up. And, believe

me, that vacuum is with us right now; we're just having trouble recognizing it.

It's in filling that vacuum that religious traditions have a lot of wisdom to offer, particularly our Catholic tradition and its emphasis on our preferential option for the poor, the most needy, who should get the benefit of the doubt. When we're in that situation of wondering when life begins, when it ends, what is human life, the Catholic perspective can be most illuminating. When you're in doubt, you give the benefit to the human being. If you're trying to decide whether it's a human or a chimp, it's a human until you've proven otherwise. When you're trying to decide whether it's alive or not, it's alive until you've proven otherwise.

That doesn't mean—Terry Schaivo's case comes to mind here—that life for us is the ultimate good. The ultimate good is being with God, both here and in the afterlife. We draw closer to God when we say, "I'm not sure what's going on here, so I'm not going to create and then kill this human entity just for research."

Do you consider human embryonic stem cell research to be a type of quicksand in the field of human engineering?

No. Not in the least. Not quicksand. It's the tip of the iceberg; a watershed. We may be heading into the quicksand, but this current focus on embryonic stem cells will pass. The technological advances and research that'll be coming will make the complexities of today's debate look like a kindergarten squabble.

What's critical in the debate over human embryonic stem cell research right now is that we set precedent for how to deal with the scientific advances that are coming, and I hope the precedent won't be technology sales jobs to the public along with incendiary rhetoric. That will not be a good basis for deciding how to integrate scientific and technological advances into our society. This integration is a huge issue in that we have responsibility not just to ourselves but to future generations as well.

Where and how do you draw lines between genetic research on embryos, fetuses, and humans?

All those lines are blurring as our advancing biological knowledge begins to undermine the definitions and distinctions we have used up to this point. That's part of the problem. Because those lines are blurring, people can make arguments to draw the line wherever they want. For instance, some say that embryos don't count until they've implanted in the womb. But the success of that argument may rely on criteria that were chosen to guarantee that conclusion.

What advances in genetic engineering are the ones that cause you the most concern?

It's the concept of technological utopianism that gives me the most concern, the attitude that we're going to solve every problem through technology. In this process, technology becomes a goal in itself, because it will bring about our salvation. Then that salvation comes down to one's own idea of utopia, and there we're all going to have our own ideas that may well be in conflict at some level.

This attitude of individual and technological salvation takes the focus away from what most people assume and agree should be the goal: betterment of human kind. In the Catholic tradition that would mean exactly what we've always been teaching: loving God and loving one another.

At what point does research in human engineering step out of the realm of scientific inquiry and become a concern of society at large?

Too late. It's already done that a long time ago. Take a look at the literature about the eugenics movement a hundred years ago. Pull out the word "eugenics" and replace it with the phrase "human embryonic stem cell research" and you'll find many parallels in the arguments used both then and now.

What really strikes me about these parallels is that back then it was “progressive” scientists saying that we have to institute eugenic practices for the good of the species. And when the Catholic Church and other religious groups raised concerns, they were dismissed as Luddites and religious fanatics. Scientists were saying that we have this ability, so we have to do it because it’s what’s best for us. But that raises questions: What was best before? Has it always been best? Whose idea of best is it? We’ve been here before; this debate is not new. But what is important now is that we have the chance to set a better precedent on how to integrate scientific and technological advances into a society that strives to care for each and all.

What are the alternatives to human embryonic stem cell research?

They are numerous. Go to www.stemcellresearch.org; it’s where we try to give people the other side of the issue, some of the other research that’s being pursued and achieved in trying to treat diseases without involving human embryonic stem cells.

While human embryonic stem cell and cloning researchers are saying that we need research involving human embryonic stem cells, there are many other scientists and clinicians who are making marvelous advances in the treatment of illness and disease. Go to the site www.clinicaltrials.gov, part of the National Institutes of Health, and pick a disease—you’ll see all the clinical trials going on today that don’t involve human embryonic stem cells.

What about adult stem cells and umbilical cord blood stem cells as other sources for this research?

The Church has no problem with research using adult stem cells as long as it’s done in the normal, ethical man-

ner, because that research doesn’t kill the source of the stem cells.

As far as umbilical cord blood—though I doubt that it will satisfy all the research needs that people are talking about—there is strong evidence that it will prove incredibly useful. Now, finally, the government and others appear ready to support a national system for cord blood storage for treatments and research. The creation of such a national system probably would have come about sooner had not supporters of human embryonic stem cell and cloning research feared that

All this compromise says is that federal funding for human embryonic stem cell research cannot be used except on human embryonic stem cell lines that already were in existence before the policy was instituted. One could argue that these already existing lines would be more than enough to do basic scientific research. But one of the questions others and I had was what happens when researchers determine that the current supply is inadequate and they start clamoring for more lines, different lines, lines with different characteristics. That, in fact, is what has happened. Hence, the political compromise was clever at the time, but it is not sustainable. As a nation we will finally have to choose whether or not we want to destroy human embryos for research purposes.

A phrase that recently came to my attention is nuclear transfer; it took me a while to realize it’s just another term for cloning. But it raises the question about the difference between an embryo created by egg and sperm and an embryo created by egg and implanted nuclear material.

That’s a fascinating question on a variety of levels, and it even reveals some of the confusion going on in the discussions about cloning. Biology textbooks state that the fusion of egg and sperm produce an embryo, so some claim that cloning doesn’t produce embryos since no sperm is involved. However, let’s look at it from another perspective. If you ask, “Is Dolly a sheep?”, people will tell you yes. No one argues with that. So then, was Dolly once a baby sheep? Yes. So then, was she once a fetal sheep? Well, yes. If so, what was she before that if not a sheep embryo?

When we talk about embryos from a moral, legal, and ethical standpoint, we’re



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advances in cord blood research would undermine their claims for the need for human embryonic stem cell and cloning research.

What’s your take on President Bush’s 2001 decision to allow federal funding for stem cell research but only on existing lines of stem cells?

It was politically a very clever compromise, but it is not sustainable simply because neither side is satisfied with it.

talking about what we all once were, but from a biological perspective we could be talking about something completely different, because sperm and egg can also come together and create a tumor. Early on, it will look like any other embryo, but on a molecular level, it's not. So you could argue that this tumor is not what we mean when we talk morally and ethically and legally about an embryo.

So, when people in the cloning debate are throwing these terms around, saying it's not an embryo because sperm and egg did not come together, from the moral, legal, ethical standpoint, that would be like saying that Dolly wasn't a sheep. They may not appreciate how they are confusing the issue. That's another reason why we need to have better and more-robust public discussion of this issue. This issue's been around for seven-eight years, and there's still a great deal of misinformation running rampant.

How do you view the arguments about the number of people who can be helped by human embryonic stem cell or cloning research?

I call that the “need and number” argument. And it's flawed. For instance, we know that every ten seconds a child dies in the world because of a lack of clean water or sanitation. We know that 2.5 billion people in the world don't have adequate sanitation. And how long have we had sanitation technology? Since Roman times at least.

Just because you have a technology does not mean that all the people who need it will get it. In fact, we have a pretty lousy record on that score. If that justifies doing research, that's no justification. We emphasize that each and every human being deserves equal respect and care, so no one can be sacrificed for the needs or wants of the many. And in this debate, there is the additional reality that the many who might benefit from this controversial research will not.

On a different note, some say, “We simply need to do human embryonic stem cell research.” That's flawed reasoning as well. It's incredibly difficult in science to predict what exactly you're going to get from a new area of research.

It's easy to say one will get some very interesting things from human embryonic stem cell research; I have no argument with that. You can get equally interesting results from research on adult human beings themselves, but there we have very strict regulations: you don't get to abuse or kill humans even to conduct very promising research.

How about on a specific level? There was a case a few years back of parents who conceived a child in hopes that it would be a bone-marrow match for their daughter, who was suffering from anemia.

The fundamental issue here is whether we should be doing things we could never

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do before simply because now we can do them. It's the technology-as-a-goal-in-itself argument. If someone is being created to perform a specific function, that's commodification of life.

Historically, people have had children for a wide variety of reasons—have more kids to run the farm, for instance. But even a case like that raises questions. Is this what having kids is all about? Or is it an expression of the love between father and mother? This certainly doesn't mean that that baby won't be loved, but that doesn't justify selecting or producing children to perform specific functions.

Where are the morally objectionable and unobjectionable areas of genetic research?

That's *the* question: it's morally objectionable when something demeans, deni-

grates, or destroys human beings. The current situation is aggravated when proponents make the research seem as important as possible to get funding to do it.

Objections come in as well on the topic of goals. If the goal for all this research is to benefit people, we have to realize that the vast majority of people don't benefit from what we already have.

So what happens if we change our goals? When we admit that we're not really doing it for the sake of all these people who could benefit? Do we say we're conducting this research just for knowledge's sake, or just to make a profit, or just to save ourselves? None of these positions is ultimately sustainable.

If you fall back on the “it's going to benefit somebody” line, who counts as somebody? And why? That's the grey area, and will continue to be grey, because we're not sure what a “somebody” is going to be and who's going to decide what a “somebody” is. Who's going to pick the criteria?

So then it comes again down to how you define what constitutes a human being.

Exactly. And, as biological lines blur, some may start deciding that this is not a human and that is not a human simply because they're not like me. It takes us back to the many historical examples we have when some humans have said to others that because you don't have the same skin color or gender or intelligence, you don't have the same importance. It's the same kind of logic that leads to some saying that embryos or fetuses are not developed enough so they don't deserve fundamental care and respect.

Whose voice isn't being heard? It's the usual groups that are not heard—the most vulnerable, the most needy. They aren't that important politically. They aren't a market. This is again where the Church and other traditions can encourage us to do what we always have to do, and that is continually raise the issue, what about your neighbor? And, who is our neighbor? In this age especially, those who have no voice. **C**