RESPECTING PLURALISM; RESPECTING COMPLEXITY

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I will be talking about stem cell research, one particular area in which we use genetic and genomic technology. I am going to be using it as a sort of core sample, a place wherein we can see themes that cross the board today in genetic science. Stem cell research presents challenges to our country that the law will have to help us face. As I see it, there are three major challenges about stem cells–in fact, about the whole spectrum of genetic science. First of all, there is a question of respect for human rights, since I am going to be talking about stem cells that come from human embryos. Another question concerns respect for one another. You know that we do not agree about how to treat embryos, and that we probably never will. How in a democracy can we show respect for those disagreements? Can we do something other than just outvote the people with whom we disagree? Finally, I will talk about respecting complexity. That is a funny phrase. We know what it means to respect life, but what does it mean to respect complexity? It is easy to go overboard in one particular direction here. When the Human Genome Project was launched about ten years ago there were people who said "once we map the human genome, we are going to know the meaning of life." But what actually happened? The Human Genome Project is finished, and as far as I am concerned, we have not made a lot of progress in understanding the meaning of life and what it means to be human. At the same time that we appreciate the wonders of genetic science, and it truly is wonderful, we have to avoid oversimplification. We have to not back away from the complexity but also not bow in defeat to it.

What is a stem cell? As the word suggests, a stem cell is a cell from which other cells will develop; a stem cell will produce different kinds of cells. It will not just replicate itself. There are stem cells all over the body. The ones that were known first are in the skin and in bone marrow. The latter

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are stem cells that produce a variety of blood cells–red blood cells and white blood cells. Even as we speak, the stem cells in your bone marrow are producing blood cells. One stem cell produces different types of cells.

If we get the stem cell from an embryo we can get a cell that is capable of producing not just several different kinds of cells but virtually all cells in the human body. The potential they have is overwhelming. Mr. Lentner, I imagine, will be talking about what happens to the victims of Huntington's disease.[1] When we talk about conquering disease, we need to remember that we are talking about people with a disease who are being helped. If stem cell research fulfills its promise, it will not just treat diseases, it will treat people whose lives are shortened or crippled by a number of serious diseases–Parkinson's, diabetes, heart disease, multiple sclerosis, etc.

We must remember that all this great promise is as of now, only possibility. We can oversimplify the situation by saying, "we are going to be able to do this."

Yet, we have to have stem cells to find out whether we will be able to do it. Uncertainty is the hallmark of science. You never know exactly what will work out and what will not.

Stem cells come from a variety of sources. Among these are embryos and aborted fetuses. I am not going to talk about aborted fetuses. Technically, that source is slightly different and raises its own issues. I will be talking about embryonic stem cells. After an egg has been fertilized by a sperm, it begins to divide. After the first few divisions, all the cells in the zygote are completely identical to one another; any of them could become any tissue in the human body. Around the fourth or fifth day, this bundle of cells becomes a blastocyst with an inner cell mass; it is those inner cells that are called embryonic stem cells. Of course, to get them we have to destroy the embryo. That is the problem.

I need to point out something really basic for a minute, and that is that at this stage, the blastocyst stage, we do not have a little tiny baby. It is not a baby, but of course it is something that could be the first stage of a human life. No question. At this stage, we have two kinds of cells, and only two, not the hundreds that make up a developed human body.

Where can we get blastocysts? We can get them from in vitro labs because, as you probably know, when an infertile couple goes to a lab more zygotes are formed than will be implanted into the woman's uterus. In vitro is still a pretty uncertain procedure and so "excess" embryos are created, and some go unused.

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1. *See* Robert Lentner, *Huntington's Disease*, *in* 2002 L. REV. M.S.U.-D.C.L. 919 (2002).

It is medically possible to create embryos deliberately for the stem cells they contain, and it is probably going to be possible to clone embryos. "Clone" is one of those words that we desperately oversimplify. We probably should abolish the term, and I hope that after tonight a red flag will go up for you whenever you hear the term. A better term is "somatic cell nuclear transplant." As you can see in figure one below, the dark gray circle with the light gray nucleus represents a cell taken from skin, let us say. Its nucleus, containing the chromosomes, is removed. At the same time the nucleus of an ovum is removed and discarded. Then the nucleus of the somatic cell (let's say the skin cell) is placed in the enucleated ovum–now you have something that will develop into a blastocyst. Why would you want to do all this? Because the tissues that you hope you will be able to grow will be transplanted, in some way, into the person who needs them. The body will reject foreign tissue, but tissue created from stem cells from a blastocyst created in this way will not be foreign. It will match the intended recipient, because the chromosomes came from the intended recipient. The problem of rejection will be much less.

Nuclear transplant ("clone")
Somatic cell nuclear transplant

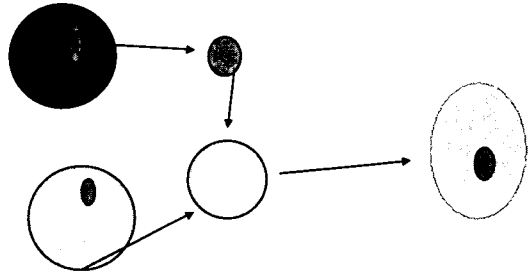

Figure 1: Somatic cell nuclear transplant

When people think of cloning, they think of an army of Hitlers. They think of every science fiction novel or movie they have read on the subject. The word "clone" makes it almost impossible to talk really sensibly about these issues, and so do old simplified presentations of science. The power of an image is obvious from some recent events, too. About three weeks ago, a

lab in Texas announced that it had created a kitten through somatic cell nuclear transplant. Very interestingly, the markings on that kitten, even when she grows up, will be different from the markings of its progenitor. The fact that the original cat and the "cloned" one will look and act different may shake loose the images people have of cloning. There are both biological and environmental reasons for these differences. So-called "cloning" is not what people have assumed it is. As for what language would be helpful, I do not know. I favor "somatic cell nuclear transplant" (SCNT)–but it hardly is a kitchen table term. "Therapeutic cloning" is what a lot of people prefer, for creating blastocysts in this particular way in order to develop tissues that a patient can benefit from. But calling it therapeutic cloning may be begging the question. Maybe we should call it research cloning, since we are not yet sure that it will work. Should we call it SCNT for the sake of research? Maybe.

Language is part of the issue. Another part is, what does it mean to respect human life? We have life on both sides of this question. The blastocyst on one hand; curing the sick on the other. There are excellent reasons for caring about both of these things. One position holds that we should treat the embryo like a human being. It is, after all, the first stage in a human life. There are reasons for making fertilization the moment at which full human status is gained. All changes after that are small and gradual, providing no clear cutoff point. If you look at a little history you know that as a species we really are quite terrifying. We are always likely to find reasons to discard some subset of humanity as not mattering. We are talking about Nazis in Germany, Europeans in America, and so on. To protect against that tendency, an argument could be made that we should count as fully human, deserving full protection as such, every stage of life from the first instant.

On the other hand, some really serious things stand on the other side as well. For one thing, a blastocyst is completely made up of stem cells; it contains no tissues. Furthermore, it exists in a petri dish, not in a woman's uterus. It does not have the kind of intimate relationship with another human being that, it could be argued, marks the beginning of human life.

One of the things that encourages me about this whole issue is that we find people moving out of their boxes. Orrin Hatch, for instance, who is very much against abortion, very much believes it wrong, and supports laws against it, nevertheless believes that stem cell research is acceptable. He believes that partly because in his religious tradition there is a soul who is "out there" waiting to be implanted into developing fetuses, and the time in which that happens is unclear. That is not too wild an idea; Thomas Aquinas held something roughtly similar. Others, who do not accept Mormon or Thomist metaphysics might still think that it is only in the later stage of development

that an embryo becomes a member of the morally protected class "human being."

On the other hand, Dan Callahan, one of the most major figures in my line of research, has taken the opposite position and as a result has taken a lot of flak. He believes that abortion is a woman's right. But he also believes that we should not be doing stem cell research because abortion is about a woman having the right to control what happens within her body. For a blastocyst in a laboratory, that question does not arise. As I said, the fact that people can think out of their boxes is quite encouraging.

The law can respond to these issues in a variety of ways. One of these is to criminalize certain kinds of research, as we and most western European countries have criminalized cloning for the sake of reproduction. A different step is to refuse to fund it. President Bush made a hard decision last August in signing a bill to allow federal funds to be used for research on stem cell lines that already existed, but not for the destruction of new embryos. Still another step would be to regulate such research. England has a special agency that regulates all fertilization and embryonic technologies. In the United States, for now, we allow most such research without funding it.

The second important question is how do we respect one another knowing that we disagree? Here, I think, there is something to be gained from what the National Bioethics Advisory Council did. Its position was that we should in fact fund stem cell research but make sure that a variety of voices including the religious voices are heard. NBAC took a lot of flak. They said that religion is very important in the United States. Religious voices need to be heard and we need to hear them. Then when NBAC said, "yes, we should try stem cell research," they put in procedures to protect, as far as they could, the consciences of the people who will be appalled by that decision. They said, "if we are going to take the so called 'excess embryos' from in vitro labs, then make sure that you do not ask people 'may we use your embryo' until you have already asked them 'do you want to keep it, do you want to donate it to another couple, or do you want to discard it?'" Only for those couples who say that they want to discard it can you go on to ask the second question: "May we use it for stem cell research?" This is so that there is no pressure to discard the embryos. NBAC also forbade directed donations, which means no one can say, "you may use my blastocyst and you may use it only for this purpose," so that no one has the motivation to go use an in vitro clinic *in order to create* embryos for research. NBAC's reasons were these: We do not need embryos beyond those already discarded, and too many of our fellow citizens would find directed donation deeply repellent.

President Bush disbanded NBAC and formed in its place the President's Councils on Bioethics. I expect to be able to respect what they do too. But I think that President Bush sent the wrong message when he dissolved one

council and created another. He sent the message that we cannot really think or talk about these things; that we have to start over when people do not agree; we need to just get rid of them and start with a new set. That is a dangerous message.

My whole profession is talking about these issues, and about our need to think clearly and speak civilly about them. I hope that I helped you do that this evening.